VAUBAN’S SIEGE LEGACY IN
THE WAR OF THE SPANISH SUCCESSION, 1702-1712

DISSERTATION

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ABSTRACT

Over the course of Louis XIV’s fifty-four year reign (1661-1715), Western Europe witnessed thirty-six years of conflict. Siege warfare figures significantly in this accounting, for extended sieges quickly consumed short campaign seasons and prevented decisive victory. The resulting prolongation of wars and the cost of besieging dozens of fortresses with tens of thousands of men forced “fiscal-military” states to continue to elevate short-term financial considerations above long-term political reforms; Louis’s wars consumed 75% or more of the annual royal budget. Historians of 17th century Europe credit one French engineer – Sébastien le Prestre de Vauban – with significantly reducing these costs by toppling the impregnability of 16th century artillery fortresses. Vauban perfected and promoted an efficient siege, a “scientific” method of capturing towns that minimized a besieger’s casualties, delays and expenses, while also sparing the town’s civilian populace. How thoroughly Vauban’s siege legacy was accepted by the end of Louis’s reign is the focus of this study.

A quantitative survey of the 115 sieges in the War of the Spanish Succession (1701-1714) places the anecdotally-based conventional wisdom on a more sure footing by setting Vauban’s offensive revolution in a broader chronological context. Abandoning the narrow biographical accounts of national figures (Vauban and the
English Duke of Marlborough in particular), we discover a larger picture that highlights the many challenges engineers faced when applying his theory to the reality of combat. Focusing on the Flanders theater (1702-1712), we find that the most important elements of Vauban’s siege attack were not only ignored, but actively opposed by the most successful French and Allied generals. These commanders – the most famous among them Marlborough, Prince Eugene of Savoy, and the Duke of Villars – are examples of a widespread reaction against Vauban’s humanitarian attempts to rationalize warfare. Generals consistently rejected Vauban’s goals and captured strong fortresses with brute force rather than finesse; they accepted higher casualties in order to avoid delays. In this early modern discourse over how wars were to be waged, the brute force community emerged victorious. Their acceptance of high casualties and reliance on overwhelming firepower has influenced Western military strategy ever since.
Dedicated to my wife, Liz, and my parents
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All errors are, of course, my own.
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Dates are given as Month/Day/Year, in New Style unless noted by “O.S.” (Old Style). Beginning in 1700 the old Julian calendar was eleven days behind the new Gregorian calendar.

I have retained the seemingly-random spelling of all contemporary quotes originally written in English – spelling was far from standardized in the period so that using *sic* would make many quotes unreadable. Even personal names lacked standardized spellings; here I have attempted to spell all names with modern orthography. In the spirit of a multi-national work, I employ the form currently used in their country of origin. For example, I refer to the Dutch commander Ouwerkerk rather than the Francophone Auverquerque (how he often signed his name) or the Anglophone Overkirk (as he was known to the English).

Similarly, I have usually referred to place names by their modern spelling, except in quotations. In Belgium, I use Flemish orthography for Flemish towns (Oostende rather than Ostend) and French spelling for Walloon places (Mons instead of
Bergen). The main exceptions are a small number of well-known Anglicized place-names, such as The Hague rather than Den Haag (or more formally ’s Gravenhage).
CHAPTER 1

INTRODUCTION

Throughout the twentieth century, military historians have acknowledged the often-pivotal role of siegcraft in warfare. A necessity since prehistory, fortress walls delineated boundaries, gave succor to the weak and protected the holder’s resources, making them obvious targets in any conflict. The romantic vision of medieval castles and the more prosaic reality of urban citadels ought to have ensured that they would continue to play a dominant role in the innumerable wars fought by early modern statesmen. Their relevance depended instead on the balance between these walls’ resistance and the force of new offensive techniques and technologies, particularly the 13th century arrival of gunpowder. Responding to this chemical imbalance, defensive architects soon created a defensive system tailored to neutralize the besieger’s new-found advantages. This disparity between the power of the defense and the frailty of the attack has been considered a prime cause of the widespread indecisiveness in Europe’s 16th and 17th century wars, which in turn crippled efforts to centralize early modern governance in royal hands. One individual, Sébastien le Prestre de Vauban, is said to have played a central part in reducing the defense’s dominance while setting the stage for a Military
Enlightenment later in the century. Assessing the impact of his legacy on this grand narrative can contribute to a better understanding of this balance and its influence on the early modern world.

SIEGE WARFARE’S PIVOTAL PLACE

Before the age of mechanization and motorized transport, warfare was inherently time-conscious. Without the combustion engine, the age’s only means of overland cargo transit was horsepower, whose requirements forced a highly circumscribed campaign season. In order to provide the tons of supplies (food, weapons, munitions, equipment) needed by armies with tens of thousands of men, large-scale military operations could normally be sustained only with the onset of spring weather and had to be concluded before winter.¹ Unpaved roads would then be transmuted into mud and waterways blocked with ice, while the horses that armies depended on (including cavalry mounts as well as teams for wagons and towing barges upriver) could not survive the strenuous campaigning on their vitamin-deficient diet of dry fodder (hay, oats, and straw) and thus had to wait for

the spring’s green grass. Wintertime also gave warring powers a respite in which to rebuild their forces and hammer out diplomatic fine points in peace negotiations. The seasonality of campaigning did vary somewhat by theater: the Mediterranean climates of Iberia and Italy allowed campaigning far earlier and later in the year, but in Spain the severe heat also demanded a respite during hot summer months (usually July and August). In the Low Countries and northern France, the quintessential theater for siege warfare, Allied campaign seasons in the War of the Spanish Succession (the focus of this study) averaged only six months out of the year, usually starting in May and ending in early November, as Figure 1.1 illustrates.

Figure 1.1: Length of Allied Campaign Seasons in Flanders

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3 For the data used to create this graph, see Appendix A.
In this time-sensitive context, the later an offensive commander entered the field and the longer a siege lasted, the less time available for future actions. The garrison’s duty was to bring any approaching army to a standstill and force it to conduct a difficult siege. Its job was made easier since advancing armies were unlikely to leave an unmolested garrison along their path of advance, for fear of it sallying out to threaten their communication with the rear. Capturing a besieged town did not always mean success in this context, for even if a well-defended fortress were to eventually fall, it could have halted enemy operations for months. In a war of attrition, the costs incurred by the besiegers would be calculated in money, blood, and powder. Well before the Spanish Succession war, the English general George Monck elucidated the impact of lengthy attacks on the momentum of a campaign:

Long sieges ruine armies; empty the purse, and most commonly it falleth out so, that it hindreth armies from better imployments; and after a long siege, though things fall out according to a commanders desire, he will have little reason to brag of his victory, when he vieweth his expences, his time, and his army. The malice of a great army is broken, and the force of it spent in a great siege.

As Monck intimates, the significance of a siege for those seeking to conduct a rapid war of annihilation was measured most immediately in days. A slower tempo of campaigning gave the advantage to the defensive side in such a conflict, allowing

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him to run out the clock on the campaign season. This generated what Thomas Arnold refers to as the “friction fortifications exerted on the pace and effectiveness of offensive operations.”6 With the campaign clock always ticking, too many sieges would doom a campaign to indecision and interminably protract the war.

**A FLUCTUATING OFFENSIVE-DEFENSIVE BALANCE**

Defensive fortifications then, served not only as force-multipliers, but also served to slow down the advance of a relentless enemy. The ease with which they were captured – how effectively they consumed a limited campaign season – has fluctuated wildly over the centuries as new defensive and offensive technologies struggled for dominance.7 The early modern period (c. 1400- c. 1800) witnessed several swings in this balance between the attack and defense. At the dawn of the period, a 14th and 15th century “gunpowder revolution” brought picturesque medieval castle walls crashing down – the thunderous roar of bombards heralded a dramatic shift in the offensive-defensive balance of power.8 In response to this new threat of gunpowder artillery, Italian architects developed in the beginning of the 16th century a fortification style referred to as the *trace italienne* to counteract the powerful cannons’ ability to smash the thin, tall medieval walls that had been designed to prevent escalade.9 These designers decreased the height of the walls in order to provide a less visible target, while increasing their thickness to provide greater solidity; angled bastions were also added to provide converging fields of fire

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at every potential point of attack. Defended by a garrison armed with gunpowder
weapons of its own, fortifications once again dominated military campaigns.

The *trace italienne*’s success led to a period of defensive predominance that
lasted through the 16th century and beyond. The design’s widespread adoption in the
Netherlands during their 80-year revolt against Spain led Geoffrey Parker to declare
that “even a small, unimportant town might resist capture for several months
provided it had the *trace italienne*.”

Christopher Duffy, the first modern historian
to give his full attention to early modern siegeworks to the development of artillery fortresses.

Parker later combined his own

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research with Michael Roberts’ postulated battlefield “military revolution,” and the resulting 1988 book advanced a revised Military Revolution based on the existence of these new 16th century fortification designs. “[W]hen constructed as part of an integrated system, fortifications _alla moderna_ dominated the conduct of warfare.”12 James Wood’s analysis of the early French Wars of Religion (1562-1576) also concluded that “even great victories on the battlefield would prove empty if there was no means to silence [a fortress’s] defending artillery and to batter the breaches that enabled the infantry to mount their assaults.”13 His examination of several extremely bloody sieges confirmed that this task was difficult in an era of defensive superiority, for “the moderately up-to-date defensive works of a single medium-sized city could resist even the most determined bombardment...”14 Another recent student of the sixteenth century highlighted more generally the “growing inefficacy of the siege assault” when firearms and cannon were fully incorporated into the defense – garrisons had adopted the new weapons as quickly as their attackers.15

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14 Wood, _The King’s Army_, 272.

Even those scholars who downplay the revolutionary nature of the artillery fortress also accept the defensive advantages of fortresses. Simon Pepper and Nicholas Adams, for example, emphasize the resistance that obsolete and transitional trace italienne fortresses could put up when facing diminutive 16th century siege trains.16 The protracted, bloody struggles of this century were prompted by a swing towards the defense.

This balance continued to benefit the defense in the 17th century. David Parrott’s recent tome on the French military during Louis XIII’s reign reinforces the point’s validity for the first half of the century, informing us that the French “with few exceptions [were] attuned to thinking in terms of sieges as the normal means of waging warfare.”17 Derek Croxton’s investigation of the Thirty Years’ War campaigns along the Rhine in the 1640’s also finds a large number of sieges alongside many field battles.18 George Rothrock was one of the first of 20th century historians to embrace rather than excuse the fact that “field battles were rarely fought, and the preponderance of military effort was absorbed in the attack and defense of fortified places or in maneuvers to pose the threat of such an attack.”19

David Chandler, a battle-centric historian at heart and the most prolific recent biographer of the famous John Churchill, First Duke of Marlborough, was forced to

16 Pepper and Adams, Firearms and Fortifications, e.g. 170-171.


18 Derek Croxton, Peacemaking in Early Modern Europe: Cardinal Mazarin and the Congress of Westphalia, 1643-1648 (Susquehanna University Press, 1999).
admit that despite his preference for decisive battles, “few periods of military history have been more dominated by siege warfare than the 60-odd years between 1680 and 1748.” 20 John Lynn’s research on Louis XIV’s armies also recognizes positional warfare as the “most common form of military operation,” reaching its apogee during the Sun King’s reign (1661-1715). 21 John Childs emphasized the importance of pitched battles in the Low Countries during the Nine Years’ War (or the War of the League of Augsburg, 1688-1697), but still declared the siege as “the principal military and political operation.” 22 The Earl of Orrery’s 1677 quip that Europeans fought more like foxes than lions, well-known to students of military history, encapsulates in a single phrase the widely-recognized prevalence and predominance of siegecraft in early modern warfare. In military operations far from the artillery fortress’ heartland, sieges still played a critical role in individual campaigns. To the east of Parker’s trace italienne “heartland,” the influence of fortifications was also keenly felt well into the 18th century. 23 In the relative backwater of Civil War England, Charles Carlton’s accounting finds that sieges still


\[ \text{\footnotesize \cite{20 Chandler, The Art of Warfare in the Age of Marlborough, 234.} \]

\[ \text{\footnotesize \cite{21 John Lynn, The Wars of Louis XIV, 1667-1714, quote on 71; on 63 it is labeled “the more common form of conflict during this period;” also 369. See also Lynn, Giant of the Grand Siècle, 530-532.} \]

\[ \text{\footnotesize \cite{22 John Childs, The Nine Years' War and the British Army, 1688-1697: The Operations in the Low Countries (Manchester: Manchester University Press, 1991), 87.} \]

\[ \text{\footnotesize \cite{23 For their role in poorly-fortified eastern Europe, see M.S. Anderson, The War of the Austrian Succession, 1740-1748, (London: Longman, 1995), 37; and Dennis Showalter, The Wars of Frederick the Great, (London: Longman, 1996), 4.} \]
comprised a third of all combats (which included many small skirmishes) and that
they resulted in more casualties than the much better known field battles.24 A more
recent survey states matter-of-factly that “The characteristic military action of the
British and Irish Civil Wars was an attack upon a fortified strongpoint.”25 A recent
survey of early modern war and society reflects the common view of the entire
period: “warfare was reduced to a seemingly interminable succession of sieges.”26

VAUBAN’S LEGACY AND SIEGE WARFARE’S DECLINE

This early period of modulation between attack and defense is identified by
the technologies associated with them (gunpowder, the trace italienne), but the next
shift – a return once again to offensive ascendancy – is summed up by an individual
rather than an object. This French military engineer took advantage of decades of
military experience to almost single-handedly reverse this trend of long, expensive
sieges inaugurated by the spread of the artillery fortress. Vauban was born (1633) in

24 Charles Carlton, Going to the Wars: The Experience of the British Civil Wars, 1638-1651, (New
York: Routledge, 1992), 154ff. For studies that emphasize the backwardness of British fortifications
and siegecraft vis-à-vis continental Europe (particularly during the British Civil Wars), see
Christopher Duffy, Siege Warfare: The Fortress in the Early Modern World 1494-1660, chapter 6;
Peter Harrington, “English Civil War Fortifications,” Fort: The International Journal of Fortification
and Military Architecture 15 (1987), 39-60; Geoffrey Parker, The Military Revolution, 26-32; James
Burke, “The New Model Army and the problems of siege warfare, 1648-51,” Irish Historical Studies
27, no. 105 (May 1990), 7-29; Rolf Loeber and Geoffrey Parker, “The military revolution in
seventeenth century Ireland,” in J. Ohlmeyer, ed., Ireland from Independence to Occupation 1641-
1660, (Cambridge: Cambridge University Press, 1994), 66-88; Ronald Hutton and Wylie Reeves,
“Sieges and Fortifications,” in J. Kenyon and J. Ohlmeyer, eds., The Civil Wars: A Military History
of England, Scotland and Ireland, 1638-1660, (Oxford University Press, 1998), 195-233; and James
Burke, “Siege Warfare in Seventeenth Century Ireland,” in Pádraig Lenihan, ed., Conquest and
Resistance: War in seventeenth-century Ireland, (Leiden: Brill, 2001), 257-291. For a less-
convincing counterargument, see Mark C. Fissel, English Warfare, 1511-1641, (London: UCL Press,
2001), 183ff.

Wars, 195.

26 Frank Tallett, War and Society in Early Modern Europe, 1495-1715, (London: Routledge, 1992),
52.
the rugged Morvan region of Burgundy to a family of poor provincial nobles, and soon volunteered to fight first against and then for the young Louis XIV. Quickly proving his abilities as a military engineer, he surpassed his master, gained the King’s personal trust to conduct sieges as he saw fit, and was rewarded with the position of commissaire-général des fortifications (1678) to oversee the realm’s defenses. The culmination of his career was his promotion to maréchal de France in 1703, a late recognition of how much the Sun King owed to his faithful servant.

Though Vauban died in 1707, his legacy lasted far beyond his death. His stone and brick fortresses shaped campaigns long after he had been buried and outline France’s hexagon today; some of them still stand today, having survived even World War II bombardments (e.g. Cherbourg and Brest). He also played a pivotal role in shaping the administrative organization of the French engineering corps. Much has also been made of Vauban’s strategic vision, particularly his creation of a rationalized, fortified frontière de fer shielding France, the famous pré carré (translated alternately as a dueling ground and a squared circle). Within this French school of historiography, the attention given to fortification design has revolved around Vauban’s “three systems,” all modern scholars insisting that the great French engineer would never have endorsed such a rigid partition of

27 My thanks to John Stapleton for these references. On Vauban’s legacy as embodied in the fortified works themselves, see Duffy, The Fortress in the Age of Vauban and Frederick the Great, 94-96. The effects of the 20th century assaults on Neuf-Brisach are illustrated in the town’s Musée Vauban.

28 On the legacy Vauban bequeathed to the administration of French fortifications and their engineers, see Ben Scott Trotter, Marshal Vauban and the Administration of Fortifications under Louis XIV (to 1691), Ohio State University Ph.D. Dissertation, Columbus, OH (1993).
fortification styles.\textsuperscript{29} The territorial boundaries Louis XIV conquered and defended with the aid of Vauban’s abilities last to this day.

But his biographers, particularly Anglo-American commentators, identify his most significant bequest to siegecraft in his systematization of the siege attack.\textsuperscript{30} After all, he besieged fifty towns or more but found himself besieged only once, at the week-long attack on Oudenaarde in 1677. The product of his years of experience, as described by one French writer, was an attack regulated by “rules” which combined to form a “liturgy,” attaining “quasi-perfection,” “developing as in one of those ballets of Benserade orchestrated by Lully.”\textsuperscript{31} Those who study Marlborough admit Vauban’s greatness even while they denigrate the strategy of positional warfare. Chandler, the most influential of these, explained that: “His contribution to the active prosecution of siege warfare was even more notable [than his defensive achievements].”\textsuperscript{32} This author explained further that “Vauban had virtually imposed a series of standards on both attack and defense,” elsewhere


\textsuperscript{32} Chandler, \textit{The Art of Warfare in the Age of Marlborough}, 275-276.
crediting him with “perfect[ing] the techniques of the siege itself – with the laborious but almost mathematically certain ‘sapping forward’ by means of approach and parallel trenches, and the clever siting of batteries.”

To stress the predictability of this process, the whole procedure is frequently given the inexorability of a drama – each act unfolding according to classical theory. More recent applications of culture to early modern military history have stressed the intellectual context of the period, particularly the Renaissance, Scientific Revolutionary and Enlightenment predilections for geometry, Newtonian mechanics and rationalism. Martha Pollak stressed the mechanical nature of Vaubanian siegecraft, a parallel to the clockwork universe discovered by Newton:

Vauban was considered a theoretical, systematic and machinating genius... His tables of calculations gave the impression of strategic unassailability; since he calculated not only the dimensions of every element of the fortification, but also the length of time it would take the enemy to gain individual layers of the fortification, every stage of the siege could be predicted in advance. Vauban reduced the defense and attack of fortresses to double-entry bookkeeping, where the two columns balance each other precisely. The accountability of the smallest part of the defense, fortification and provisioning in Vauban reflect the earlier attempts by military theorists to set up a machine which can be expected to operate by itself, but which results - both in


Vauban and his predecessors - in an obsession with the smallest detail.\textsuperscript{36}

A man of his time, he purportedly made siege warfare “scientific.”

Given such perfection, it is no surprise that Vauban is widely held to be responsible for determining the course of siege warfare for the next century or more. Not only did he provide a systematic discussion of the siege attack (the basis for tactical doctrine), but his legacy also resided in the large corps of French engineers he had trained in his methods; their experience would be critical in disseminating and explaining his ideas to posterity. Eighteenth century engineers and military authors had no choice but to come to grips with Vauban’s legacy, either by accepting it or rejecting it.\textsuperscript{37} Guerlac explained that Vauban’s legacy “was followed with but little variation during the eighteenth century.”\textsuperscript{38} John Childs more recently concurred that “European engineers rapidly imitated the system of three parallels [one of Vauban’s main innovations], and a ‘siege in form’ became synonymous with an attack according to the Vauban method.”\textsuperscript{39} The unequalled expert on early modern siegecraft, Christopher Duffy, concluded more forcefully:


\textsuperscript{37} For a survey of trends in 18th century siegecraft, see Duffy, \textit{The Fortress in the Age of Vauban and Frederick the Great}, chapters 4 and 5.

\textsuperscript{38} Guerlac, “Vauban,” 79. The ossification of Vaubanian historiography is evidenced by the very fact that Guerlac’s work remains widely-cited despite its age. Similarly, the most recent biographies of Vauban add nothing new to this aspect of their subject. In addition to Blanchard, consult also Bernard Pujo, \textit{Vauban}, (Paris: Albin Michel, 1991); and Hebert and Rothrock, \textit{Soldier of France: Sebastien Le Prestre de Vauban, 1633-1707}.

\textsuperscript{39} Childs, \textit{Warfare in the Seventeenth Century}, 148. Speaking of the siege of Menin in 1706, Hebert and Rothrock (212) wrote that “the attack was carried on in the now generally accepted way, for Vauban’s opponents had adopted his methods.” See also Blomfield, \textit{Vauban}, 163-165.
Vauban’s impressive contribution to the defence is eclipsed by his still greater achievement as a taker of fortresses. The later engineers were allured, exercised and finally frustrated by the quest to undo his work by restoring the defence to an equilibrium with the Vauban-style attack.  

The engineer’s principles became veritable doctrine for future engineers. As Azar Gat explained: “Vauban’s highly-renowned De l’attaque et de la defense des places, published in numerous editions, was the standard work for students of fortifications and siegecraft until the second half of the nineteenth century.” The professor Paul Lazard, drawing on his military service as a colonel in France’s Génie (engineering corps) at the beginning of the 20th century, contended that the great engineer’s methods were not significantly modified until the outbreak of World War I. In short, “Vauban... established a nearly-infallible routine which was accessible to ordinary mortals who were willing to take the trouble to become versed in it.”

Hence, by the dawn of the 18th century Vauban appears to have completely altered the face of early modern siegecraft, reversing the dominance of the century-old trace italienne design and overturning as well the pattern of long, bloody, uncertain sieges of the 16th and early 17th centuries. His swift conquests of Spanish and Dutch towns in the War of Devolution (1667-1668), the Dutch War (1672-

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40 Duffy, *The Fortress in the Age of Vauban and Frederick the Great*, 96.


1679), the War of Reunions (1683-1684), and the Nine Years’ War (1688-1697) won him fame throughout Europe; a contemporary adage boasted that a town besieged by Vauban was one taken, while a town defended by him was one saved. In this new era patient besiegers could be certain to capture even a strong artillery fortress in only a month or two, assuming their manpower and supplies held out and a relief force did not force them to lift the siege. The Vauban legacy thus eliminated the eternal sieges of a previous age.

CHALLENGING VAUBAN

How far towards the offense Vauban made the pendulum swing is a matter of debate. The well-established biographical literature of another giant of the age, the Duke of Marlborough, presents their impatient subject as a precursor to that greatest of military commanders Napoleon Bonaparte, thanks to his perpetual quest for decisive battle. Sieges therefore appear through Napoleonic-tinted lenses a less-than-ideal replacement for field battle. As a consequence, such historians reject Vauban’s efforts as futile and consider absurd the very idea that a war of positions could somehow avoid indecision. Though writing about Vauban, Henry Guerlac’s early formulation of the period’s strategic culture set the tone for much of the rest of the century: “The strategic imagination of all but a few exceptional commanders

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was walled in by the accepted axioms of a war of sieges.... [they] accepted unconditionally this doctrine of the strategic primacy of the siege.”⁴⁵ Not surprisingly, Marlburists pay particular attention to the “tedious” and “leisurely” nature of sieges, even those conducted à la Vauban.⁴⁶ Figure 1.2 provides a justification for their claim, indicating that even in the War of the Spanish Succession a quarter of the Allies’ Flanders campaigns were spent attacking fortresses. Adding to this the time needed to prepare for and clean up after the attack, offensive siegecraft took up more than one-third of the campaign time available to the Allies, who held the initiative in the theater for most of the war.


⁴⁶ Chandler discusses siege lengths in The Art of Warfare in the Age of Marlborough, 245-246.
<table>
<thead>
<tr>
<th>Year</th>
<th># Days in campaign</th>
<th># Days in sieges (O-C)</th>
<th># Days in sieges (I-BL)</th>
<th>% of Campaign in Sieges (OT-C)</th>
<th>% of Campaign in Sieges (I-BL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1702</td>
<td>172</td>
<td>34</td>
<td>70</td>
<td>20%</td>
<td>41%</td>
</tr>
<tr>
<td>1703</td>
<td>194</td>
<td>13</td>
<td>44</td>
<td>7%</td>
<td>23%</td>
</tr>
<tr>
<td>1704</td>
<td>214</td>
<td>2</td>
<td>2</td>
<td>0.9%</td>
<td>0.9%</td>
</tr>
<tr>
<td>1705</td>
<td>168</td>
<td>10</td>
<td>17</td>
<td>6%</td>
<td>10%</td>
</tr>
<tr>
<td>1706</td>
<td>176</td>
<td>45</td>
<td>109</td>
<td>26%</td>
<td>62%</td>
</tr>
<tr>
<td>1707</td>
<td>161</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>1708</td>
<td>223</td>
<td>115</td>
<td>139</td>
<td>52%</td>
<td>62%</td>
</tr>
<tr>
<td>1709</td>
<td>127</td>
<td>83</td>
<td>104</td>
<td>65%</td>
<td>82%</td>
</tr>
<tr>
<td>1710</td>
<td>209</td>
<td>148</td>
<td>197</td>
<td>71%</td>
<td>94%</td>
</tr>
<tr>
<td>1711</td>
<td>179</td>
<td>21</td>
<td>70</td>
<td>12%</td>
<td>39%</td>
</tr>
<tr>
<td>1712</td>
<td>149</td>
<td>42</td>
<td>15</td>
<td>28%</td>
<td>10%</td>
</tr>
<tr>
<td>Total</td>
<td>1972</td>
<td>513</td>
<td>767</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>179</td>
<td>47</td>
<td>70</td>
<td>26%</td>
<td>39%</td>
</tr>
</tbody>
</table>

Figure 1.2: Percent of Allied Campaigns Spent Besieging, Flanders theater

Géza Perjés referred to this structural stalemate as an early modern “crisis of strategy,” where politicians and military commanders were unable to achieve their strategic objectives because they could never completely defeat the enemy before the weather forced them to go into winter quarters and give the reeling foe a respite

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47 See Appendix A for the sources for the campaign lengths; the siege data is derived from Appendix B; Appendix C describes the two measures for siege length used (from open trenches to the capitulation – OT-C – and from investment to when the besiegers finally left the site – I-BL). The average of percentages is calculated by dividing the total number of days spent in sieges into the total number of days campaigning, rather than an average of the yearly percentages. This ratio may actually be higher than shown, since the time an army spent idle waiting for the siege preparations to be completed prior to investment is not included. In the 1710 campaign the number of days the Allies spent besieging had to be modified because the Allies attacked both Aire and Saint-Venant at the same time. Therefore only the days spent at the siege of Aire were counted, since it was the longer of the two sieges and both were invested on the same day. If we were to measure the days of labor exerted in sieges however, we would include Saint-Venant’s 24 days (I-C).
in which to recover and rebuild. Chandler and other more recent historians have adopted and expanded upon this concept.  

THE IMPACT OF VAUBAN’S LEGACY

The significance of studying the details of trenchworks, batteries and assaults goes far beyond an improved understanding of the nature of early modern warfare. The unique nature and great frequency of fortress warfare and urban combat had wide-ranging influences over early modern society. Discussions of the period’s “limited” warfare have to ignore the innumerable occasions in which civilians found themselves caught in the crossfire. Battles were fought on level plains (“field” battles), but sieges were waged for control of densely-populated urban areas – sieges literally brought the war into the inhabitant’s hearth and home. Of most immediate interest to the townspeople, the ease with which a town could be captured influenced the experience of war for the participants (combatants and noncombatants alike). Formidable town walls might defend those inside from the casual depredations of marauding bands, but it also made them a target for military operations. In a time of defensive dominance, the strength of a besieged fortress might push both sides to extremes. The garrison would be encouraged to hold out to the bitter end, while the besiegers might become frustrated with a slow siege and either settle down to a blockade in order to starve out the town, or else vent their


49 For an early exposition of some of these influences, see Duffy, Siege Warfare, chapter ten, The Fortress and Humankind. See also the wide-ranging collection of Ivy Corfis and Michael Wolfe, eds., The Medieval City under Siege, (Woodbridge: The Boydell Press, 1995).
anger by setting the town on fire for its recalcitrance. On the other hand, a town with weak fortifications might encourage the attacker to forego a formal siege and take the place by storm instead. If their assault succeeded, the fate of both garrison and townspeople would rely on how successfully the enemy commander could control his troops’ bloodlust. Thus their lives and deaths were directly caught up in the last argument of kings.

The offensive-defensive balance dictated in large part how successful military campaigns would be and how much money those operations would cost. With the entire early modern state’s fiscal apparatus dedicated to funding the period’s lumbering martial juggernauts, these military factors determined the burden early modern society would bear. Sieges, as Monck’s earlier quote recognized, were a particularly expensive way to wage war.\(^50\) The eruption of works on the logistics of early modern militaries in the past few decades has underlined the crushing expenses exacted by their military instruments and the difficulties with which these governments raised, equipped and maintained them.\(^51\) For the French, building modern fortresses and renovating old ones cost Louis more than 105 million \textit{livres},


\(^51\) Among others (to limit ourselves to monographs): Parker, \textit{The Army of Flanders} and \textit{The Military Revolution}, chapter 2; John Lynn’s relevant chapters (3-6) in \textit{Giant of the Grand Siècle}; the works in his edited \textit{Feeding Mars: Logistics in Western Warfare from the Middle Ages to the Present}, (Boulder, CO: Westview Press, 1993); James Wood, \textit{The King’s Army}, chapter 11; and David Parrott’s \textit{Richelieu’s Army}, chapter 4. This is also one of the main themes of the recent volume edited by Philippe Contamine, \textit{War and Competition between States}, (Oxford: Oxford University Press, 2000).
or 2.5% of total royal expenditures.\textsuperscript{52} The cost of fortifications to French society were in fact much higher than this, for this figure accounts for costs incurred during only half of his reign, and does not include the expenses paid for directly by the localities, in terms of both monetary and labor. Capturing and defending these defensive works also cost money, measured in lost lives, consumed powder and shot, and burst cannon (such accountings, however, appear to be almost non-existent in the French archives). The costs of short sieges were probably miniscule compared to long sieges, but these further inflated wartime expenses by bogging down armies for year after year. With little to show for a single campaign other than a few conquered places, peace negotiations could easily break down and more military operations would be needed the next year, which required reestablishing unit strengths throughout the winter and spring, as well as the costs of yet another campaign. Thus arose the hope that a decisive battle, though bloody, could save both lives and money in the long-term by cutting years off the length of an otherwise indecisive war.\textsuperscript{53} The theory never worked for Louis XIV or his opponents, particularly during the two final slogging marathons of 1688-1697 and 1701-1714.


\textsuperscript{53} Russell Weigley presents a caricature of this battle-seeking philosophy in Russell Weigley, \textit{The Age of Battles: The Quest for Decisive Victory from Breitenfeld to Waterloo}, (Bloomington: Indiana University Press, 1991).
Enormous armies (increasing in size throughout Louis’ reign\textsuperscript{54}) and the
Herculean tasks they performed forced war expenditures to spiral out of control,
from half of the King’s expenses at the beginning of his reign to 90% of the royal
“budget” in his last wars.\textsuperscript{55} Finding the funds to pay for such massive undertakings
in an era of almost perpetual armed conflict severely challenged every early modern
state, no matter how well endowed it was with natural resources, how many
peasants it could conscript, how many mercenaries it could hire, or how much
money it could raise from its own tax base and financiers. Credit and cash, the
sinews of early modern war, have been identified as the crucial connection between
traditional military history and the broader histories of the nation-states that
struggled for dominance.\textsuperscript{56} In a state of almost constant warfare, such insatiable

\textsuperscript{54} See John Lynn, “Recalculating French Army Growth During the Grand Siècle, 1610-1715,”

\textsuperscript{55} Rorive, La guerre de siège sous Louis XIV en Europe et à Huy, 39-40. On early modern military
financing generally, see P.G.M.Dickson and John Sperling, “War Finance, 1689-1714,” in J.S.
Bromley, ed., The New Cambridge Modern History, Vol. 6: The Rise of Great Britain and Russia,
1688-1715/25 (Cambridge: Cambridge University Press, 1971), 284-315. The most recent surveys of
French finances during the period can be found in Richard Bonney, Jean-Roland Malet: premier
historien des finances de la monarchie française. (Paris: Comité pour l’histoire économique et
financière de la France, 1993); as well as his “The Eighteenth Century II: The Struggle for Great
Power Status and the End of the Old Fiscal Regime,” in R. Bonney, ed., The rise of the fiscal state in
Europe, c. 1200-1815, (Oxford: Clarendon Press, 1995), 315-392. These figures (e.g. 71% of the
royal “budget” being expended on the war department in the early years of the war) are based on the
financial histories of two 18\textsuperscript{th} century historians, Jean-Roland Malet, an aide to the French controller-
general Nicolas Desmaretz, and Véron de Fourbonnais. For the English, see Dwyryd W. Jones, War
and Economy in the Age of William III and Marlborough, (Oxford: Basil Blackwell, 1988); John
Knopf, 1989), and most recently James Scott Wheeler, The making of a world power: war and
Bonney for various European countries can be found at www.le.ac.uk/hi/bon/ESFDB/.

\textsuperscript{56} Both Michael Roberts’ initial Military Revolution and Geoffrey Parker’s more recent permutation
stressed the increasing army sizes, which in turn necessitated new methods of generating revenue to
support the troops. Although historians might disagree over how many men were paid, when the
most important military changes occurred, and whether military expenses drove administrative and
demands could virtually enslave political leaders, forcing the often-undirected development of “fiscal-military” regimes. The massive financial demands of waging war spurred monarchists and republicans alike to find innovative ways to fund their armies, forces that, more often than not, were involved in assaulting an enemy stronghold. For early modern France in particular, scholars have already illustrated how war became the enemy of centralizing monarchs. The unending need for immediate cash elevated the pursuit of creative, short-term financing above fiscal and political reforms that would improve the Crown’s long-term budgetary stability. Reform-minded financial ministers such as Colbert saw their projects collapse when war was declared: the Crown was then forced to sell more venal offices and hire more tax-collectors instead of buying back these administrative posts. Elaborating the shifting balance between offense and defense are of critical importance therefore for our understanding of the role war played in the development of the early modern state.

**ASSESSING VAUBAN’S LEGACY**

The War of the Spanish Succession, which pitted Bourbon France and Spain (allied with Bavaria and Liège) against the rest of Europe (the Maritime powers of Britain and the Netherlands, and Austria, plus a variety of German princes) provides fiscal innovations or the reverse, they all agree that states usually teetered on the brink of insolvency as a result.


58 Parrott argues this point in *Richelieu’s Army*, 550.
an excellent opportunity to examine early modern siegecraft at the acknowledged pinnacle of its offensive development. The Italian-style 16th century artillery fortress had already been refined in a dozen wars over two centuries when Vauban began systematizing offensive tactics in the 1660’s. Only at the end of his career did the Vaubanian attack achieve perfection, as he gradually tested and refined new techniques over four decades and fifty sieges. The last war he participated in thus represents not only the culmination of a lifetime of experience and reflection, but also a transitional phase between Vauban and his pupils – the first critical step needed to assure his legacy. This was the first of Louis’ wars where Vauban played only a minor role in the many sieges conducted, at least 119 sieges over thirteen years of conflict.59 These sieges offer us the opportunity of accurately assessing Vauban’s impact on positional warfare by gauging what he passed on to others.

We will further restrict our analysis primarily to the Low Countries sieges of this war. This was, in many ways, the war’s key theater, certainly for the French, British and Dutch, the three powers most capable of conducting and paying for state-of-the-art siegecraft.60 No theater saw more campaigning than Flanders (eleven years of full-scale operations), nor did other theaters witness field armies as large as

59 The siege dataset I have collected in Appendix B only includes 115 sieges: several (mostly in Iberia and Germany) had to be excluded because there was not enough clear evidence in secondary sources to indicate their duration accurately.

60 Though the name of the war might suggest the Spanish theater as an alternative, it should be remembered that modern-day Belgium was under Spanish rule, and that France had been fighting its Habsburg enemies since the Valois-Habsburg wars of the 16th century.
were mustered here, numbering 100,000 men or more by the end of the war. Additionally, Vauban’s legacy, the application of his methodical style as well as his fortress designs, would be tested most vigorously here where his famed pré carré, a double-line of fortified places stretching from the Ardennes to the English Channel, blocked the entrance into the heart of France. With the region’s flat terrain and numerous waterways, besiegers took advantage of extensive transportation networks that allowed them to marshal all their resources against enemy strongholds. The theater’s uncomfortably-close proximity to Versailles and Paris dictated that it would be here that the French would exert their utmost efforts to avoid a collapse, and here also where the Allies would concentrate their labors. As a result of this combination of factors, the theater witnessed thirty-two sieges, double or even triple the number of sieges the theater had seen in Louis’ previous wars. In fact, this number even approaches Vauban’s lifetime total (around fifty) in only eleven years of campaigning (1702-1712). Vauban remained active until his final year of life, but he would conduct only two sieges during this, the last and most defensive of Louis XIV’s wars. It was now his students and his enemies who waged positional warfare throughout the region. Arrayed against these fortresses was a coalition army of many European nations led by Marlborough, assisted in several campaigns by the Austrian general Prince Eugene of Savoy. This convergence of three of early modern Europe’s most famous military men serving the period’s wealthiest states further encouraged detailed documentation of its large number of sieges, offering us

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61 In general, I will use the terms the Low Countries and Flanders interchangeably, while recognizing as a technical matter that Flanders could also refer more specifically to the coastal region.
an opportunity to examine in detail the nature of warfare in the “Age of Vauban,” and to assess how well his techniques were disseminated to the wider world. It is only with a complete inventory of a large number of sieges at the end of Vauban’s personal command that we can begin to measure his true legacy.

Outline of dissertation structure

To test the correspondence between Vauban’s offensive legacy and the siegecraft in the War of the Spanish Succession requires a detailed examination of not only the theory of siegecraft but of the sieges as they were actually conducted. This requires broadening our focus beyond the narrow biographical approach found in the Vauban and Marlborough literature, to examine the full variety of sieges conducted by both Bourbon and Allied armies. We start by resolving the literature’s methodological confusion over the nature of 17th century siegecraft, which requires collecting the data necessary to determine overall trends in a consistent manner (Chapter 2). A basic quantitative analysis on a dataset of 115 Spanish Succession sieges highlights the pitfalls of translating the offensive-defensive balance into a single measure of siege length with inadequate data. Nonetheless, this data does allow us to tentatively conclude that the balance between attack and defense did indeed change over the span of Vauban’s long tenure. We must then deal with the problematic matter of defining what exactly Vauban contributed to this trend (Chapter 3). Here we need to focus less on specific tactics and more on the broader context, a framework that allowed him to fashion the siege attack into a cohesive whole based upon a foundation of efficient preparation and application. With a more

of Flanders, divided between French, Spanish and Dutch rule.
nuanced and contextualized understanding of his methods and objectives, we can then test how well this model was executed in the War of the Spanish Succession, especially its Low Countries sieges (Chapter 4). The reality is that here Vauban’s successors fell far short of his legacy because engineers lacked the command authority to control critical aspects of the siege. Even more importantly, however, generals rejected the fundamental philosophy motivating his method: his emphasis on carefully balancing losses, delays and costs (Chapter 5). Contrary to the impressions left by the historiography, Vauban’s opponents succeeded, without recourse to his techniques, by choosing tactics that minimized the delays inherent in siegecraft, regardless of their effect on casualties and expenditures (Chapter 6).

Greater understanding of the contemporary debate over the nature of the siege attack and the contrasting military values it reflected reminds us that military tactics were adopted only when the underlying concerns that drove their creation were accepted as well. At its core, the War of the Spanish Succession witnessed a clash of military cultures over the very nature of warfare.
CHAPTER 2

CONTEXTUALIZING VAUBAN’S LEGACY

Before judging Vauban’s legacy as a revolutionary, we must first clearly establish what significant changes actually occurred in 17th century siege warfare. Unfortunately, scholars disagree about the evolution of siegecraft during the period – some arguing for stasis, others for a growing offensive predominance, and yet others for increasing defensive domination. How much Vauban changed siegecraft and what it looked like remain important points of contention. Only after we have clarified through quantification the broad pattern of siege warfare throughout the 17th century can we identify critical points of change and match them with the Vauban literature. To date, existing explanations of changes in the offensive-defensive balance have been hindered by a failure to measure siege warfare accurately in the first place.

The duration of a siege seems to provide a good summary measure of the relative strength of each element of siegecraft: a predominance of long sieges indicates a feeble offense whereas short sieges indicate a weak defense.62 Many

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62 Three other important measures should also be mentioned, although collecting survey data on them would be much more difficult: the percentage of successful sieges, the size ratio of besieger to garrison, and the casualties suffered in the siege (particularly the besieging army’s losses).
scholars have judged siege length an especially salient characteristic of sieges, serving as a useful proxy variable for the balance between attack and defense. Geoffrey Parker’s interest in the revolutionary nature of the *trace italienne* led him to search for a convenient way to measure this balance over time; the time needed to capture a place is one of the most self-evident, readily-available and easily-quantified of all siege variables. Lengthy attacks required more men: desertion and sickness whittled away at blockading forces, assaulting troops were slaughtered in the many attempts to storm a breach. The longer the siege lasted, the more likely the chance of relief, which necessitated in turn extensive lines of circumvallation and the troops to man them. Clifford Rogers similarly used siege length as a measure of the offensive-defensive balance in the 15th century – informing us of the dramatic decline in durations following the introduction of effective gunpowder artillery. A number of other scholars have also emphasized siege lengths into their own works, further reinforcing our conviction that this measure reflects the fundamental essence of siege warfare.

Although historians of both the 16th and 17th centuries recognize the importance of siege lengths, none have offered the data behind their conclusions for public scrutiny. Looking at the period’s prototypical war of positions in particular,

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63 See his “The Military Revolutions of the Hundred Years’ War,” 64-67.


65 Lynn’s “The *trace italienne*” is an important exception to this that will be discussed below. Parker criticized Lynn’s data from this article on army sizes, but did not challenge the accuracy of length data, conceding that sources usually agreed on siege lengths. Parker, “In Defense,” 351.
the Dutch Revolt, we find that neither of the two main military historians of the war, Geoffrey Parker and Jonathan Israel, provide the underlying data they used to develop their conclusions. Instead, we find generalizations either based on a handful of cited examples or on an unspecified number of cases spread over hundreds of pages of text.66 Parker provided readers with a general sense when he argued that “Normally, the capture of a stronghold defended by the *trace italienne* required months, if not years.... Numerous examples of each technique fill the annals of early modern warfare; but the one thing they all had in common was longevity.”67 Confusingly, Jonathan Israel concludes quite the opposite. Nothing epitomizes the unsettled state of research, and the need for explicit quantification, better than their views on the attack of Breda in 1624-1625: Parker argues that its nine-month defense was “relatively short by the standards of the Low Countries’ War,” while Israel stresses the “exceptional duration” of the very same defense!68 Part of a larger argument over the nature of the war’s siegecraft, these two scholars were clearly not considering the same data, the same time frame, or using the same definitions.

Information on how many fortresses were attacked over the course of an eighty-year contest, what methods were used to attack them (see Appendix D), how long they defended themselves – all remain either illustrated by a few anecdotes or

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66 In Parker’s *Military Revolution* synthesis, one page out of 154 is dedicated to anecdotal evidence supporting his proposition that 16th century sieges were measured in months rather than weeks, and another two paragraphs discuss the sizes of the armies needed to capture these places (13-14).


68 *The Military Revolution*, 13; Israel, *The Dutch Republic*, 107. Israel limits himself to the second half of the Dutch Revolt; Parker focused more closely on the earlier phases.
unspecified altogether. Their failure to present all their evidence and state their assumptions makes it impossible for an impartial reader to choose between them without redoing much of their research.

Thus the existing trace italienne literature gives us conflicting accounts of the distribution of siege lengths in the 16th and 17th centuries. Nor, for that matter, do we learn of early modern siegecraft beyond the middle of the 17th century; the Military Revolution debate has spurred the most interest with scholars studying areas before 1660. For scholars engaged in this debate, the later-17th and 18th centuries are seen primarily as a period of stasis, serving only as a convenient contrast with their own dynamic periods. To take Parker’s seminal work, despite the inclusion of the entire early modern period (1500-1800) in the subtitle, The Military Revolution’s interest in siege warfare ends early in the 17th century. Once the three elements of the artillery fortress were integrated together circa 1530, Parker acknowledges only negligible changes in both offense and defense thereafter:

After the Renaissance, therefore, much of Western Europe seemed locked into a military system in which offence and defence were almost exactly balanced. There were some further improvements to fortifications in the seventeenth century, but they did not render the earlier versions obsolete, as the bastion had almost instantly outmoded most medieval walls; indeed, several early modern fortresses continued to be seen as strategically important until the 1920’s.

Contrasted with the trace italienne’s arrival in the 16th century, little fundamental change to the offensive-defensive balance presumably occurred for the next century,

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69 Parker mentions 208 towns having permanent garrisons in the Spanish Netherlands, thus the potential for a very large number of sieges.

70 The Military Revolution, 14.
or at least Parker’s silence on this later period’s siegecraft implies as much.

Contesting Lynn’s emphasis on fortification improvements in the 17th century, Parker confirmed the 16th century’s priority by explaining that “the critical development was not the ‘upgrade’ from one trace to another, but the switch from a system of vertical defense... to a trace italienne with bastions that bristled with guns.”71 In a concluding chapter of *The Military Revolution* he returns to its “apogee,” Frederick the Great’s battlefield tactics in the middle of the 18th century, but nowhere do we hear of the fate of the trace italienne or of siege trends more generally until Napoleon’s armies neutralize their strengths.72 Where Vauban does appear, he is related almost solely to the strategic impact of de-fortifying much of France in order to free up garrison troops for the armies. Parker concluded that there was no fundamental change: “The only real difference was that the later wars were fought with even larger and more expensive armies than the earlier ones.”73

The artillery fortress literature has thus far largely ignored the second half of the 17th century, but a large corpus of works on Vauban offer the hope that they will

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71 “In Defense,” 347. Later in this piece he does mention the “development and constant refinement of defensive systems based upon the trace italienne...” but does not tie it to any changes in design. Although Bert Hall describes siege warfare in dialectical terms, he too adopts a punctuated equilibrium view when he finds it doubtful “that later design refinements added more than small increments to the total defensive capability of these fortresses.” Bert S. Hall, *Weapons and Warfare in Renaissance Europe*, (Baltimore: Johns Hopkins University Press, 1997), 162. This view might be confirmed if we find in future datasets a much greater change between 15th and 16th century siege statistics as compared to the change between the 16th and 17th centuries.


pick up where the *trace italienne* left off.不幸地，即使最近的有关 Vauban 的传记也没有讨论他如何改变围城战，更不用说提供有关围城战本身的系统数据。草图式的前-Vauban 时代混乱的战壕广为流传，而 Vauban 自己对前法国围城术（读者只能在一句话或两句话中获得）的判断被认为是其全部的文艺复兴时代的围城术。令人惊讶的是，现有的 Vauban 文学文献对我们的数据收集提供的只是轶事性的叙述，强调 Vauban 的创新。时期围城术的细节仍然隐藏，部分原因是因为对 Vauban 的个人文件的获取受到极大限制。然而，由于过去十年的更广泛获取，仅仅依赖于传记研究保证了这种狭隘的视角。由其他法国工程师执行的围城战不适合其生活简历的叙事，而非法国的以及在 Vauban 任期之前和之后的围城战几乎完全在这样的框架之外。与更全球化的军事革命讨论相比，Vauban 研究倾向于非常地方主义，很少超出 17 世纪的法国。这些传记研究的生物传记格式进一步限制了我们对战术变化的视野，要求对 Vauban 令人惊叹的多面的多产的多方面的影响。[74] Rogers 是唯一暗示 Vauban 的革命性围城战对 *trace italienne* 争论的适用性，它很好地符合他对平衡的间歇期模式的模型。尽管 Lynn 在许多著作中都涵盖 *trace italienne* 争议和 Vauban，但他并没有将两者综合到一起。[75] 最佳尝试将 Vauban 放入更广阔的情境中来自 Lazard 的和 Blomfield 的 Vauban 生平，以及 Child 在《九年战争》中的简短评论。

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74 Surprisingly, Rogers is the only scholar to hint (however briefly) at the applicability of Vauban’s revolutionary siege attack to the *trace italienne* debate, it fitting well with his model of punctuated equilibrium. Rogers, “The Military Revolutions of the Hundred Years War,” 92 note 149. Although Lynn covers both the *trace italienne* debate and Vauban in a number of works, he does not incorporate the two together.

75 The best attempts to place Vauban in a larger context come from Lazard’s and Blomfield’s biographies of Vauban, and Child’s brief comments in The Nine Years War, 93.
subject – Vauban the architect, the strategist, the Court client, the religious pluralist, the proto-Enlightened reformer – which leaves little space for a discussion of his tactics and their context in the wider field of military history. Vauban’s contribution to the siege attack appears almost self-evident then, taking the form of a ritual retelling of his tactical innovations as they unfolded across the decades.

A final body of literature with potential relevance to the issue focuses on the great commander Marlborough, but it further confuses the issue by arguing that many sieges in the Vauban era were still very long. An early student of Marlborough explained that “their reduction was always slow and usually a costly process.”\(^76\) In 1976 the premier authority on the Duke, David Chandler, wrote that “so effective were [Vauban’s] methods that the average time taken to bring sieges to satisfactory conclusions was reduced considerably in his day, although some were very lengthy.”\(^77\) All the same, earlier he had chosen to emphasize their length:

Over the preceding generation the science of defensive engineering had made great progress compared to the relative stagnation of the artillery arm. As a consequence, properly fortified towns could rarely be taken by a *coup de main* unless treachery or demoralisation had paved the way, and besiegers had to resort to lengthy and elaborate procedures to achieve success.

He argues that many lasted 40 to 60 days, and still required “lengthy and elaborate procedures.”\(^78\) This earlier conclusion is, in fact, the prevalent view among English


\(^77\) Chandler, *The Art of Warfare in the Age of Marlborough*, 276, emphasis in the original.

\(^78\) Chandler, *Marlborough as Military Commander*, 81.
scholars: that sieges tended to be quite long in spite of Vauban’s efforts. Thus John Childs described the late 17th century “siege in form” of “considerable duration.”

Faced with these contradictory views, we are forced to gather together our own summary description of the fate of siegecraft across the 17th century from existing works. Narratives of Vauban’s sieges, as sparse as they are in details, leave the impression at least that the time needed to capture many fortresses in Louis XIV’s early reign was quite small. The rapidity with which Spanish and Dutch fortresses succumbed to Louis’ early armies (the campaigns of 1667-1668 and 1672 stand out) is in stark contrast to the marathon struggles seen during the Dutch Revolt. One simple test of this idea can be made with the raw data provided by John Lynn, one of the extremely few early modern military historians to construct a dataset measuring sieges (135 French sieges conducted from the 15th through 18th centuries). More concerned with the relationship between army sizes and the presence of trace italienne fortifications (i.e. the Military Revolution debate), his dataset nevertheless offers the most comprehensive list of siege durations available. From his data he concludes that siege lengths, if anything, decreased as the seventeenth century progressed, although he did not frame the issue in terms of a Vaubanian revolution. Summarizing his data graphically, our anecdotal impression is reinforced by a visible decrease in siege lengths soon after Louis XIV’s accession to the French throne. This holds true whether we look at the mean and median siege

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80 Lynn, “The trace italienne,” esp. 179.
length for each war (Figure 2.1), or the average siege length of French sieges (Figure 2.2). Thus the existing data appears to support a significant change occurring in the middle half of the 17th century.

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81 Ideally, we would compare France’s progress with the trends seen in non-French siegecraft. But since Lynn’s dataset only includes sieges which saw French participation, any comparison between other nations would be invalid as far too many sieges between non-French participants would be missing: Spanish and Dutch sieges in the Dutch Revolt, Austrian sieges in the Empire and against the Ottomans, English attacks during the British Civil Wars...
Figure 2.1: Lynn's Average Siege Lengths by War
Figure 2.2: Lynn’s Average Siege Length by War, French besiegers
Such calculations, however, would be premature. A closer analysis reveals that even Lynn’s dataset, the best available, cannot provide further insight into the nature of siege warfare without significant revision.\(^{82}\) To take one example, the most basic question one could ask – how many sieges did Vauban conduct? – is surprisingly difficult to cull from the existing literature. Vauban has been the subject of seven monograph-length biographies and scores of colloquia in the 20\(^{th}\) century, yet even his résumé is uncertain. Part of the problem lies with the limited access to Vauban’s personal papers, but the larger reason is that in spite of these many works, we still lack a systematic examination of his career. Returning to the question at hand, almost immediately we find different sources mentioning different figures. In one work, Vauban is said to have identified forty-eight sieges in which he participated,\(^{83}\) while Chandler cites Vauban’s eulogy in which Fontenelle attributed fifty-three sieges to his subject.\(^{84}\) Turning to Lynn’s wide-ranging dataset for answers, we see that even the most comprehensive list of French sieges thus far is incomplete. His \textit{trace italienne} article inventories twenty-four sieges besieged by the French between 1655 (the beginning of Vauban’s career) and his final siege of Breisach in

\(^{82}\) Lynn acknowledged that his database was not strong enough to support positive theories, but was intended only to illustrate that the current historiography did not support Parker’s \textit{trace italienne} contentions. Lynn, “The \textit{trace italienne},” 177.

\(^{83}\) Michel Parent and Jacques Verroust, \textit{Vauban}, (Paris: Editions Jacques Fréal, 1971), 315 “Sièges de Vauban: Liste des sièges auxquels Vauban a assisté ou dont il a dirigé les attaques, établie et commentée par lui,” 315-316. The table included only shows forty sieges, though it is not clear if this list comes from Vauban’s own accounting or the editors’.

1703. With half of Vauban’s sieges unaccounted for (i.e. 24 of the 48 to 53) in the most widely-accepted dataset, we cannot be certain of the decline in durations displayed in Figure 2.1, much less its slope. Given military historians’ attraction to pre-packaged quantified data and equal reluctance to take on the admittedly time-consuming task of creating their own, Lynn’s earlier article will undoubtedly continue to be used by scholars, often without his framework, and without the benefit of corrections made in more recent works.

If a dataset did include all the cases, we would still not be ready to calculate, for it is not as simple to determine siege durations as Parker’s earlier rejoinder suggests. The errors which can creep into datasets are as damaging as missing cases. To return to the War of Devolution, Lynn’s data on Lille 1667 in the trace italienne article identifies the siege lasting from 8 July to 28 August, while his recent work on Louis’ wars corrects the error: the town was actually invested 28 August, the trenches were opened 18 September and it finally capitulated on 27 September.

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85 Lynn, “Vauban,” MHQ says 53 sieges; Wars of Louis XIV, 72 reduces the number to 48.


87 Lynn, Giant of the Grande Siècle, 575; The Wars of Louis XIV, 108. Duffy corroborates this correction (The Fortress in the Age of Vauban and Frederick the Great, 7), although he too condemns to obscurity the short sieges of 1667.
some other scholars have advanced completely different dates, we begin to recognize that measurement issues make even siege length a problematic variable.\textsuperscript{88}

Durations are obviously calculated from a start and end date, but there were several possible dates for each of these stages, which can cause confusion and inaccuracy. Most simply, a siege could begin when a besieging army invested the town or when it opened the trenches; the siege could end either when the capitulation was signed, when the garrison evacuated the fortress, or when the main besieging force left the town.\textsuperscript{89} Each of these stages is a valid measure depending on the purpose, but when comparing siege lengths we must consistently use the same criteria. In the case of Lille 1667, the siege lasted only nine days of open trenches (18-27 September), but a full month, three times as long, when measured from investment to capitulation. By itself, the overestimate of Lille 1667 does not invalidate the downward trend of siege lengths. More worrisome is the potential that other wars have similar lacunae. Further analysis of Lynn’s 1991 dataset in particular will serve little purpose until we can better judge its accuracy by delving into the details – a laborious but absolutely critical task.

We cannot hope to provide here a systematic list of the hundreds of early modern sieges conducted across the entire continent, but we can at least set out a methodology to use when measuring them. We can also start the task for one war,

\textsuperscript{88} Pujo even writing that Lille \textit{capitulated} 28 August. Vauban, 42. With numerous errors, we must return to the original sources for much of our data.

\textsuperscript{89} See Appendix C for a discussion of this methodological issue.
the War of the Spanish Succession. When we focus our attention more systematically on this war to test the comprehensiveness of existing datasets, we are encouraged to find that quantitative figures have attracted the attention of not only Lynn, but of David Chandler as well, allowing direct comparison of their results. Unlike Lynn’s far-ranging, Gallo-centric dataset, Chandler is interested more narrowly in the sieges of Louis XIV’s reign, especially those conducted during the Duke of Marlborough’s tenure. Testing these datasets by independently collecting data, we uncover a serious measurement error in both Chandler’s and Lynn’s data. Comparing the data I have collected from primary sources with Chandler’s and Lynn’s datasets illustrated in Figure 2.3, we discover substantial omissions which amount to a hidden bias: of the 115 distinct sieges in the War of the Spanish Succession I have identified thus far, Lynn lists 58 of them (half of the actual

90 See Appendices C and D for a discussion of these measurement issues as they relate to siege definitions and durations.

91 These works are based largely on important 19th century statistical studies. The most important is Bodart, Militär-historisches kriegs-lexicon (1618-1905), (Vienna: C.W. Stern, 1907-1908), whose findings have been largely ignored by most modern historians. Another 19th century example, L.-H.-C. Vauvilliers’s Recherches historiques sur le rôle et l’influence de la Fortification (Paris: Dumaine, 1845), argues that fortifications were essentially a waste of time, although his conclusions are clearly focused on the contemporary debate over whether or not to fortify Paris. A very brief but even more ambitious example of the 19th century macro-statistical approach is Sicard, “Récherches historiques sur les guerres, sièges et traités de paix depuis l’origine du nom français,” Le Spectateur militaire 7 (1829), 619-649.

92 An exception to this is the largely-accurate table of Spanish Succession Low Countries sieges in Olaf van Nimwegen, De subsistentie van het leger: Logistiek en strategie van het Geallieerde en met name het Staatse leger tijdens de Spaanse Successieoorlog in de Nederlanden en het Heilige Roomse Rijk (1701-1712) (Amsterdam: De Bataafsche Leeuw, 1995), 100-101. However, as van Nimwegen’s focus was on logistics and not siegecraft, he too failed to include a few of the smaller sieges in the Low Countries; nor did he analyze this data in any systematic fashion. The non-Flanders theaters were also beyond the scope of his book.
number), while Chandler includes only 24 (a fifth of the total).93 A large number of sieges have been missed in previous surveys, threatening to completely undermine the usefulness of existing datasets.

93 These 115 events are all strictly-defined sieges, as distinguished from blockades, bombardments, surprisals and storms. Chandler, Lynn and van Nimwegen used place-level data; I have aggregated my FCTE-level data up to the place-level to make valid comparisons. For a discussion of my terminology regarding place level and FCTE level data, see Appendix C.
Figure 2.3: Spanish Succession Siege Lengths: A Comparison of Sources
If their data were randomly drawn from the entire population of early modern sieges, their conclusions would remain valid. However, almost all of the missing Spanish Succession sieges are of short duration. As the histogram in Figure 2.4 illustrates, both authors missed a particularly large number of sieges lasting six weeks or less. Not only were there two- to four-times as many sieges conducted as previously claimed, but the median length of this comprehensive list of sieges is half of previous, incomplete lists. In fact, half of the entire war’s sieges lasted two weeks or less.94 The shorter sieges in Iberia and Italy, seen as peripheral theaters by many English and French scholars (and thus underrepresented in the literature), are particularly absent: Lynn’s database lists only eleven of forty-four sieges in Iberia and nine of the twenty-five conducted in Italy, while all twelve sieges in France are accounted for, as are thirteen of the twenty sieges in the Spanish Netherlands and thirteen of the nineteen sieges in Germany. The result: the extreme examples of the longest sieges have been privileged by historical scholars, while the shorter sieges are relegated to obscurity.95 Such a skewed sample is extremely misleading in understanding siege warfare as a whole, particularly given the centrality of siege lengths.96

94 The median (.5 months as compared to Lynn’s uncalculated .9 and Chandler’s 1.3) is the best measure of central tendency for this data, since the distribution of the sieges is highly skewed toward the longer sieges. The mean is 1 month, compared to Lynn’s 1.4 and Chandler’s 1.8. Luh repeats Chandler’s data, claiming an average siege length of 47 days. Ancien Regime Warfare and the Military Revolution, 108.

95 Lynn has more recently stated that “throughout the wars of Louis XIV, most towns and fortresses fell in much less time than one would expect, and only a minority of cases required the full process of a lengthy formal siege.” Wars of Louis XIV, 114.

96 The impact of this improved dataset on Lynn’s conclusions on durations (e.g. his claim of decreasing siege lengths in the 17th century) is unclear since each war would have to be reviewed
before we could declare that a similarly large number of short sieges have been missed in earlier wars.
When we limit our sights to the Low Countries theater, the general pattern of brief Spanish Succession sieges continues to hold true. Only a quarter of the besieged fortresses held out for even a month, as Figure 2.5 indicates. As with the entire war, very few of the Flanders sieges met, much less exceeded, the range of 40 to 60 days emphasized by Chandler. That none of the Flanders sieges even approached the longest sieges of the war is represented by the exaggerated vertical scale. Even Vauban’s “ideal” siege length of 48 days was achieved by only a few of the defenders in the Low Countries. The Marlborough literature in particular has grossly overestimated the duration of these sieges.

97 Note that these lengths are cumulative, e.g. the siege of Lille’s town required two months to capture and its citadel (in many ways an independent operation that required separate attacks) another two months to capture, yet Lille is represented here as a four-month siege rather than two two-month sieges.

98 The exact number of days varies from 41 to 48 days, according to the source. The 48 day figure is cited in Chandler, The Art of Warfare in the Age of Marlborough, 246.
Figure 2.5: Spanish Succession Flanders Siege Lengths, by Besieger
There are several possible explanations for this weakness in the historiography. A suspicious reader might infer that a few historians have focused attention on the longer sieges in order to emphasize the plodding, indecisive nature of many early modern campaigns. Supporters of a Marlburian decisive-battle strategy constantly criticize the reliance on sieges and contrast it with Marlborough’s “will to battle.”

More generally, historians emphasize long delays as an inherent element of siege warfare – sieges become by definition an incredibly time-consuming practice, thus emphasizing the right extreme of the distribution, i.e. the longest sieges. The rhetoric used to describe sieges often emphasizes their extreme length: “a single siege could sometimes consume an entire campaigning season.” Such generalizations only beg the question of whether such long sieges were common or rare – how often is “sometimes?” Chandler’s efforts to emphasize the extreme lengths of sieges are particularly zealous: “Sieges were as a rule extremely expensive in terms of both material and time. Their length varied enormously.... Many, however, fit into a 40-60 day bracket.”

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102 *Marlborough as Military Commander*, 86. Elsewhere he wrote that “a great many sieges” were 40-60 days in length (*The Art of Warfare in the Age of Marlborough*, 245).
only one-quarter of his listed sieges lasted 43 days or longer. Such a relatively small percentage does not seem to justify characterizing sieges in general as extremely long. Figure 2.6 displays the corrected dataset from Appendix B, allowing us to see that few of this war’s sieges met or exceeded Chandler’s forty to sixty day margin, while a far greater number capitulated before a month had passed.

103 71% of his sieges did not even reach 40 days. Marlborough as Military Commander, Appendix B: “Marlborough’s Major Sieges.” If we remove the incorrect Lüttich entry (see below), the mean decreases 12%, to 28 days.
Figure 2.6: Revised Spanish Succession Siege Lengths
Even the least battle-centric of historians misleadingly emphasize the longevity of sieges by confining their textual generalizations *a priori* to the larger sieges. The danger of focusing on one extreme is found in the quantitative works mentioned above, but they are just as common in histories that do not explicitly rely on numerical evidence. Returning to the Dutch Revolt, even if Parker and Israel had provided their data, it is likely that the issue still would not have been resolved, for both proffered caveats that raise the question of how representative their samples are. Both confine their generalizations to “main” or “great” actions or sieges, implying that there were minor ones as well, but without informing the reader as to how these were handled.\(^{104}\) Without a presentation of the underlying data and an estimate of its representativeness, curious readers must return anew to the primary sources often tucked away in distant archives in order to uncover the full variety of sieges.\(^{105}\) In addition to the missing Vauban sieges mentioned above, Lynn also discusses “major” sieges, but does not inform us of his criteria or even why this distinction is necessary.\(^{106}\) Chandler also specifies that his appendix only includes

\(^{104}\) Israel’s sample probably included far more short actions, as he argues for shorter sieges. Or perhaps he used a more strict definition of “siege” to exclude blockades, and thus eliminates from consideration some long blockades that Parker included. Without the underlying data, it is difficult to tell – another example of the need to disclose the methodology and data.

\(^{105}\) Common qualifications to historians’ accounts of major sieges, such as ‘many sieges were not, of course, as large as Lille 1708,’ suggest only that the author has not deemed siege warfare worthy of much study. What proportion of sieges were like Lille? In what way were they similar to Lille? What impact did these similarities and differences have on the period’s warfare? These questions go to the very heart of early modern warfare, but we remain ignorant of the answers to even these basic questions.

\(^{106}\) For example, in *Giant of the Grand Siècle*, 575-576, Lynn goes back and forth in successive paragraphs. First he stresses the length of “major sieges” (averaging 4-8 weeks) that “could consume an entire campaign season.” Then he discusses the fact that “many fortresses and towns fell quickly.” Then he returns to the “costly, time-consuming and generally indecisive character of siege warfare.”
Marlborough’s “major” sieges, yet his data includes four sieges less than ten days long – are there even shorter sieges that were not included?\textsuperscript{107} Even in his epic survey of early modern siegecraft, Duffy also focuses on large sieges as case studies rather than exploring the full variety of sieges (Lille 1667 being only one example). When ascertaining the duration of sieges, one cannot simply ignore the smaller sieges without justification, and not only should each dataset be presented to the reader in full, but scholarship should also include an estimate of the relationship between the sample and the larger population. How many of these minor sieges were there? How long did they last? Were they besieged? Blockaded? Stormed? Why are they so different from longer sieges that they deserve separate treatment? These answers are critically important, particularly if we make assumptions about sieges based off of their length – do short sieges always involve small armies and few casualties?\textsuperscript{108} Thus the definition of “major” siege threatens to undermine the best efforts. Measuring change across time is impossible without a clear idea of the data’s relation to reality and a clear idea of how exactly the data might be biased. Cumulative and comparative scholarship seeking long-term patterns cannot advance very far in an environment that fails to address such issues.

\textsuperscript{107} Chandler does similarly in \textit{The Art of Warfare in the Age of Marlborough}, 244-246. Without strict criteria, it is impossible to judge the validity of such generalizations.

\textsuperscript{108} In the case of Lynn’s “trace italienne” conclusions, the impact of missing cases revolves around the definition of “major” siege. If a dataset includes all of the lengthy sieges, it does not necessarily follow that it also includes all of the sieges that included large besieging armies, as besiegers could conceivably increase their army sizes to decrease the siege’s duration – in such a case Lynn’s dataset would not accurately reflect trends in besieging army sizes over time. Only a closer examination of the data and an explanation for the cause of bias can clarify the issue.
Other explanations of the missing short sieges are more benign and more likely to be true, yet they present even more difficulty. The publication of Chandler’s and Lynn’s underlying data facilitates further scholarship by making mistakes easy to find and correct.\(^{109}\) Since their data (and sources in Lynn’s case) are available for public scrutiny, we can pinpoint the flaws: over-reliance on a single mathematical measurement, a few traceable typographic errors, inconsistent start and end dates, as well as a much more damaging weakness in the sources being relied upon. The reliance on the mean as the measure of central tendency combined with a small sample size can lead to minor mistakes significantly impacting the results. As the dashed vertical bars in Figure 2.3 indicate, only ten percent of Chandler’s and Lynn’s siege lengths differ significantly from mine. Most striking of all these errors is the length Chandler assigned to the siege of Lüttich (the German name for Liège) in 1702, an enormous 127 days instead of the actual nine days.\(^{110}\) This mistake significantly skews the average siege length upward in a small sample already biased towards the larger sieges.\(^{111}\) In fact, someone as knowledgeable

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\(^{109}\) Lynn deserves our thanks for pushing the debate onto more solid ground, and his contributions (both this siege database and his more detailed work on French army sizes) have received widespread praise, including Parker’s commendation of Lynn’s article on army growth. “In Defense,” 362 footnote 59.

\(^{110}\) *The Art of Warfare in the Age of Marlborough*, 308 (both in the original edition and in the 1994 reprint by Sarpedon). This error is also found in *Marlborough as Military Commander*, Appendix B. The 1995 reprint of *Marlborough as Military Commander* reproduced this error, but the 2000 Penguin edition attempted to remedy it: a corrected entry for Liège 1702 was added, but the erroneous Lüttich entry was retained!

\(^{111}\) Jürgen Luh’s perpetuation of this error adds an entire week to his average siege length, a 15% increase. This large a deviation comes from a dataset that includes some of the largest sieges in the Spanish Succession and almost none of the shortest! The median of his original flawed data is only 34 days compared to a mean of 47. *Ancien Régime Warfare and the Military Revolution*, 108.
about the Spanish Succession as Chandler should have been struck by the fact that
the strongest of Louis’ Flanders fortresses (Lille) appears to have taken a week less
time to capture than the feeble fortifications of Liège, and that both Liège and
Roermond were apparently besieged at the same time, a very rare occurrence. With
little analysis of the data, the resulting error is not surprising.

Worst of all, and sadly indicative of military historians’ occasionally
cavalier attitude towards numbers, other scholars have perpetuated this error in their
own work.\textsuperscript{112} Lynn catches the particularly egregious error of Liège, and while a
few of his dates are marred by typographical errors, these problems are relatively
insignificant in such a large dataset.\textsuperscript{113} They would be even less so if the entire
distribution of sieges were examined. Error also comes from the inconsistencies of
measuring sieges’ start and end dates – investment might occur, as we have already
seen with Lille 1667, a week or more before the trenches would be opened. Lynn’s
twenty Low Countries sieges, for example, include at least seven where the opening
of trenches is the start date, whereas the rest of the sieges are measured from the
date of investment. We need to assure ourselves of the reliability of the data
collection process, or at least appreciate the nature of any resulting bias, before
analyzing the figures.

\textsuperscript{112} Frank Tallett (\textit{War and Society in Early Modern Europe}, 51) even cites Chandler’s inflated Liège
length to showcase how long sieges could last.

\textsuperscript{113} For example, he adds an extra 18 days to the siege of Stevensweert (capitulating October 2 instead
of October 20), and at the siege of Badajoz, he probably transposed the start date as April 10 (4/10)
The larger and more important explanation for the under-representation of short sieges derives from the way they are reflected in the historical record. The major sieges were of immense interest to contemporaries, and thus received widespread comment. Painfully obvious to anyone who attempts to construct a systematic siege dataset, witnesses were much less interested in the smaller, “inconsequential” attacks that did not require either side’s full attention or resources for very long.\textsuperscript{114} Far fewer sources provide far less information on them as a result. Noteworthy also is the fact that both secondary and published primary sources for the Spanish Succession are biased heavily towards the Flanders and German theaters, theaters which had a smaller proportion of short sieges. Only with a detailed examination of the campaigns through primary sources can we accurately measure trends in siege warfare.\textsuperscript{115} The cumulative effect of all these flaws – primary sources skewed towards the larger sieges, both primary and secondary sources interested only in those theaters in which their national army saw service, typographical errors, confusing multiple measures for start and end dates – is data of uncertain accuracy. At a minimum, we need to test the reliability of existing datasets, but when there is a question of biased sampling, we have no choice but to return to the original sources. Developing a well-designed database with data entry validation and calculated fields would avoid some of these problems, while

\textsuperscript{114} Whether one or both of these are true will help determine the bias in a dataset that under-represents short sieges, i.e. did sources miss these cases because they involved few resources or because they were short? Once again, an empirical question whose answer might even vary by period or place.

\textsuperscript{115} Parker criticizes Lynn’s use of encyclopedic sources; only a systematic, empirical comparison of these disputed sources with the actual values can resolve this issue.
exploring the distribution of these figures in the context of the campaigns and explaining outliers (i.e. seeing how the pieces fit together) would likely uncover many of the others.

CONCLUSION

Responding to Mahinder Kingra’s effort to document the small sizes of garrisons during the Dutch Revolt, Parker replied that: “This may be true, but his figures do not prove it.”116 This comment applies, unfortunately, to the entire discussion of siegecraft in early modern Europe. No one has presented the solid figures necessary to outline adequately the trends of siegecraft over time – neither the participants in the trace italienne debate, neither Vauban’s or Marlborough’s biographers, nor the secondary campaign narratives of Louis XIV’s wars. Without this essential information, scholars have been forced to choose whatever examples were foremost in their minds when hypothesizing about changes in siegecraft across the 17th century. Readers are inevitably unsure of whether the conclusions are really supported by all the underlying data.

Although the full range of siegecraft across the period remains to be discovered, we now have a sense of how important explicit methodology and an appreciation for sampling bias are to any debate. One thing we might conclude from the best available data, in spite of the bias against short sieges, is that the longest sieges of the pre-Vauban era appear to have lasted far longer than the longest sieges of the Spanish Succession. This probably holds true for the entirety of the period as

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well, since the longest attacks are least likely to have been missed in previous surveys given the widespread attention contemporaries gave them. The exceptional attack on Oostende 1601-1604 and the numerous many-month struggles, among them Florence 1529-1530 (11 months),\textsuperscript{117} Haarlem 1572-1573 (8 months),\textsuperscript{118} Middelburg 1573-1574 (20 months), Antwerp 1584-1585 (13 months),\textsuperscript{119} La Rochelle 1627-1628 (15 months)\textsuperscript{120} and Casale 1628 (11 months),\textsuperscript{121} have no counterpart in the Sun King’s wars – whether siege or the lengthier blockade.\textsuperscript{122}

Figure 2.7 illustrates this point with Lynn’s data: the number of sieges lasting several months sharply declined in the second half of the 17\textsuperscript{th} century. The variation of siege lengths appears to have decreased dramatically – the longest sieges tended to be far shorter now than before, while the shortest sieges remained just as brief (a few days) as they had been before 1660. Further research – that measures start and end points accurately, and that distinguishes between sieges and non-siege tactics –

\begin{itemize}
\item \textsuperscript{117} October 1529 to August 1530. Duffy, \textit{Siege Warfare}, 20.
\item \textsuperscript{118} Ending in July 1573. Duffy describes it as a 10-month siege in \textit{Siege Warfare}, 72, but earlier he noted that it was invested in December of 1572, which would make it only an eight month siege. Yet another example of the need for better data in all periods.
\item \textsuperscript{119} July 1584 to mid-August 1585. Duffy, \textit{Siege Warfare}, 76-79.
\item \textsuperscript{120} Captured in late October 1628. Duffy, \textit{Siege Warfare}, 118-119.
\item \textsuperscript{122} All of these siege lengths are meant only to give specificity to the conventional wisdom of epic sieges in the 16\textsuperscript{th} and 17\textsuperscript{th} centuries. Their lengths must be tentative because they rely on the works of historians whose methodology and reliability are unknown. Thus, some may in reality be several months shorter or longer than given above, and some might not have even been sieges in the strict sense. See Appendix D for a discussion of siege versus non-siege tactics.
\end{itemize}
may alter this conclusion, but the historiography today supports the notion of lengthy 16th century sieges.

Regardless of future findings for other periods, our complete data from the Spanish Succession certainly shows an offensive supremacy compatible with the Vauban historiography and contrary to the Marlborough literature, a significant departure from defensive advantages seen during the zenith of the trace italienne in the 16th century. With a pattern clearly established for the Spanish Succession and confirmatory hints of a significant shift from the 1660’s onward, we can now turn to investigate the mechanism(s) behind these results: can this new-found dominance of the offensive be ascribed to the adoption of Vauban’s methodical attack?
Figure 2.7: Lynn's Siege Lengths, 1512-1714
To test how influential Vauban’s offensive techniques were, we must first specify what exactly these methods entailed. Despite the voluminous literature studying the man, Vauban’s attack is described by the same vague generalizations repeated again and again, forcing us to revisit his techniques. Was his approach a radical break with previous engineers, reflecting the decline in siege lengths seen in the previous chapter? After placing Vauban’s siege attack back into its larger 17th century context, we will focus on the essence of the Vauban-style attack, illuminating the centrality of his less-tangible Method and the objectives it was designed to achieve. With a better understanding of what Vauban fashioned from existing practices, we can then test the extent of his legacy as manifested in the Spanish Succession war.

Historiography

Within the Vauban scholarship, analysis of his offensive legacy is quite limited. The topic’s descriptive treatment generally falls into two complementary categories. First, there is a brief discussion of the three tactical innovations he introduced: trench parallels, cavaliers de tranchée, and ricochet fire. This is usually
accompanied by a recitation of the stages through which a Vaubanian siege would progress. With this elaborate multi-stage process briefly sketched, Vauban is declared the engineer who systematized and perfected the early modern siege attack, leaving a formula for subsequent engineers to follow for the rest of the 18th century. While this litany is repeated with little variation and even less elaboration, few have attempted to answer questions the conventional wisdom raises: what exactly was Vauban systematizing and what impact did his reforms really have? Exploring the topic in greater detail, we find that Vauban’s legacy diminishes when seen in the larger perspective of a long-term improvement of the siege attack over the course of the early modern period. The French engineer’s precise role in this effort remains fuzzy, forcing a reconsideration of the impact of tactical change on 17th century siege warfare.

The most detailed method for describing the Vauban-style attack is to identify the critical tactical innovations that gave Vauban success. Few revisions of Vauban’s tactics have emerged from recent studies. Instead, works rely on an almost ritualistic retelling of his offensive innovations, an argument that has been repeated with an increasing loss of detail since at least the early 19th century, its contents varying only slightly from Fontenelle’s 1707 eulogy to Vauban. Biographies

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124 For a reproduction of Fontenelle’s eulogy, see Virol, *Les Oisivetés*, Annexe 2 esp. 480. Sadly, modern explanations of Vauban’s tactical innovations are rarely explained as clearly as N. Allard’s
continue to appear, but his stature as *preneur des villes* still derives from the three offensive tactical innovations attributed to him.\textsuperscript{125} Discussed together, their cumulative effect was ostensibly to reinvigorate and systematize the siege attack. How important these specific features were in real sieges will therefore be tested.

Another common historiographical approach presents Vaubanian siegecraft as a series of formal stages that the besiegers would perform in their almost certain efforts to gain a fortress. Rather than examine a particular siege in detail, historians adopt the pedagogical approach common among early modern writers, artificially constructing a hypothetical siege by attaching a variety of anecdotes from different incidents in numerous sieges onto the theoretical framework presented in Vauban’s manuals.\textsuperscript{126} The progress of the “typical” siege is elaborated with appropriate (if de-contextualized) examples: cavalry troopers cutting off the roads that connected the garrison with the outside world, foot soldiers and conscripted peasants digging lines of circumvallation and contravallation around the town to complete its isolation, all the while the army’s administrative arm oversaw transporting and gathering the

\textsuperscript{125} For sample discussions, see: Nicholas Faucherre and Philippe Prost, *Le triomphe de la méthode:* *le traité de l’attaque des places,* (Paris: Gallimard, 1992), 52-53; and Lynn, *Giant of the Grand Siècle,* 569-571. Unlike Parker’s Military Revolution hypothesis, there has been almost no debate over Vauban and his legacy, despite the spate of recent biographies by both English and French scholars.

\textsuperscript{126} For examples, see: Pernot, “Vauban, le siège devenu réglé,” 256 and 258ff; Chandler, *Art of Warfare in the Age of Marlborough,* 240ff; Duffy, *Fire and Stone*; and Childs, *The Nine Years’ War,* 92-96.
massive amount of siege supplies needed for the siege. The siege proper would begin with the opening of trenches against the town that slowly creep forward in the face of garrison resistance and with the support of besieging artillery fire, finally to arrive at the first layer of fortifications, the covered way. Here, the besiegers would gather their forces for an assault on the counterscarp, which, if successful, would gain them a lodgment that they could then expand to make room for batteries that would pummel the walls of any outworks, which in turn would have to be captured after the intervening ditch had been crossed. Finally, with a breach in the last obstacle, the curtain wall of the town, the garrison would then need to decide if it was willing withstand a storm on the breach – which risked not only the garrison but possibly the townspeople as well – or whether it would instead surrender.

This hypothetical siege model does a good job of illustrating an idealized “average” siege and its component parts, but it has a significant disadvantage for those who believe siegecraft was pivotal to the European way of war in the early modern world. Remaining at this level of abstraction obscures any changes that occurred from Louis XIV’s accession to the French Revolution, as well as any diversity in styles of siegecraft, whether these manifest themselves in the choices of commanders and engineers, or through more impersonal factors such as national logistical capabilities, military culture or topography and climate. By using Vauban’s siege attack as the only model for Ancien Régime siegecraft, it is far too easy to include only those examples that fit in this framework and ignore those that do not. The result is that rather than testing the extent of Vauban’s influence, it is assumed a priori. If sieges truly were central to warfare in early modern Europe,
they deserve a far more detailed and empirical examination than they have received thus far. A more thorough investigation of Vauban’s role is central to this endeavor.

**VAUBAN IN CONTEXT**

Reinforced by over a century of reiteration, modern historiography on Vauban and late 17th century warfare places him in the center of a revolution in the siege attack. The conclusion that Vauban quickly captured a large number of fortresses certainly seems justified by the previous chapter’s preliminary data. However, it is less obvious whether this is more than just correlation: an explicit comparison of Vauban’s sieges with his contemporaries would solidify this assumption, as would a consideration of other factors that might influence how readily a fortress might fall. Without a systematic investigation of why exactly towns in the Age of Vauban fell as quickly and meekly as they did, the crucial causal link between Vauban’s tactics and decreasing siege lengths remains speculative. Comprehensively examining the tactics used in hundreds of early modern sieges is necessarily a long-term, collaborative effort. But even a cursory survey of the existing scholarship shows us many examples of these exact techniques used well before the decline in siege lengths seen under Vauban. Almost all of the elements of the Vaubanian attack (those highlighted by his biographers at least) existed long before he burst into European prominence as an *ingénieur du roi* in the 1660’s. Further, many of these supposedly fundamental components of the Vaubanian siege were only sporadically utilized by his heirs in the Spanish Succession war. Recovering the antique heritage that Vauban drew upon is critical to understanding his place within early modern siegecraft.
“Vaubanian” Tactics Before and After Vauban

Despite the unanimous presentation of Vauban as systematizer of previous techniques, not a single scholar has described these precursors in more than a single sentence. Even the most nuanced language referring to perfecting and systematizing the siege attack is, unfortunately, exceedingly vague. John Lynn and John Childs have made the most direct references to Vauban perfecting pre-existing techniques, but neither specify what this means beyond the standard recitation of his three tactics – leaving the reader only to conclude that this systematization was primarily a matter of perfecting these three techniques. Where and when these tactics were first perfected, how frequently they were used, as well as their exact contribution to successful sieges are issues still unexplored. A perusal of earlier 17th century works provides a stronger basis for appreciating how Vauban relied heavily on contemporary practice.

Unfortunately, the current scholarship of 16th and 17th century warfare does not address this issue; the trace italienne’s defensive features monopolize discussion. To a certain extent, our knowledge of other aspects of Renaissance warfare strengthens our expectation of finding these techniques predating Vauban. Given the crushing burdens early modern states faced supporting their war efforts, there must have been intense pressure to develop an alternative to the lengthy, bloody assaults on new-style fortresses and the glacial pace of plodding

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128 For the most recent overview of pre-Vaubanian engineers and their defensive works, see David Buisseret, *Ingénieurs et fortifications avant Vauban: L'organisation d'un service royal aux XVIe-XVIIe siècles*, (Paris: CTHS, 2002).
blockades. There was plenty of opportunity to implement such theories as well: the many sieges of the Valois-Habsburg wars, the Dutch Revolt, and the Thirty Years’ War were just a few of the testing grounds where such techniques must have been developed and refined. New weapons and increasing army sizes would require developing technological, administrative and logistical infrastructures, whereas the use of these weapons and men in a siege were essentially up to the individual commander or engineer, allowing much more flexible experimentation. Furthermore, the innovative mindset was clearly present in the 16th century. Renaissance historians are familiar with thinkers such as Maurits of Nassau and Gustavus Adolphus, who used the geometrical postulates of Ancient authorities to create battlefield tactics like the countermarch, in spite of the extreme difficulty of implementing such complex maneuvers in the fluid condition of battle. It would have been just as easy for engineers before Vauban to improve the more static siege attack with mathematics, especially since these same specialists were already applying geometric principles to the design and construction of trace italienne

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129 Parker discusses the heavy logistical requirements of early modern campaigning, while James Wood, John Lynn and David Parrott offer recent accounts of how the French state attempted (often with limited success) to support 250 years of seemingly-perpetual internal and external wars.


fortresses. Given the widespread application of geometry to military tactics, we should now look more closely at the specific tactics attributed to Vauban.

Vauban’s last and least-often mentioned tactical innovation was ricochet fire, small-caliber cannon firing solid shot propelled by under-sized powder charges that bounced over obstacles. First used at Philippsbourg in 1688 and perfected at Ath in 1697, Faucherre and Prost deem it the most effective (“la plus performante”) of Vauban’s innovations.\(^{132}\) It is quite likely that ricochet fire was “discovered” far earlier, when an absent-minded gunner accidentally charged a cannon with too little powder, resulting in the lower velocity shot that would bounce along the hard ground over obstacles.\(^{133}\) Similarly, ricochet fire might have been recognized early in naval warfare, where a cannonball could skip along the water much as one skips stones when thrown at the proper angle and with the proper velocity. We even see the germ of the idea in Vauban’s 1669 work, where he warned that a garrison’s enfilading fire was particularly dangerous from far away, as a spent cannonball could quickly plunge onto troops otherwise shielded behind a traverse in the covered way.\(^{134}\) From this realization, it is not a difficult step for a bright mind to achieve this result by artificially decelerating the round’s velocity with a smaller


powder charge. However, until new scholarship examines the early 17th century siege attack in greater detail, Vauban must remain the popularizer of this tactic.

Nevertheless, we have to wonder why it has received such attention. Its purpose was to clear defenders from behind their traverses and ramparts in the covered way, once the garrison’s batteries had been silenced by direct fire. This was, however, a task shared by several other better-known tactics. The cavaliers de *tranchée* similarly exposed the besieged in their outworks, while howitzers and mortars firing either exploding bombs or stones and lobbing stones from *pierriers* served the same purpose. Before he discovered ricochet fire Vauban had been a strong proponent of this indirect fire, going so far as to proclaim at the siege of Luxembourg in 1684 that “fifteen mortars shatter [a garrison’s] morale far better than sixty well-served cannon.” It seems that ricochet fire filled what many contemporaries saw as a non-existent void – only someone as interested as Vauban in improving the efficiency of the attack would fully appreciate its utility.

Furthermore, Vauban perfected ricochet fire only at the very end of his career (Ath 1697), well after many of his most successful sieges. Thus any explanatory power it might have would not account for the great success of Vauban’s early sieges.

Notwithstanding Vauban’s delight with the technique, ricochet fire had not caught on even by the end of the great engineer’s life. He wrote in his 1704 treatise: 

“I know well that the reputation of ricochet fire is poorly established, because

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136 Quoted in Lazard, *Vauban*, 473.
people do not know its usefulness…”  

His view is supported by the fact that fewer than a handful of the dozens of siege accounts and thousands of letters I have consulted even mention the use of ricochet fire, whereas the other two tactics are mentioned with greater frequency. In the Allied sources we find only the most infrequent reference to their use, such as Saxon general Johann Matthias count von der Schulenburg’s recommendation at Lille to use it during their attack on a hornwork. We look in vain for other mention of such tactics among the thousands of documents, and in this same point Schulenburg indicates that they had not yet fully accepted the superiority of ricochet fire as Vauban had, for he also refers to the need to continually bombard the works with *pierriers* and mortars. Further, contemporary maps of their major sieges show batteries consistently targeting the faces of the works rather than firing laterally along the covered way and other firing platforms as Vauban intended (i.e. the batteries’ lines of fire are perpendicular to the face of the work being attacked rather than parallel to it). Its neglect is particularly surprising since it would have been quite easy for any besieger to adopt as simple a change as decreasing the amount of powder; there was no corresponding demand for changes in technology, organization or logistics, areas much less

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139 This may be related to the fact that the Allies often attacked along much narrower frontages than Vauban (compare his 1691 siege of Mons to the Allied trenchworks in 1709), thus their guns did not have the proper angle to utilize ricochet fire.
amenable to rapid modification. It is conceivable that Vauban’s secretive nature limited its dispersion – the first complete edition of Vauban’s siege writings was only printed in 1737 at The Hague. Yet French sources mention their use of ricochet fire only slightly more often. The defenders at Douai 1710 used it in a flying battery sent beyond the outworks to enfilade the Allies in their trenches. Once back on the offensive, the French made slightly wider use of Vauban’s technique on the attack, for example at their siege of Le Quesnoy. From these few examples, we must conclude that ricochet fire may have been used by the French with some frequency, but it certainly did not have the impact on siegecraft commensurate with its discussion in the historiography, at least during Louis XIV’s lifetime.

Vauban has also been given credit for the innovation of *cavaliers de tranchées* or trench cavaliers, raised firing platforms on or near the glacis which allowed besieging musketeers to fire down into the exposed covered way. With this tactic we are on much firmer ground in our hunt for precursors: earlier sources indicate a widespread use of such techniques well before Vauban, a fact

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140 AG 1M 126-3 Mémoires historiques, #13 Journal de ce qui a été fait pour l'investiture… 6/15/1710.


142 I will use the term “musket” in a generic sense, even though by the 18th century the French had replaced their muskets with fusils. Contemporary sources used both terms in their correspondence. On this transition, see François Bonnefoy, “Louvois et la politique d'armement des troupes” *Histoire, Economie et Société* 15(1) (1996), 101-103.

rarely-remarked upon in the Vauban literature. From prehistory onward fortified communities and their attackers recognized the axiom that all things being equal, higher positions command lower ones. The Roman soldier, used to digging a fortified field camp each night, as a last resort would exert Herculean efforts building long siege ramps up to the top of a tall city’s walls. More sophisticated siege towers and belfries enabled medieval besiegers to “overtop” towering enemy walls, a practice that continued into the 15th century. Fortress designers of the 16th century built cavaliers in the middle of the new angled bastions and along the curtain walls to expose attacking troops in their trenches, hence requiring Vauban’s addition of de tranchée to cavalier. Faced with defenders armed with gunpowder weapons, Renaissance attackers replaced the awkward and now dangerously-vulnerable siege towers with smaller mounds of earth for batteries, using “mounts” or trench cavaliers to fire down onto garrison troops defending a breach. A mid-century English writer keeping his compatriots abreast of Continental siege tactics discussed cavalier platforms raised beyond the covered way to breach the bastions

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145 Wauwermans, “L’architecture militaire flamande et italienne,” 166; Duffy, Siege Warfare, 95; David Eltis, The Military Revolution in Sixteenth-Century Europe, 88; Olaf van Nimwegen, “Maurits van Nassau and siege warfare (1590-1597),” in M. van der Hoeven, ed., Exercise of Arms: Warfare in the Netherlands, 1568-1649, (Leiden: Brill, 1997), 127-128. The English editor of Goulon’s memoirs mentions that the Turks at Candia used a cavalier in their attack – this is the same siege where trench parallels were used, and it merits further study. Louis Goulon, Memoirs of Monsieur Goulon, being a Treatise on the Attack and Defence of a Place. To which is added, a journal of the siege of Ath, in the year 1697, under the conduct of Monsieur de Vauban. For Use of the Young Gentlemen of the Royal Academy at Woolwich, (London: for C. Bathurst and A. Millan, 1745), 22. Duffy treats the siege’s main events in The Fortress in the Age of Vauban and Frederick the Great, 218-221.
hidden behind the covered way, “4 yards high, and sometimes more.”\(^{146}\) The leap to artificially-constructed heights was not a large one, particularly when gunpowder artillery forced fortress designers to significantly decrease the height of their walls, making trench cavaliers practical. It is, however, conceivable that Vauban was the first to use these trench cavaliers (or at least the first to publicize their use) specifically against the covered way. This, after all, is where he claimed that besiegers lost three-quarters of their men storming such works, so it is possible that he had been looking for a way to capture the place without the dangers of a storm.\(^{147}\)

In this hypothesis, Renaissance commanders focused their attention on their greatest challenge, exposing the defenders behind a retrenched breach, and later Vauban turned this same technique against the covered way, which by then had replaced entrenched breaches as the toughest challenge for besiegers. Whether or not this proves to be true, Vauban only modestly extended the use of ideas already developed by past engineers.

Trench cavaliers saw much greater use than ricochet fire in the War of the Spanish Succession. At the siege of Venlo in 1702, we find an English correspondent reporting of the besiegers that: “They have made their works so heigh that they can see into the midle of the market place.”\(^{148}\) Du Mée, encamped before


Lille, wrote of “increasing the work on the right to look into the covered way before the grand breach.” At Douai 1710, the garrison commander François-Zénobie-Philippe comte d’Albergotti explained late in the siege that although his men still held the traverses of the covered way, they “would be chased out very quickly by the height of [the enemy’s] lodgments, as is their method.” By the Spanish Succession Allied engineers had recognized the utility of height in exposing the enemy’s men.

It is not clear whether Vauban’s impetus led to their use, for the self-evident nature of trench cavaliers assured their widespread adoption. In fact, natural terrain and poorly-designed fortifications could create the same effect, offering inspiration to those unfamiliar with Vauban’s writings and earlier precedents. At the siege of Menin, the engineer Charles-Guy Valory wrote in the garrison’s journal that the enemy batteries were placed on high ground “which gave them a height advantage that exposed the base of the face of the Capuchins bastion” well before they had even reached the covered way. Within a day sixty breaching cannon had reduced

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149 Sieur de May [i.e. Du Mée], *An exact journal of the siege of Lisle, from the opening of the trenches, to the entire reduction of the said place under the Command of his Highness Prince Eugene of Savoy; with a list of the kill’d, wounded and prisoners and Private men on both sides: Nicely calculated from the best Accounts: Together with the Numbers of the Besiegers, and the Besieged, at the Opening of the Trenches; with other Remarkable Passages relating to the said siege by the Sieur d’Mey*, (1708), 12. Earlier, see 4 8/29/1708.

150 AG A1 2215, #223, Albergotti, Douai, 6/19/1710. For examples earlier in the siege, see Bibliothèque municipale de Douai (BMD), Manuscrit 1133, *Journal des sièges de 1710 et 1712 et d’un très beau plan de Douai et ses environs par M. Coeuret capitaine d’artillerie*, 12, 5/23/1710; and AG A1 2225, #222, Albergotti to Villars, Douai, 6/5/1710.

151 AG Article 15 Section 3 Menin, Relation de ce qui s’est passé au siège de Menin depuis le 23 juillet 1706 jour auquel il a été investi jusqu’au 22 août suivant que la place a capitulé, f. 5, 8/9/1706. This is confirmed by an Allied account which claimed that two paces of the bastion were “entirely ruined” by their batteries on the 10th. BL Add MSS 4742, Journal of the siege of Menin, Helchin, 8/9/1706.
its face to rubble.  At Lille, the senior engineer in Dutch service, Guillaume le
Vasseur des Rocques, informed Marlborough that the terrain’s elevation would
allow them to breach the corps of the place from their first batteries. Albergotti
also worried that an outlying hill would allow the Allies to batter Douai’s Ocre
bastion without the need for breaching batteries on the covered way. Height was
height, regardless of how one gained the elevation. The mere use of elevated
batteries cannot be considered a legacy of Vauban without more evidence of his
direct influence, for the general principle was widely recognized.

Trench parallels are the most important of the three tactics and its origins the
most difficult to pinpoint. Vauban’s “places d’armes” (as he confusingly called
parallels) are the most frequently mentioned of his innovations:

Louis XIV owed all or nearly all his successful sieges to the skill of
Vauban and the new methods of attack that he introduced, namely
attack by trench parallels to the rampart instead of by the older
method of approach by zigzag trenches on lines at right angles to the
fort attacked. A series of three parallels, each dug progressively closer to the fortress than the
previous one, would envelop the front under attack and shelter the besieger’s early


153 BL Add MSS 61312, f. 50, Des Rocques to Marlborough, Lille 8/22/1708. For confirmation of
the breach, see Royal Commission on Historical Manuscripts, Report on the Manuscripts of the Earl

154 AG A1 2215, #51, Albergotti, Douai 5/9/1710 and AG A1 2225, #183, Albergotti to the intendant
of French Flanders Charles-Étienne Maignart de Bernières, Douai 5/14/1710.

155 Place d’armes were also the enlarged angles of the covered way that provided room for garrison
troops to gather in preparation for a storm or sortie. At times he also called them “lines,” which could
be confused with lines of circumvallation and contravallation.
batteries and zigzag approaches. According to the historiography, his first use of parallel trenches was at the siege of Maastricht in 1673, where their utility became immediately evident.\textsuperscript{157} In his 1704 treatise his summary maxims (four through six) advised attackers to always dig three wide parallels that enveloped the front under attack and connected to each other. Following the many stages of these amorphous siege works is a much more complicated matter.

Most scholars mention that Vauban’s trench parallels were spurred by his second-hand knowledge of the Turkish trenches at the siege of Candia 1668 – Louis had sent an unsuccessful French expedition to help lift the Ottoman siege.\textsuperscript{158} The earlier marquis de Puységur (in French service from 1617 through the 1650s) had already referred to the use of parallels as the “\textit{maxime des Turcs},” possibly suggesting a more widespread use in Ottoman sieges than currently recognized.\textsuperscript{159} The parallels as they appeared at Candia, however, were far from how Vauban implemented them at Maastricht: the copious Turkish branches that sprouted from

\textsuperscript{156} Blomfield, \textit{Vauban}, 61-62. NB: Parallels were usually combined with zigzag approach trenches rather than replacing them.


\textsuperscript{158} Georges Michel wrote that Vauban still deserved the credit, because “in war, the art consists as much in the application as the invention.” \textit{Histoire de Vauban}, (Paris: E. Plon, 1879), 81. Michel traces the transmission via an engineer named Paul, while F.J. Hebbert implies the Huguenot Charles Goulon was a possible vector. F.J. Hebbert, “The Memoirs of Monsieur Goulon,” \textit{The Journal of the Society for Army Historical Research}, 69 (279) (1991), 161. Vauban’s secretary Pellison claimed that Vauban had told him that Candia was his model.

the approach trenches did not even connect the saps together.\textsuperscript{160} Without such connections, janissaries rushing to the aid of an attacked sector in the neighboring trench would have to cross open ground covered by the garrison’s fire. Indicative of Vauban’s still unsettled ideas, a wide variety of transitional styles can be found in his 1669 treatise, including many where he extended the parallel branches to make contact with their neighbors, as well as several that include mistakes he would later warn against, such as parallels enveloped by the front under attack.\textsuperscript{161} By 1683 the Turks before Vienna knew to join their approaches with parallels, but their endless multiplication suggests that Vauban’s improvements had not yet returned to any of Kara Mustafa’s engineers.\textsuperscript{162} The chaotic Turkish trenchworks indicate that the mere existence of trenches dug parallel to the fortifications were not enough on their own, requiring a more detailed look at their evolving morphology.

There were more advanced examples, both real and theoretical, of trench parallels much closer to Vauban, hardly surprising as it would be difficult to not dig trenches parallel to the works under attack.\textsuperscript{163} A few isolated examples will have to

\textsuperscript{160} A reproduction of these trenchworks can be seen in Duffy, \textit{The Fortress in the Age of Vauban and Frederick the Great}, 220.

\textsuperscript{161} Compare, for example, Plate 8 (64) with Plate 9 (66). Consult also the variety of other parallels on 72 Plate 11, 82 Plate 16, 98 Plate 20, 104 Plate 22, and 124 Plate 25 (this last closest to the Ath ideal, with only two parallels, the second and third). For a later comparison, see Plate 14 of Vauban, \textit{Traité}.

\textsuperscript{162} For illustrations of Vienna’s trenches, see Duffy, \textit{The Fortress in the Age of Vauban and Frederick the Great}, 230; and Childs, \textit{Warfare in the Seventeenth Century}, 130-131.

\textsuperscript{163} Childs is exceptional in his contention that rather than Candia, “Vauban probably drew on the less methodical work of his European predecessors.” \textit{The Nine Years War}, 93. See also the brief mention of pre-Vauban parallels in Jean-Marie Goënaga’s entry on “Sièges” in F. Bluche, ed., \textit{Dictionnaire du Grand Siècle}, (Paris: Fayard, 1990), 1449.
suffice until further research can indicate how exactly they differed from Vauban’s tactic. At Amiens in 1597 the French king’s approaches included several parallels and quasi-parallels.\footnote{Olivia Carpi-Mailly, “Amiens au XVIe siècle: Le destin d’une ville frontière,” in P. Nivet, ed., Picardie, terre de frontière: actes du colloque, Amiens, 26 avril 1997, (Amiens: Encrage, 1998), Plate 9.} The royal army at the siege of La Rochelle in 1573 utilized one large parallel trench to envelope the entire front under attack and another smaller one on the counterscarp.\footnote{See the map in Wood, The King’s Army, 256-257.} Illustrations of the sieges of Groningen 1594, Grave 1602 and Jülich 1610 in Wijn’s study of Dutch Revolt siegecraft also portray trenches dug parallel to the attacked fronts.\footnote{Wijn, Het krijgswesen in den tijd van Prins Mauritz, 296 (Plate VII), 289, and 287. On 289 he summarily stated that besiegers did not use parallels, but it is difficult to imagine what else these trenches dug parallel to the front of attack could be. Perhaps Wijn meant the fully developed series of three parallels Vauban is famous for?} The reproduction of the attack on Montauban 1621 reproduced by Duffy similarly shows the town being attacked on three sides by cannon behind entrenchments roughly parallel to their targets, although with cosmetic angled redans.\footnote{Siege Warfare, 119. This engraving is surprisingly similar to the more generalized plan of Venlo 1702 in Nicolas de Fer’s Les forces de l’Europe ou description des principales villes avec leurs fortifications, (Paris: 1705), Plate 24.} A plan of the 1636 siege of Dôle conducted by Condé depicts two parallel trenches attacking the Besançon gate.\footnote{Pierre Bertin, “Guerre de Trente Ans: Le siège de Dôle en 1636,” in Revue historique de l’armée, (1970), fourth plate after 8 (unpaginated).} French maps of the Spanish sieges of Arras 1654, Dixmuide 1647, and Ypres 1647 also show parallels and zigzag approach trenches among the siegeworks.\footnote{Le cabinet du Roi: recueil d’estampes de différents auteurs concernant les bâtiments, les tapisseries, tableaux, conquêtes et autres sujets qu’on trouve dans les maisons royales, (Paris: De l’Imprimerie royale, 1679-1743), VII.} Vauban
was present in the relief army that lifted the siege of Arras, offering at least the remote possibility of an alternate origin of his parallels; these West European versions certainly appear closer to Vauban’s eventual ideal than the Turkish examples.

Earlier theoreticians also reproduced trench parallels in their own works. In Papillon’s *Practicall Abstract of the Arts of Fortification and Assailing* published in 1645, we find a trench at the foot of the glacis that looks much like one of Vauban’s third parallels as he illustrated them in his 1669 manual. The Englishman also depicts an “engirting circulatory trench” that surrounds the fortress near the glacis, with outlets for troops to storm the counterscarp – in other words, a contravallation line abutting the counterscarp which essentially serves as an overextended version of a third parallel. That Vauban’s parallel eliminated the need for contravallation lines where the attacks were located suggests a logical genesis: the first parallel may have been an atrophied contravallation line. Papillon encourages such a theory by depicting the contravallation trench serving also as a first parallel, with the approach trenches zigzagging forward from it.

The trenchworks seen in earlier sieges and treatises, although closer to Vauban’s works at Ath than the Turkish trenches at Candia, do not yet resemble the fully-developed attacks portrayed in Vauban’s final manual. But neither, for that matter, does Vauban at first fully articulate what functions his parallels perform. In his early work he focuses on their use as an assembly area for storming the covered

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170  Plate 24, discussed on 112.
way,\textsuperscript{171} contrasted with his later elaboration of the first and second lines, whose main utility lay as a counter-measure against sorties.\textsuperscript{172} Most Vauban scholars appear to rely primarily on his early work, for they discuss only the assembly area function, which in a proper Vaubanian siege would only be relevant to the third parallel on the glacis.\textsuperscript{173} With such confusion, we definitely need further research into the matter before summarily declaring it a Vaubanian innovation.\textsuperscript{174} The advantages of parallels, after all, accrue from their ability to enfilade the fortress works under attack, a simple geometrical requirement utilized by besiegers long before his tenure.

How closely Vauban’s advice to “always make three parallels; locate and construct them well, making them as wide as is necessary” was followed is another matter.\textsuperscript{175} There is plentiful evidence that both Allies and French attackers made use of trenches dug parallel to the front under attack – contemporary plans of almost any

\textsuperscript{171} Rothrock, ed., \textit{A Manual}, 53-57; see 54 for hypothetical language that suggests he had not yet tried such a tactic.

\textsuperscript{172} Vauban, \textit{Traité}, 82-84 and 91-95.

\textsuperscript{173} Examples in Blomfield, \textit{Vauban}, 62; Lynn, \textit{Wars of Louis XIV}, 76; also in \textit{Giant of the Grand Siècle}, 570. A large part of this utility came from the additional room Vauban’s spacious trenches provided, yet we find earlier mention of siege trenches varying in width according to the commander’s preference. Papillon, \textit{Practicall Abstract of the Arts}, 111. For a rare appreciation of their utility in this respect, see Duffy, \textit{The Fortress in the Age of Vauban and Frederick the Great}, 78-79.

\textsuperscript{174} Vauban’s concern with sorties suggests an important aspect of the siege that has received little discussion in the \textit{trace italienne} literature. In this context, we find a number of attempts before Vauban to counter this threat, particularly Blaise de Monluc’s \textit{arrière coins} that provided redoubts for guards to shelter in.

\textsuperscript{175} Vauban, \textit{Traité}, 261 maxim 5.
siege of this period will illustrate these works. The more important question, given his hardening views on their proper implementation, is whether the historiographical stereotype of three parallels progressively approaching the fortress accurately reflects the reality. Are the parallels used in the Spanish Succession distinctly Vaubanian?

In most cases, the system of parallels worked exactly as Vauban had intended. The majority of both Allied and French siegeworks included three parallels enveloping the fronts under attack. The garrison commander Pierre-Paul Riquet, comte de Caraman attested to their efficiency at the attack on Menin in 1706:

> Our garrison was strong and had good morale, but the enemies had a parallel 140 toises [~850 feet] from the palisades which was guarded by more troops than we had in our entire garrison, and this parallel was supported by 110 cannon and more than 200 mortars of all sizes, so that any sorties were impossible, since their batteries were spaced along the length of the parallel, we therefore had nothing else to do but keep up a continual fire to slow down their trenches.

One of the Allied approach commanders recognized the defenders’ impotence, and had little fear of garrison sallies now that their parallel had a “great front.” With parallels widely accepted, only at the Allied siege of Douai in 1710 was a sortie against early trenchworks successful – the garrison targeted the gap between the two

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176 Writing of the 1706 Flanders campaign, Duffy noted that “The Allies were now using Vauban’s system of parallels as a matter of course...” in The Fortress in the Age of Vauban and Frederick the Great, 37. For visual examples, see Pelet’s accompanying Atlas des Mémoires militaires relatifs à la succession d’Espagne sous Louis XIV..., (Paris: 1862). Some of these images are viewable online at [http://images.umdl.umich.edu/m/misc/](http://images.umdl.umich.edu/m/misc/) (search under “ostwald”).

177 AG A1 1939, #203, Caraman to the Secretary of War Michel Chamillart, Douai 8/27/1706.

approaches’ un-joined parallels. While the details may have varied from Vauban’s theoretical strictures, by and large Spanish Succession parallels followed the broad outlines of the Vaubanian attack.

There are a few cases where their application did not necessarily follow all of Vauban’s maxims. In a small number of cases (e.g. the Seven Fountains attack at Tournai and the Hartevelt attack at Guelder), besiegers attacked along a narrow front, making it impossible to envelop the front under attack. The Allies also tended to attack with multiple approaches on different sectors, violating Vauban’s sixth maxim.\(^{179}\) However, in most of these cases there was little alternative, as inundations or waterways divided up the approaches into isolated narrow attacks. Separate attacks had the additional advantage of allowing different nationalities to command their own approaches. The Allies used a false attack at the sieges of Ghent in 1708 and the French did the same at Bouchain in 1712, once again contrary to Vauban’s suggestions. Even greater violations are found in a few Spanish Succession siegeworks resembling pre-Vaubanian sieges of the early 17\(^{th}\) century more than Vauban’s siege of Ath in 1697. Despite Vauban’s fifth maxim, the sieges of Ghent 1708 and Bouchain 1712 featured only a second and a third parallel, while the trenches at Saint-Venant were pushed forward so quickly that only a third parallel was constructed.\(^{180}\) These variations are not necessarily strict violations, for Vauban did allow some flexibility even in his late system, but the

\(^{179}\) Duffy, *The Fortress in the Age of Vauban and Frederick the Great*, 43.

\(^{180}\) These conclusions are necessarily based on the assumption that engineers did not eliminate their mistakes from their plans. Textual siege accounts do not provide enough information on their own to sketch the locations of the trenches.
trenchworks do not follow his admonitions as faithfully as he undoubtedly would have wished.

Vauban himself acknowledged at the end of his career that implementation of his rules, no matter how “scientific” they might appear, was difficult:

As no certain rules have been given until now for the practice and siting of parallels, this has always engendered some confusion, and they are not always well executed. I can even say that since the siege of Maastricht, where I first used them, they have been properly implemented only at the siege of Ath [1697]...181

If even the great engineer, drawing on his skills and unquestioned authority, was unable to transfer his paper-perfect parallels onto the ground, it is hardly surprising that his less-able peers and pupils could consistently do the same even with his advice. Overall, these exceptions encourage us to conclude that parallels were frequently used and served their purposes adequately, although they did not conform to the exact forms Vauban demanded and thus were undoubtedly less effective than they might have been.

In this larger 17th century context, Vauban’s contribution would appear to consist of improving upon and explaining how all these various trenchworks and firing tactics could be put together into a single whole.182 Vauban included scores of recommendations covering all stages of a siege, so that singling out these three tactics seems somewhat arbitrary. If further research shows that Vauban was indeed the first to popularize the use of such tactics, such a conclusion is itself worth

181 Vauban, Traité, 83.

182 For other samples of techniques predicting Vauban’s tactics, see Blomfield, Vauban, 22; and van Nimwegen, “Maurits van Nassau and Siege Warfare,” 137-138.
explanation: why were so many early 17th century military minds unable to see the advantages of parallels, trench cavaliers and ricochet fire when they were clearly able to apply these same geometric principles (interlocking fields of fire) to the design of fortresses, and when at least some of their peers were using these techniques in the attack? Is it possible that the French were particularly backwards in the siege attack c. 1650 and thus unaware of the parallel’s potential? Vauban claimed that the French were reputed better attackers and the Spanish better defenders, but why do the Dutch not even appear, given their vast experience with positional warfare in the Eighty Years’ Wars? Why, for that matter, did Vauban himself not recognize the importance of parallels in his early manual, finished just a few years before he applied them at the siege of Maastricht in 1673? If he did get his motivation from Candia, was 1669 too early for him to recognize the significance of the Spanish line at Arras? Such questions open a fruitful line of enquiry about the dissemination of tactical change in the 17th century, as well as an opportunity to merge the Vauban historiography with the emphasis 16th century scholars have placed on fortress design and the strength of the defense. Such cross-fertilization would improve our understanding of both periods, certainly providing a more balanced view of his contributions.

Stages in Context

If Vauban’s tactical originality is, at best, “not proved,” perhaps his elaboration of the numerous stages of the siege attack was a significant departure from the past. But even when measured in terms of the more generic siege stages, we again see Vauban reflecting his age rather than shaping it. By merely skimming
the admittedly-sparse literature we discover that all of the essential stages of
“Vauban’s” siege attack were firmly in place long before the middle of the 17th
century. His unique contribution to the siege attack continues to diminish to less
mythical proportions when we take a wider view of siegecraft.

The first important step in any siege was to cut off the garrison’s
communication with the outside world, preventing supplies and reinforcements from
being sent in and garrison troops from sneaking out. Vauban’s instruction on how to
begin a siege considered such issues as retaining the element of surprise and camp
security. But he offered little advice that was new or innovative, instead centering
his advice around: the need for secrecy before the target was invested, how to
properly construct the lines, what the proper distance of the camp from the garrison
was, the need to prevent the garrison from foraging around the fortress, and the need
to adequately arrange the besieging troops to counter any relief efforts. The most
important 17th century improvement of a besieger’s security goes unmentioned until
his later, more comprehensive work: the use of a separate observation army
covering the besieging force. This proactive approach, necessarily intertwined
with the issue of growing army sizes, eliminated the besieger’s disadvantage of
trying to protect their siege lines everywhere by taking the offensive and marching
out to meet the approaching relief force on more advantageous ground.

To the extent that flaws in investments could be found in sieges predating
Vauban’s service, they appear to have been a matter of either carelessness or

incompetence on the commander’s part (or a shortage of men) rather than ignorance of the need to complete investment, or a general lack of knowledge on how to do so, the shortcomings that Vauban seems to have been combating. Attacking forces, after all, had had millennia of experience shutting in defenders. Given weaknesses in pre-gunpowder breaching technology, many attackers were unwilling to endure the many casualties that a mining or sapping party would suffer spending days or weeks slowly boring their way through rock while under fire from above. Not surprisingly then, there was a heavy reliance on non-siege tactics: blockade, bombardment, storm, and stratagem (see Appendix D for a discussion). Particularly with blockades, the most passive of methods, medieval attackers attempted to isolate the garrison from the outside world by building counter-forts (or counter-castles) at critical points, “one of the basic elements of medieval siegecraft.”\footnote{185} An extension of counter-forts was continuous lines of field fortifications (circumvallation facing outward against any relief force and contravallation facing inward to defend against any garrison sortie), built to completely cut off a garrison. While these can be found at least as early as the Classical Greek world and probably much earlier, early modern scholars had assumed they disappeared along with the Roman Empire, until the revival of siegecraft in the dynamic age of the


\footnote{185} Richard Rogers, \textit{Latin Siege Warfare}, 69. See also 30-33, 39, 95, and for close blockade examples, 164 (Valencia 1093-1094) and 170 (Zaragoza 1096). Counter-castles are also discussed in Jim Bradbury, \textit{The Medieval Siege}, 63-65, 86-87 and 89.
Renaissance.186 Duffy, for example, locates the first modern use of such lines in the Dutch Revolt.187 As late medieval scholars have re-examined the issue, they have discovered circumvallation lines at the beginning of the 15th century, if not several centuries earlier.188 These lines co-existed with the continued use of counter-forts (now called bastilles or bastides),189 while a transitional combination of the two (continuous lines punctuated with star-shaped forts) lasted through the 16th century. It is likely that only in the course of the 17th century were these star forts replaced with the angled open-backed redans familiar to the 18th century.190 In short, attackers have always been quite aware of the needs and challenges of isolating a garrison from the outside world. The question has been more a matter of whether they could implement the concept properly, which required adequate manpower to construct and defend, a competent analysis of the terrain, the ability to maintain troop discipline over a long period of time, and the supplies to maintain an effective cordon. Overall, what the French lacked before Vauban was probably less tactical knowledge of how to isolate a town, or an appreciation of the need for full

186 Paul Bentley Kern reviews several examples of walls used to hem in defenders in Ancient Siege Warfare, (Bloomington, IN: Indiana University Press, 1999), chapter 5.

187 Duffy, Siege Warfare, 19, 70. Lynn implies similarly in Giant of the Grand Siècle, 568.

188 Alain Salamagne, “L’attaque,” 74-75 cites several 15th century examples, while Philippe Bragard cites the example of Namur 1488 in his “Un exemple de la transformation de la poliorcétique au XVe siècle: le premier siege au canon à Namur (1488),” in Revue belge d'histoire militaire, (1994), 126. In a footnote, Bragard pushes back the existence of investment lines to at least the 11th or 12th century (note 44).


190 Star forts can be seen, for example, in the contemporary illustration of Amiens 1597’s works in Parker, The Army of Flanders, Plate 4. The connection between star forts, continuous lines, angled redans and the existence of lines of contravallation remains to be explored.
investment (which itself was only necessary if there was the likelihood of relief) as an ability to implement the technique. If Vauban was truly saying something new with his stress on proper investment, this is an indication of how incompetent French commanders were rather than a signal of some fundamental shortcoming in pre-Vauban siegecraft.

After isolating the town, the besiegers then had to approach within striking range while braving the garrison’s fire. Trenches were an obvious method to use. Various historians have summed up the existing literature by declaring Vauban’s success as much a matter of spade as sword, and this was equally true of sieges long before his tenure. From prehistory onward we find armor used to protect assaulting troops from enemy projectiles, as well as the spawning of numerous protective siege devices in the Classical world: the Roman tortoise, sows, cats, siege towers, mantlets, pavises, as well as shields. Late medieval besiegers used earth and wood (trenches, mantlets, wicker gabions and bundled fascines) for protection against the new gunpowder weapons quickly adopted by the defense. This inheritance from the ancient world continued to be passed down through the Renaissance until Vauban himself embraced the tradition by enjoining his masters to capture a place with pick and shovel rather than with the blood of young

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192 See, for example, the 15th century quote in Clifford Rogers, “Military Revolutions of the Hundred Years War,” 67.
Frenchmen. That most historians only associate one individual with the siege attack hides the evolutionary process of tactical development.

Continuing to point out the similarities with the other stages of pre-Vaubanian sieges (breaching the walls, crossing the ditch and storming a breach) would only belabor the point. All of the stages of the Vaubanian siege were firmly in place several centuries earlier, not only in broad outline but in almost all of the specifics as well. Wijn’s description of the siege attack during the Eighty Years’ War is extremely familiar: investment, opening the trenches and sending them forward in zigzag fashion with redoubts at each turn, and the use of cannon (and mines) to create a practicable breach. The medievalist Alain Salamagne’s conclusion illustrates the importance of the longue durée in siegecraft:

In total, the siege techniques circa 1400 – lines of circumvallation and contravallation, approaches by trenches to avoid the garrison’s fire, the heads of trenches protected by wood and earth, taudis [a type of portable screen], the steady advance of the artillery, incendiary and gunpowder mines – are little different from siege techniques of the 16th century, making it difficult to point to the end of the 15th century as the rupture between two ages.

Extending the argument, these siege stages of the 16th and early 17th centuries are little different from those of the 18th (except perhaps in the dexterity with which they were implemented), suggesting an evolutionary progression of the attack rather than a radical break around 1500 or even 1670. Besiegers in all periods used the same procedures in their formal sieges: isolate the town, transport supplies to the

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193 Oddly, 16th century illustrations of siege trenches often depict them as walls being built from the ground up instead of ditches dug into the ground. Presumably this was an artistic convention.

194 Wijn, *Het krijgswesen*, 278-308. Wijn’s treatment of parallels has been discussed earlier.
site, approach the walls with shielding, cross the intervening moat, capture the
outlying works, breach the walls and assault them. The speed of advance for each of
these stages might vary from period to period, as might any number of other factors.
The main point is that little evidence has been presented thus far to suggest that
Vauban added an entirely new stage to the process of a siege attack, an effort that
had been practiced a thousand or more times over several centuries (to limit
ourselves to the gunpowder era).

Vauban was clearly not working in a vacuum: even anecdotal textual
evidence seems to point in this direction. The opinion of the French marshal
Tavannes, written around 1620, suggests that all the techniques described above
were being fully exploited well before Vauban:

> Nowadays the besieger has gained the upper hand, and the defence of
fortresses has been so weakened that we can see that without the help
of an entire army, and not just small detachments, they have no hope
of holding out…. Nowadays the Spanish and Dutch officers have
made the capture of towns an art, and they can predict the duration of
resistance of a fortress, however strong, in terms of days.196

To cite another example, Vauban’s predecessor the comte de Pagan claimed circa
1640 that even the strongest fortress of the day could not hold out for more than six
weeks.197 Whether these impressions are supported by the data is a question that
must await the construction of a representative dataset. For now, these highly
selective examples are provided only to reinforce the hypothesis that earlier military

196 Quoted in Duffy, Siege Warfare, 100.
197 Blomfield, Vauban, 37.
thinkers had already developed the tools Vauban put to good use in Louis XIV’s reign. With the conventional wisdom of Vauban’s offensive legacy in doubt, we turn to the more positive task of identifying what Vauban did do for the siege attack.

**VAUBAN’S METHOD**

If Vauban did not contribute anything significant to the stages of a siege and he only slightly modified the three tactics attributed to him, perhaps he made some other contribution? Here we come to a final and quite vague characteristic of his attack, its “systematic” nature. What exactly did Vauban’s systematization of the attack actually entail? To explore this issue, we will examine Vauban’s two most detailed presentations of his offensive ideas, his original treatise on the siege attack (drafted in 1669 at the request of the Secretary of War and director-general of fortifications François-Michel Le Tellier, marquis de Louvois and finished in 1672) and his much later *Traité de l’attaque des places* (written in 1704 at Louis’ behest for his grandson Louis Bourbon, Duke of Burgundy). 198 While these two works cannot provide a comprehensive understanding of his tactical ideas, they do offer useful bookends to his career, allowing us to see the progression of his ideas as well as threads of continuity throughout. Because limited access to his personal papers (the Rosanbo archives) has prevented detailed investigations of his actual sieges, these manuscripts provide the best glimpse into his mindset currently available. From these works, we can conclude that his Method and his quest for the most

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198 For summaries of these treatises, see Blanchard, *Vauban*, 167ff; and Virol, *Les Oisivetés*, 27-40 (1669/1672) and 41-53 (1704/1705)
efficient siege possible, rather than his three tactics or siege stages, embody the legacy he sought to pass on to his students.

*Goals of a Siege*

Vauban’s attack shared with its peers the objective of capturing a place. Beyond this overriding goal, two additional objectives were also sought: to capture the fortress in the shortest time possible and to do so with the fewest casualties possible. While all engineers and commanders sought to minimize both the delays and costs, Vauban’s attack in particular emphasized a low tolerance for casualties.\(^{199}\) Just as Vauban saw the wealth of a nation residing in its people, so too did the strength of an army depend on its soldiers.\(^{200}\) Thus the desire, reflected in many of his writings, to improve their composition, morale, pay, training, and conditions of service. Writing of his early counterscarp method, he easily reconciled saving casualties and a more methodical approach and sought to assuage the doubts of time-conscious critics: “I guarantee an infallible success *without a day’s extra delay* if you will defer to my opinion and follow faithfully the rules I lay down.”\(^{201}\) In his primer for the Duke of Burgundy, he elevated the seventh rule to axiomatic status and indicated the compatibility of both success and saving lives: “Use the sap as soon as the open trench becomes dangerous, and never expose yourselves or use

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\(^{199}\) Fontenelle’s eulogy for Vauban contended that he would gladly accept delays if he could suffer fewer losses as a result. See also Guerlac, “Vauban: The Impact of Science on War,” 79; Blanchard, *Vauban*, for Vauban’s complaints at Maastricht 1673 reported on 183, and Blanchard’s description of his approach as founded on “méthode, rapidité, souci d’éviter les pertes inutiles” on 320; Pernot, “Le siege devenu réglé,” 255; Virol, *Les Oisivetés*, 253.


\(^{201}\) Rothrock, ed., *A Manual*, 65, my emphasis.
force where labor [industrie] will suffice, since industrie is certain, whereas force is much less certain and usually risks much.”202 His humanitarian spirit recoiled at the prospect of needlessly-spilt blood:

> If it were done of necessity, because there was no other way of advancing the works, it would have to be borne. But since the trenches can be advanced at the same speed without exposing anyone, is it not a horrible cruelty to every night expose four or five hundred men to the entire fire of a fortress without them being able to return even a shot? At the height of the peril, when the entire fire power of the fortress is bent upon our destruction, we cannot reply for fear of hitting our own men. The consequence is that our workers and their guards have no protection but the darkness, which is often all too light, and they are miserably slaughtered by the enemy who can pick them off at leisure.203

Casualties were a critical factor in judging a siege – a well-conducted attack was one where the besiegers suffered fewer losses than the garrison.204

Nonetheless, while minimizing casualties may have been a crucial goal to Vauban, he was hardly the first Early Modern to recognize its importance. This was a particularly important concern in the pre-Louis XIV era when governments could barely keep their units in the field up to strength.205 In a sense then, Vauban’s humanitarianism, however laudable, was beside the point. Nor for that matter, is casualty avoidance a technique. Vauban could have a low tolerance for casualties and even inculcate that priority in others, but he needed specific tactics to achieve


204 Vauban, *Traité*, 56.

205 Mark Fissel contends that the concern for limiting casualties is a universal trait of military commanders. Fissel, *English Warfare, 1511-1641*, 181.
this objective, such as his recommendation for saps above. His goal was to find how best to combine the assortment of tactics into a single system that would reconcile success, low casualties and minimal delay.

Vauban believed, ultimately, that in order to solve the pressing problem of how to avoid unnecessary cost and bloodshed, one must combine Reason (in the form of geometrical axioms) and practical construction techniques to this problem set. The results were the combination of specific tactical techniques that coalesced into the ideal siege. Many scholars have cited this rational approach of his, but see its main result as either the development of his three tactics, or a rigid, “scientific” progression of the siege stages:

But the most innovative aspect of the *Traité de l’attaque des places* is certainly the rational approach to sieges that Vauban developed. Divided into a logical succession of twelve stages, a siege required at most 48 days of work, at the end of which the governor of the place had no other choice but to capitulate.206

In the expository paragraphs that follow this statement, Faucherre and Prost present Vauban’s qualifications and deviation from this ideal, but the exceptions do not receive the emphasis Vauban himself gave them. Three aspects of Vauban’s Method therefore require clarification: his constant quest for perfection, the anticipated gulf between theory and practice, and the extent to which his sieges could be considered “scientific.”

**Efficiency and Perfectionism**

From early in his career, Vauban strove to minimize the length and casualties of each siege; he was a soul-mate to the modern-day efficiency expert.

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His perfectionistic impulses went far beyond individual tactics such as his development of trench parallels. He gave particular attention to three aspects of the siege attack as a whole in his constant attempts to systematize and perfect the outcome of a siege. Preparations and planning allowed the engineer to request the required supplies in a timely fashion and plan out his trenchworks before turning over the first shovel of dirt, thus saving both lives and time. These preparations were particularly important as the most efficient siege was one that economized on effort; it was as important to know when to use each technique as it was to know how to use each technique. After the siege was over, it was the engineer’s duty to examine its conduct and learn lessons that would improve future sieges. These were the three principles – preparation, application and evaluation – that Vauban exhorted his engineers-in-training to internalize, for these were the only way that siegecraft would improve.

Planning was critical to war. Whether preparing for the upcoming campaign or for the next siege, without such preliminary attentions reactions were slow and options limited. Drawing on the engineering tradition, Vauban embodied the “measure twice, cut once” school of thought. One preliminary stage of siege preparations to which Vauban paid particular attention was the gathering of supplies for a siege.\(^\text{207}\) Although an engineer had little control over whether the supplies reached the besiegers (this was the provincial intendants’ purview), he was responsible for providing administrators with a list of the necessary materiel.

\(^{207}\) See Vauban, Traité, 14-16. In his 1669 work, he stressed the need for advanced planning so as to be able to surprise the enemy with an uncontested investment. Rothrock, ed., A Manual, 22-23.
Vauban gave his readers an indication of the types of supplies needed for a siege, what the magazines should contain as well as suggested prices for labor and materials (everything from lumber to rope to gunpowder to wheat to cheese), something we find in the planning documents of specific sieges. The emphasis on preparations was particularly appreciated by Louis, who preferred the greater certainty of a siege, a confidence directly connected to the advance preparations made, as contrasted with the risks of battle, which often occurred without warning and could not be controlled to the same extent.208

Once the necessary supplies and tools were in transit, an engineer then turned his attention to how exactly the town would be attacked. Vauban clearly identified the fundamental flaw in previous siegecraft as well as indicating what he meant by systematization:

The confusion and lack of plan or design, which until now have marked our efforts, constitute the most pernicious failings imaginable in trenchwork, for we work all day every day with no notion of what we shall be doing two hours later. Thus, everything is disordered and groping, and consequently the entrenchment is poorly made. Never are the batteries and assembly areas where they ought to be; never are the proper measures taken for the establishment of firing positions; and never are we in an advantageous position to resist a sortie. Finally, never—or at least rarely—does it happen that the trench does not run a half or a third longer than it should and that there is not some enfiladed end or dangerous escarpment. This bungling results in unnecessary losses of men, needless expenses, little damage to the enemy, little advance, little effect from the batteries, reduced infantry fire power, and the perpetual peril of being defeated by the first sortie, however weak it may be. And we shall

never overcome these weaknesses if we do not change our procedures.209

His principal trench technique, the parallel, embodies the utility of preparation: digging a spacious, properly positioned trench before the enemy has a chance to make a sortie thereby pre-empts his attack. His assault on Ath in 1697 was his finest because of his planning for “all the measures that are needed in order to prevent reverses which could arrive from all the advantages of this place.”210 Again and again he returned to this central point: preparation and planning minimize mistakes, decrease the likelihood and impact of Clausewitz’s “fog of war,” and force the enemy to fight on your terms.211 Only with such prescience could one hope to overcome the many advantages of a well-designed fortress.

To aid in this planning, engineers must sketch out the attack. Just as fortification plans were drawn before they were constructed, so too did Vauban call on engineers to place on paper their intended plan of attack.212 A necessary and early part of any nobleman’s education included drafting lessons; it was also the medium by which engineers communicated both with each other and with their


211 For other examples, see Rothrock, ed., A Manual, 44-45; and 73. As he counseled at Ath: “risk nothing and... be ready to fall back on the rules in case of an accident.” Quoted in Blanchard, Vauban, 351.

superiors.\textsuperscript{213} Once again serving as a model, Vauban’s 1669 manual provided plans (i.e. aerial-view maps) of both the original attack on Lille 1667 and an improved version which corrected the aforementioned mistakes (Plates 28 and 29), allowing his readers to discover through direct comparison the many potentially-fatal mistakes that had been narrowly avoided. A quickly-sketched, symbolic representation of the approaches allowed them to test their ideas, to have something to show to superiors for approval, while copies were made available to those directly in charge of overseeing the digging.\textsuperscript{214} Teaching by example, Vauban provided two dozen graphics illustrating his essential points of how trenches were to be laid out and constructed, where batteries were to be sited, and occasionally how all these were integrated together to provide the interlocking fields of fire that would both defend against enemy sorties and quickly breach enemy walls (without visually indicating these zones, however). He also stressed the need for the chief engineer and his subordinates to reconnoiter the place from very close (having had his share of brushes with garrison sentries throughout his career), the better to gain accurate intelligence to record on the map.\textsuperscript{215} This more generalized visualization took advantage of the shift over the course of the 17\textsuperscript{th} century in the representation of

\textsuperscript{213} Manuals were published on the methods of drafting, and there is at least one letter where the Secretary of War’s office sent recommendations to an engineer at the siege of Douai on how to improve his plans by coloring each day’s trenches a different color and adding a scale. AG A\textsuperscript{1} 2382, #51 8/19/1712.

\textsuperscript{214} Unfortunately, most of these maps and plans have been separated from the letters they were enclosed with and apparently lost. For a surviving example, see Valory’s map of the attacks at Menin in AG A\textsuperscript{1} 1939, #208.

\textsuperscript{215} Vauban, \textit{Traité}, 20; 39-40 on the need to make as many reconnaissance trips as are needed in order to acquire a full understanding of the fortification to be attacked: “You must neglect nothing in this matter, because you will have a great advantage over a well-reconnoitered place.”
sieges, from a horizontal view (an elevation) to a more abstract and “objective” aerial view (an ichnographic plan).\textsuperscript{216} With scale enforced, this new tool allowed a more accurate representation of the works to be made, as well as providing a more geometric and (at least on paper) controlled portrayal of the siege. Vauban may have been the first to completely integrate this new, more precise way of “seeing” a siege with a systematic effort to perfect the attack, recognizing the tool’s potential to help implement his plans more precisely and efficiently.\textsuperscript{217} Nevertheless, Vauban judged the quickly-sketched plan by a reconnoitering engineer as worth more than a precise map that took several days to draw, following in the footsteps of previous engineers who had refused overly- (or spuriously-) precise measurements in the field.\textsuperscript{218}

\textsuperscript{216} Martha Pollak discusses this shift in “Representations of the city in siege views of the seventeenth century: The war of military images and their production,” in \textit{City Walls: The Urban Enceinte in Global Perspective}, (Cambridge: Cambridge University Press, 2000), 605-646. For a discussion of the artistic perspectives used in portraying military architecture, see Pollak, “Military Architecture and Cartography in the Design of the Early Modern City,” in D. Buisseret, ed., \textit{Envisioning the City}, (Chicago: University of Chicago, 1998), 109-124. When exactly engineers began applying geometric precision to the trench attack requires exploration – despite Pollak’s argument (whose sources appear limited to published propaganda and not utilitarian engineer plans), one would think that the Renaissance adoption of zigzag trenches required siege engineers to sketch out a plan of the attacks, conceivable since fortress plans were already being used to display fields of fire for the defensive works.

\textsuperscript{217} For maps more generally in early modern Europe, consult the collection of articles, especially David Buisseret’s “Monarchs, Ministers and Maps in France before the Accession of Louis XIV,” in D. Buisseret, ed., \textit{Monarchs, Ministers and Maps: The Emergence of Cartography as a Tool of Governance in Early Modern Europe} (Chicago: University of Chicago, 1992).

\textsuperscript{218} Rothrock, ed., \textit{A Manual}, 25. Vauban also considered the plans-reliefs far too expensive. In his later work he stresses that engineers should study whatever existing maps were available before the siege, so as to have all the better an indication of the fortifications to be attacked. Vauban, \textit{Traité}, 38. On earlier engineers’ rejection of overly-accurate maps, see Virol, \textit{Les Oisivetés}, 34-36. A similar rejection was made for gunnery range tables that were far more detailed than what gunners in the heat of battle could use. A.R. Hall, “Gunnery, Science, and the Royal Society,” in J. Burke, ed., \textit{The Uses of Science in the Age of Newton} (Berkeley: University of California Press, 1983), 134.
Planning for the ideal siege is exemplified by Vauban’s preparations for the attack on Ath in 1697. A journal of the siege explained his success against the town in terms not only of applying mathematical axioms, but of planning as well:

The truth is, as [Ath] was a regular fortification, the rules and proportions of which are well known, the attack was so much the easier, requiring no farther study than the knowledge of the ordinary rules, which are inseparable from that Art; which is not the case in places of an irregular or bizarre construction, which oblige the ingineer to search for expedients in his own imagination, whose purposes should be answerable to the irregularity of the place, in which respects they are often preferable to the regular ones. Nevertheless, as this regularity was accompanied with great skill and judgment [Vauban had designed the place twenty years earlier], as the movements of the waters were well contrived and disposed; and, in a word, as Monsieur de Vauban had piqued himself on this work, a particular application was necessary, and a plan of attack to be formed before-hand, which in its way should be as perfect as the fortification; and it is not easy to say which has the advantage, as appears by the plan.\(^{219}\)

The not-so-subtle lesson: even the great master, when attacking a regular fortress that approached the theoretical ideal elaborated in siege manuals, a fortress that he himself had constructed, was unwilling to risk accidents and labored to perfect his planned attack.\(^{220}\) The role model continued to apply his Method, for after he arrived on site nothing was left to chance, he personally reconnoitered the ground around the place with his subordinates in train, assuring himself that neither the terrain nor fortifications deviated from the assumptions made in his project.\(^{221}\)

Given Vauban’s comprehensive preparations, it is not surprising that he judged the


\(^{220}\) Antoine de Ville had described the irregular fortress as the best test of an engineer’s ability to implement theory in the real world. Pollak, *Military Architecture*, 22.

attack here the best he had conducted. The only way to systematize an attack was to
plan its course in advance according to rational rules of siegecraft.

Once the siege was finished, the meticulous engineer was not yet done, for it
was then time for post-combat analysis. Always with the goal of improving the next
siege, Vauban encouraged his readers to consider how they might have improved
their outcomes, or even the results of other sieges whose progress they had been
following from afar. Whereas people with a less professional attitude might assume
that a successful attack was a well-conducted attack – which one could only learn
from failure – we find Vauban revising his own successful dispositions when there
were no obvious indications of problems. We see this illustrated most clearly in the
several pages he spent in his early manual revisiting his successful siege of Lille in
1667 – an almost obsessive compulsion for improving efficiency.222 His sovereign
was pleased to have the widely-held fears of a lengthy siege dispelled. Vauban
acknowledged that this attack “has received great commendation,” only to undercut
the outcome by continuing that it “was truly the least inept attack we have attempted
in a long time” (171). He argued, for example, that at Lille 1667 “we failed to
dispose the cavalry guard properly.” But such insight required a reliance on theory –
his general principles – since no harm had in fact befallen the horse: “Nevertheless,
if the enemy had noticed it, we should have been forced to withdraw or else to suffer
serious interference.”223 Next we learn that their approach trench was too narrow:

222 DeJean argues that Vauban’s pursuit of efficiency was never-ending, an asymptotic quest for

“This would have exposed us to extreme peril if the enemy had had the presence of mind and confidence to take advantage of it.”\textsuperscript{224} Vauban even conscripted client-patron rhetoric into the effort, attributing the success of the siege more to the King’s presence than to the plan of attack. In the process, he further illustrated the attitude a conscientious engineer was to adopt: “Thus, hopes for success were no less rash than the rest of the attack, which would surely have exposed us to the greatest dangers had it not been for the help of the King’s fortune.” The implication: we cannot always rely on the King to save us from failure, therefore we must prepare for that eventuality. Although he doled out criticism to all involved (including himself), through all the self-flagellation we are never told that his faulty siege had only required nine days of open trenches and cost the French perhaps 600 casualties.\textsuperscript{225} Even this low a figure was unsatisfactory for one obsessed with efficiency and second-guessing, for Vauban had discovered that a poorly-sheltered entrenchment had cost the King the lives of eighty to one hundred French soldiers (171). Rather than rest on his laurels, he labored to uncover more examples of wasted powder, needlessly-sacrificed men and lost time even when others were flush with victory.

\textsuperscript{224} Rothrock, ed., \textit{A Manual}, 173, my emphasis.

\textsuperscript{225} Casualty figures for Lille 1667 are almost completely missing in the secondary literature. The 600 man figure comes from Léon Lecestre, ed., \textit{Mémoires de Saint-Hilaire}, (Paris: Renouard H. Laurens, 1903), 1:49, and is supported by Louis’ rebuke of Turenne’s later storm of Aalst (Alost) that cost 500-600 men: the King complained that he lost more troops at Aalst than he had lost in any of his sieges. Rousset, \textit{Histoire de Louvois et de son administration politique et militaire}, (Paris: 1864-1864), 1:111.
Always with an eye to efficiency, Vauban recognized that every fortress should be studied, as they all offered opportunities for improvement. This preparation was practical as well as philosophical, for fortresses passed easily from one sovereign to another as military and diplomatic fortunes shifted back and forth. Thus what was being defended one year might need to be besieged the next – another example of the benefits reaped from planning. For this reason, Vauban had refused to follow Louvois’ short-sighted order (based on security concerns) to destroy the plans of the towns they had just won at the Peace of Nijmegen (1678).\textsuperscript{226}

The future was uncertain, both on a tactical and strategic level, thus the need to plan for contingencies.

Unfortunately, we cannot judge how efficiently sieges were conducted, for Vauban himself gives no concrete criteria by which to judge them. He was unable to spell out each of the steps in detail. Assuming we were to condense his Method down to his thirty General Maxims, many of these demand a minutely-detailed knowledge of the objective conditions at the siege, information unavailable to us today. The goal of efficiency also prompts many troublesome questions: Were too many trenches dug? Too few? Were mistakes (unexploited by the enemy) made in the trenchworks? What weaknesses did the directors not take advantage of that a more skilled conductor would have recognized? How much error is acceptable before siegeworks can be declared “un-Vaubanian”? How many mistakes can be made while still adhering to Vauban’s techniques? His emphasis on increasing

\textsuperscript{226} Virol, \textit{Les Oisivetés}, 233.
efficiency seems to almost demand the perfect application of theory to reality, a high standard indeed. The tension between his early desire for efficiency (practical efficiency – only do the minimum amount of work required) and his concern to pre-empt counterfactual garrison actions (a more theoretical kind of efficiency) was similarly problematic: should the besiegers have used a particular technique even if they paid no price in the siege for not doing so? Vauban criticized his 1667 attack on Lille several times for just this reason, and his 1704 treatise finds him increasingly rigid about the application of the rules to specific cases. Such issues point out the impossibility of judging sieges according to Vauban’s own exacting criteria.

Application: Situational Tactics

At least initially, Vauban’s perfectionist tendencies did not lead him to demand a strict adherence to all of his many siege techniques. He recognized that a commander who focused on only two of its objectives, capture and casualty-avoidance for example, could still conduct a far from efficient siege, since it might well be to the detriment of the other outcome, length. On the other hand, an efficient siege would minimize both delays and losses while not jeopardizing the overall success of the attack by taking significant risks. The way to balance these three outcomes was to understand the strengths and weaknesses of the fortress under attack, match them to your offensive capabilities, and adjust your approaches

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227 Some of the difference between the two works may be explained by their intended audience – the 1669 work was meant for the Secretary of War Louvois, an administrator who could not interfere in a siege, and the 1704 treatise was dedicated to the Duke of Burgundy, who had disputed with Vauban over the conduct of the siege of Breisach in 1703. Experiencing several rejections in 1703, Vauban undoubtedly sought to more tightly control the attack by spelling out its nature in greater detail.
accordingly. His works must be seen in the context of his larger message: these “rules” for the attack were contingent on a whole range of factors, such as the garrison’s size and morale, the strength of the fortifications, the size of the besieging force and the terrain, to name but a few. The key was to apply the abstract axioms to each unique situation.

No matter how much attention he paid to the details of trench alignments, battery construction and troop dispositions, at the end of his works Vauban returned to this central point: his recommendations were completely dependent on the specifics of the particular fortress the engineer was faced with; the general maxims were inviolable only in the abstract. In his summation of the attack, he noted that “There is no fortress to which this method is not applicable, but it is more advantageous with some than with others, depending upon the topography and composition of the terrain.”\textsuperscript{228} To give an indication of the variety of issues an engineer had to consider when deciding whether to accelerate an attack or not, he counseled:

\begin{quote}
Before resolving to accelerate an attack you should have studied carefully whether the garrison is weak or the place occupied only by the inhabitants, whether the defenses are in poor condition, whether there is cover in front of the fortress, whether there are advanced and poorly supported outworks, as crescent works and crown works with dry ditches sometimes are, whether there are broken or incomplete works in which you could lodge positions, whether the glacis of the countescarp has blind spots not raked by the body of the fortress or whether it has a raised edge that would give cover, whether there may be some ditch that cannot be covered by the fire of the fortress, whether the palisade offers advantages, as being too far raised or placed at the summit, whether the most advanced outworks lie near
\end{quote}

\textsuperscript{228} Rothrock, ed., \textit{A Manual}, 93.
houses, cottages, cellars, hedges, orchards, gardens, enclosures, ditches, natural screens, hollows, or sunken roads which might aid your communications with detached positions. These are the most essential observations which determine whether you may accelerate an attack. There is another circumstance in which I never hesitate: for instance.... 229

Faced with a new or different situation, you must always return to first principles and judge each maxim’s relevance to the case at hand.

Of the remaining text, his detailed discussions and many conditional statements are a direct result of the infinity of variations an army might meet: rather than leaving it to the “imagination” of the engineer, Vauban helps the reader by providing a list of guiding principles and a plethora of specific options to be adapted to the situation at hand. Vauban’s techniques and tactics were not to be followed blindly, but with a full understanding of why they were needed:

As for other fortresses which are in less difficult positions and are defended by mediocre garrisons, it would be superfluous to follow point by point the rules that I have established in this book; they are only essential when the occasion demands. Under other circumstances you may be able to omit half of the works, to neglect the dimensions prescribed in the cross sections, and to reduce the number of trench guard positions. As long as you follow a well-designed program which takes advantage of the terrain, of hollows and elevations, you can boldly do without this particular plan, understanding of course that you must neither make mistakes nor expose the men foolishly. 230

Lest his point be missed, he summarized it again in a form that combined both planning and application:

Never begin a trench until the full plan has been drawn and approved by the general, and draw the plan with careful regard for the capacity


of the place to resist. It would not be reasonable to take more precautions against a shanty [bicoque] than against a strong fortress or to treat a place short of troops or munitions as one plentifully supplied with both.\textsuperscript{231}

Rather than presenting a strict recipe of steps to follow, which would result in inefficiency and wasted effort, he offered his readers a menu of options to choose from. Contradictions must be resolved by the engineer’s application. Relying on a stereotyped, rigid view of his siege attack discourages us from exploring this variation.

Here then we find the real crux (and paradox) of Vauban’s work. “Better safe than sorry,” although preferable to its alternative, was, initially at least, not Vauban’s mantra, for he heard the campaign time clock ticking as well as the commander. Instead, he depended on skilled, experienced engineers to first assess the situation and determine what was the most efficient way to attack the town, then to carry out that plan. In this respect he mirrored the traditional engineering drive to find the application of theory approaching closest to the ideal.\textsuperscript{232} There were too many enemy moves for each one to be guessed in advance, but drawing on his vast experience, Vauban could predict many of them in a given situation. He then codified the techniques in his manuals that would either preempt most of them or at least minimize their disruptiveness.

Unlike his earlier rushed work, the 300 pages of his final primer allowed him to develop the theme further, including thirty pages examining how to besiege eight

\textsuperscript{231} Rothrock, ed., \textit{A Manual}, 160. \textit{Bicoque} could refer to either a small building or, in a more martial sense, a weakly fortified town.

\textsuperscript{232} Vérin, \textit{La gloire des ingénieurs}, 327-333.
different types of irregular fortresses. At the end of his *Traité de l’attaque* he summed up the art of reconciling the need to preempt the almost infinite universe of an enemy’s potential moves with the need to minimize the besieger’s unnecessary effort:

> There would be many other things to say about the attack of all types of fortresses, but one would never finish; because as there is not a single one that resembles the design nor the situation of another, each place forces us to deviate somewhat in order to address the specific conditions; and where the observation of the rules becomes impossible either totally or in part, only good sense can help us, but *always with the goal of breaking the rules as little as possible.*

Vauban did not expect his engineers to act like automatons, but to intelligently assess each individual situation and apply the guidelines he laid out as consistently as the chaotic arena of combat would allow. The objective was to direct the attacks “by the shortest, most reasonable and least bloody route as possible” – no precise formula could be given for how to reconcile these potentially-conflicting demands. Explaining a proposed training program for engineers, a close engineering associate of Vauban disabused the director-general of French fortifications Michel Le Peletier de Souzy of the idea that sieges were rigidly mechanical: “it is not true as is commonly believed that mathematics are the

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233 Vauban, *Traité*, 205-232. In *A Manual* he spent almost ten pages discussing the strengths and weaknesses found in a variety of terrains: rocky, plain, marshy, etc. (41-50). The marquis de Quincy admitted that no manual could encompass the entirety of siegcraft: engineers were to rely on their own experience to cover the topics that he had omitted. *Maximes et instructions*, 178.

234 Vauban, *Traité*, 231-232, my emphasis. He then describes several rules that are “almost always” applicable, such as using parallels.

foundation of our métier, they are simply the key, which only le bon esprit can use...”236 Only through experience could the engineer intelligently apply the rules. However, by the end of his career he felt the need to limit the freedom he was willing to give his pupils. His earlier suggestion that a weak fortress allowed one to accelerate the attack and omit half of his works disappears in his 1704 manual. In its place, we find the 23rd rule: “Never reject or discard the rules under the pretext that a fortress is not strong, for fear of allowing a weak place to defend itself like a strong one.”237 Rather than encouraging engineers to break the rules as long as they make no mistakes (from the beginning setting the bar quite high), his late work becomes much stricter. His last treatise provides thirty rules (maxims) to obey, with the language far more constricting than he had previously used: never do X (maxims 3, 7, 8, 9, 10, 12, 16, 23), always do Y (maxims 2, 4, 5), break the rules as little as possible (maxims 21, 30), and do not rely on luck to capture the covered way (maxim 7). He also warned that only experienced individuals can apply the rules effectively (maxims 18, 28, 29), and less-than-strict observation of the rules results in greater difficulties (maxim 24, 30). With decades of additional experience, time for reflection, and with his life drawing to a close, Vauban felt the need to codify his techniques more assertively.

236 Hué de Caligny quoted in Virol, Les Oisivetés, 109. See also Vérin, La gloire des ingénieurs, 193-194. Such lessons were needed since Le Peletier de Souzy was not an expert on the art of engineering, but rather a bureaucrat from a Parisian robe background whose expertise lay in his financial management skills. His experience with fortifications (and his relationship with Vauban) began when he was made intendant des finances of newly-conquered French Flanders at the end of the War of Devolution. In this post he was charged with supervising the renovation of the fortress of Lille and the construction of its citadel.

237 Vauban, Traité, 264-265.
Hypothetical preparation also served a utilitarian purpose. ‘War-gaming’ also gave soldiers the practice that allowed them to apply the abstract to real situations and thereby improve efficiency and approach more closely the ideal.\textsuperscript{238}

The obligation to prepare for a siege included the garrison commander as well. Vauban counseled that a new governor should draw up a plan of defense for his town and submit it for review; if after several attempts he showed himself incapable of recognizing the strengths and weaknesses of the place, he was to be replaced.\textsuperscript{239}

This was necessary because the most perfect defensive project prepared in advance by an expert engineer will mean little if the governor does not know the guiding principles behind it or how to implement the recommendations suggested therein. If something unforeseen should occur (an unanticipated move by the besieger, faulty assumptions as to the fortifications or supply situation), the scripted plan would offer little guidance. In this case there would be slim hope of the incompetent commander devising an effective response. Through this argument Vauban yet again taught that the tactics and techniques used in a siege were situational, their application depended on the unique combination of attacking and defending forces that only an experienced commander could identify. He did not demand every attack follow each of the stages laid out in his manual, instead, he left it to the competence of the engineers and commander to adapt his Method to the situation at hand, to apply his rules to their case.

\textsuperscript{238} Far earlier had Renaissance generals “rediscovered” that drill improved an army’s performance.

Vauban continues to be portrayed as the genius who turned siege into science, laying down infallible laws for the attack. Not only did Vauban stress the opposite, but this belief is particularly odd considering how far historians go out of their way to argue the exact opposite for his fortress designs – to dispel the myth that there were “rules” of fortification, and to emphasize that each place was to be built according to its own unique circumstances.\textsuperscript{240} The debate over the existence of Vauban’s three “systems” of fortifications was long ago abandoned (Fontenelle’s 1707 eulogy declares as much, while later 18\textsuperscript{th} century Enlightened writers were quickly overturned by Napoleon), but modern scholars still spend twice as much time belaboring this conceded point as they do considering the siege attack.

Tellingly, Vauban had made it clear that the rules for a siege are exactly the same as those that apply to fortification design: “The principles on which I have founded my method are drawn from those of fortification itself, which assumes a regular system as the most perfect, and all that one can do is strive to approximate this perfection as closely as the different situations allow.”\textsuperscript{241} In both design and attack, Vauban believed in Method applied to the specific, not a system of rigid theory imposed on reality. That the literature considers theoretical ideals more attainable for frightened and tired humans digging in the dark under enemy fire than for engineers and masons working with inert rock in the security of peacetime is an indication of how


\textsuperscript{241} Vauban, \textit{Traité}, 202.
neglected the history of the siege attack has been when compared to the motionless walls it targeted.

*The Vaubanian Siege as Science*

Although Vauban’s rationalization of the attack coincided with the age of the Scientific Revolution, he was only minimally influenced by its most significant findings. His siege attack, and his other works as well, drew very little from the contemporaneous advances in natural philosophy. His methods show little influence of 17th century mathematical and scientific trends: algebra and Descartes’ analytical geometry, Pascalian probability, the astronomical observations of a Galileo, the circulatory system of Harvey, Leibniz and Newton’s calculus.242 Nor were new scientific instruments, devices such as air pumps, microscopes and the like, shedding much light on siegework.243 Even the telescope, promoted for its utility in sieges by early inventors, was of limited use to Vauban: he did not mention them and instead directed engineers to reconnoiter the fortresses from very close up, risking capture himself on many occasions. Searching his works, we find little reflection of the mathematical formalism so often attributed to him. Their

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243 See the online catalog of The Geometry of War exhibition at [http://info.ox.ac.uk/departments/hooke/geometry/cat81.htm](http://info.ox.ac.uk/departments/hooke/geometry/cat81.htm).
organization mimicked formal geometry, but in this he only mirrored the many military manuals of the earlier 17th century, proceeding from definitions and axioms to examples of contemporary bad practices, and then on to how to improve these procedures through application.\textsuperscript{244} His geometry was Euclidean, and would have been familiar to educated people of the Renaissance, of the medieval world and even of ancient Greece. We find only two examples in his manuals where he adopts an overtly geometric approach, when describing how the trenches were to be laid out and when discussing how to determine the powder charge needed for a mine. Even here, he boils the geometric postulates (never formal equations) down into memorable aphorisms or rules of thumb. As a result, some mid-18th century reviewers of the published work (1737) even complained of the lack of geometric apparatus they had come to expect in other, later treatises on siegecraft.\textsuperscript{245}

Otherwise, Vauban assumes the budding engineer will have already learned his basic geometry and trigonometry and knows how to transfer their knowledge onto paper without his aid.

More often, his calculations relied upon basic arithmetic (often presented in tabular form) – calculating materials needed for battery platforms, the dimensions of

\textsuperscript{244} Virol, \textit{Les Oisivetés}, 32-33. On 81-90, she illustrates how his manuals’ organization, use of history, maxims and definitions, as well as his concern with cost-effectiveness all follow in the footsteps of earlier engineers. Once again, Vauban’s siegecraft placed back in its 17th century context.

\textsuperscript{245} Virol, \textit{Les Oisivetés}, 47ff. We might contrast Vauban’s sparse presentation of geometry with the much more formal pedagogical treatises seen in the later 18th century, such as abbé Deidier’s \textit{Le parfait ingénieur françois, ou la fortification offensive et défensive, contenant la construction, l’attaque et la défense des places régulières et irrégulières, selon les méthodes de Monsieur de Vauban, et des plus habiles auteurs de l’Europe, qui ont écrit sur cette science}, (Paris: Jombert, 1757). Virol argues that Vauban refused to provide his manuals with geometric notation for his fortress designs so as to protect such important state secrets (231).
trenches, lengths of siege lines, sizes of guard posts, pounds of gunpowder or bread, ratios of trench guards to garrison forces, days of labor, and so on. Most of his numbers were concerned with the less precise matters of troop dispositions (where to place the workmen and in what numbers, how many troops commanded by how many officers of what rank should be used in an attack...) and construction advice (e.g. how to reinforce a trench with gabions and fascines). In other words, he put on paper the kinds of indispensable logistical and operational calculations that commanders, engineers, and quartermasters had been performing mentally for centuries. Mathematics served siegecraft only as a way to describe the relationships between specific siege works, not as a tool for proving their utility.

Not that we should be surprised at the relatively simple level of mathematics Vauban made use of. He had, after all, little formal education. From his father (a gardener) he had received a knowledge and appreciation of nature, learning the practical knowledge of nature required for a person growing up in the wilderness of the Morvan in Burgundy. Without family money to draw upon, he likely attended a

246 On Vauban and arithmetic, see Virol, *Les Oisivetés*, 253-299.
247 Erik Lund writes of this “operational level” of military practice, the everyday history of how an army in the field marches, camps, forages, etc., and its basis in the agricultural economy of the period, in Lund, *War for the Every Day: Generals, Knowledge and Warfare in Early Modern Europe, 1680-1740*, (Westport, CT: Greenwood Press, 1999). For an example of the mathematical skills available to early medieval military planners, see Bernard Bachrach, “Charlemagne and the Carolingian General Staff,” *Journal of Military History*, 66(2) 2002, 338-341.
248 Indicative of his sparse reliance on modern mathematics prevalent in the social sciences is how rudimentary it appeared in a “lettre sur la manière de faire les statistiques,” which limited itself to a discussion on how to collection information on a region’s basic demography and economic potential. Rochas d’Aiglun, ed., *Vauban*, 1:590, 2/1/1706. The statistical manipulations performed in this dissertation were completely foreign to the 18th century.
249 On Vauban’s early life and education, of which little is certain, see Pujo, *Vauban*, 17-22; and Blanchard, *Vauban*, 45-75.
nearby prieuré where he would have learned from a curé some basics of the humanities (including some Latin as well as history), and more importantly for his future path, the rudimentary amount of mathematics, fortifications (i.e. applied mathematics), and draftsmanship expected of a poor, young nobleman. Recalling his sparse education, he admitted only “a fair smattering of mathematics and fortification, and also drawing not at all badly.”\textsuperscript{250} His real education in the military arts came with his enlistment (1651) as a cadet gentilhomme in the prince de Condé’s army fighting against the young Bourbon king (still a minor) in the princely Fronde. With his elementary knowledge of fortifications, he was assigned to repair threatened and recently captured fortifications as well as assist at Condé’s sieges, perhaps a dozen or more over the course of his service with the prince. Thus, Vauban learned much of the specifics and application of siegecraft like most other military engineers, in apprenticeship under fire rather than from erudite theoretical treatises.

Nor did Vauban have much leisure time for such secondary pursuits throughout his career. His family’s financial situation had denied him the resources that would have allowed him to be a gentleman scholar, and he was busy doing the King’s business in any case. Although he was appointed to the Académie royale des Sciences in 1699, this was an honorary appointment well after his formative years. From what we know of his library, he had very few books on the subject of natural

\textsuperscript{250} Quoted in Hebert and Rothrock, \textit{Soldier of France}, 14.
philosophy.\textsuperscript{251} He likely had little time to attend many sessions of the Académie and keep up with the latest scientific debates, given his peripatetic life of royal service. In addition to the many campaigns in which he actively participated (1651-1658, 1667-1668, 1672-1678, 1683-1684, 1688-1697, 1702-1703) and the mass of mémoires he penned and correspondence he maintained, his post as the King’s first engineer required he draft hundreds of fortress plans, as well as travel from one corner of France’s nascent hexagon to another visiting fortifications and preparing them for a defense. As a result, he spent an average of only 22 days per year at home in the Morvan.\textsuperscript{252} From 1651 to 1667 he averaged only 865 kilometers per year in travel, from 1668-1677 some 4,280 km on average, and from 1678 through 1703 fluctuating between 4,000-5,000 km per year – an average of almost seven miles per day. The vast majority of these journeys were far beyond his home or Paris. His many responsibilities to the Crown consumed most of his adult life.

But Vauban was affected by the broader philosophical underpinnings of his age, combining the Cartesian mechanical philosophy so prevalent in 17\textsuperscript{th} century France with Baconian empiricism. From his brief education Vauban would have learned Descartes’ reductionism, whereby all things are reduced to their simplest component parts.\textsuperscript{253} Applying this to siegecraft, he reduced a siege to each of its stages, and within each stage, their constituent tactics. To this implicit theoretical framework, however, Vauban attached an appreciation of empiricism in order to

\textsuperscript{251} For the existing inventory of his library, see Virol, Les Oisivetés, 85-88 and Annexe 6.

\textsuperscript{252} On Vauban’s many travels, see Blanchard, Vauban, chapter 17 “Le vagabond du roi.”

\textsuperscript{253} On Vauban and Cartesian reductionism, see Virol, Les Oisivetés, 194-204.
bridge the gap between siege theory and reality. This attitude manifested itself most visibly in his use of historical examples.\textsuperscript{254} Illustrating mistakes made in the past, he justified his authoritative judgments by drawing on the experience gained in well over forty sieges, as well as drawing from his study of one hundred others. Experimentation in a laboratory could not approach real-life conditions, but Vauban did make use of hypothetical “thought experiments” such as revising Lille 1667, calling upon both his general principles and his vast experience. He also experimented with siege tools and techniques, for example his experiments with \textit{pierriers} (stone-throwing mortars) and cannon-casting methods, as well as his experiments determining the rate of advance by sap.\textsuperscript{255} He was also interested in topics removed from fortifications and the military, the beginnings of the social sciences. Although his analyses were largely limited to an arithmetic approach, he studied not only architecture and engineering but also agronomy, demography, economics and politics – topics falling under the contemporary rubric of ‘political arithmetic.’ As with siegecraft, these were all fields that directly affected his efforts to improve the security, strength and prosperity of France.\textsuperscript{256} Despite his geometrical theorizing and marshal’s baton, he was at heart a practical man who

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\textsuperscript{254} Virol, \textit{Les Oisivetés}, 85-88 on the use of examples in his military writings, 223-229 in his non-military works. See also the predominance of history works among an inventory of his book collection (Annexe 6).

\textsuperscript{255} For his investigation of cannon founding, see Pujo, \textit{Vauban}, 283-241. On the sap’s progress, see Vauban, \textit{Traité}, 80 note 1.

\textsuperscript{256} See his \textit{Oisivetés} for a sampling of his range, catalogued and excerpted in Rochas d’Aiglun, ed., \textit{Vauban}, volume one.
identified more with the peasants of his beloved Burgundy than with the intellectual elite. Mathematics and engineering were a means to an end rather than a diversion.

**CONCLUSION**

Compared with Vauban’s immense architectural legacy and his status as the founder of French military engineering, his offensive legacy is less clear. While he has received the credit for breaking the defensive supremacy, a cursory look at earlier sieges suggests that he was only codifying practices that had already been developed earlier. To the extent that he “perfected” the siege attack, he did it not by bringing mathematics to the siege attack, for many besiegers before him had worked with this apparatus, hence the pre-Vauban appearance of zigzag approaches, trench cavaliers, and parallels in various forms. Nor did perfection mean a strict application of parallels, trench cavaliers and ricochet fire. What Vauban did do, by the end of his life, was to create a rigorous, coherent presentation of geometrical maxims in codified form, testing and collating the many practical details of 17th century siegecraft according to a guiding philosophy that sought to reconcile low casualties and short durations. Efficiency through preparation and attention to all the details of a siege was his mantra.

Whether or not Vauban was the first engineer to combine a variety of 17th century offensive techniques based on geometrical principles into a cohesive whole, his unique situation and prolific quill guaranteed that he would receive the attention of posterity – if nothing else Vauban was the greatest popularizer of a more systematic type of attack. No other similarly talented engineer had the fortune to work for a bellicose king who ruled one of Europe’s wealthiest kingdoms, whose
quest for military *gloire* manifested itself in a shared appreciation of sieges, and whose lands were conveniently located near several of the most heavily-fortified cockpits of Europe. At the very least, it was this convergence of royally-granted authority, a rich resource base, and a king’s willingness to wage a war of positions against a declining Spanish foe that gave Vauban his opportunity to shine. The extent to which others followed his example is the focus of the remaining chapters.
The efficiency that Vauban advocated set a very high standard. As Vauban aged he sought to assure his legacy by passing his knowledge and authority on to his fellow engineers, the only ones who could properly conduct a Vaubanian siege. Although his treatises provided a basis for a curriculum, none of the major European powers established formal educational institutions for their engineers until the middle of the 18th century, which undermined their group identity and left the fate of his legacy in doubt. In spite of all Vauban’s efforts, the French were perpetually short of trained engineers, as were their enemies, while individual technicians varied widely in their abilities and knowledge. Even worse, whether following Vauban’s strictures or not, even the most skilled engineers faced significant hurdles transplanting their ideas onto the ground in front of a fortress. Every chief engineer’s idealized plan of attack was compromised since he was forced to rely on the goodwill and aptitude of non-engineers to carry out his instructions. When engineers failed to juggle adroitly the many components of the siege apparatus, their attacks deviated significantly from Vauban’s ideal. Implementing this Vaubanian ideal required an authority that overworked engineers did not have.
Proto-Professionalism

The first difficulty in implementing any kind of efficient attack was that it required a large number of highly-skilled engineers who knew how to apply his maxims to the specific siege at hand – professionally-trained members with an institutional base of support. Unfortunately for both French and Allied participants, the quality of those available for service varied greatly, for training in a pre-institutionalized age was informal and based on an apprenticeship model. The number of engineers provided by this informal system failed to supply the numbers needed to fight a major war in several different theaters. The experience and “good sense” Vauban depended on was a precious commodity, from the start sparsely distributed among the engineers and constantly eroded by the casualties of combat.

Ad Hoc Engineer Training

The uneven quality of engineers made the results of sieges far from certain. Despite Vauban’s attempts at rationalizing his craft, the institutional foundations that would assure his offensive legacy would not be established until later in the 18th century.257 Nor did any of Louis XIV’s peers seek to assure institutional continuity for their engineering corps before the siècle des lumières was in full swing. Many countries had long-established schools for pages and young noblemen, but these

dedicated only a small part of their curriculum to the technical details of the
engineer’s craft – especially drafting and geometry.  

In short, most engineers of the early 18th century continued to learn their basic geometry from a relative, from Jesuit schools, or from tutors in a field camp or garrison.  
The particulars of their craft were learned by watching and doing rather than by following a standardized, formal course of study in an academic setting intended to inculcate uniform tactical doctrine.  

Until 1690 the French engineering corps was further splintered between the Secretary of War Louvois and his rival the Secretary of the Marine (Colbert, succeeded by his son Seignelay). The conflicts between these two factions exacerbated professional tensions, for each corps had its own areas of specialization. Engineers in the Marine department focused their efforts on building and maintaining coastal fortifications, while the War ministry funneled most of its members into conducting sieges on land.  

Serving as commissaire-général des

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259 For one Frenchman’s brief account of his initial mathematical education as a cadet in a garrison town, see Anne-Marie Cocula, ed., Mémoires de Monsieur de La Colonie: maréchal de camp des armées de l'Electeur de Bavière, (Paris: Mercure de France, 1992), 51-52.

260 On the generally low level of military education in all services, see Lynn, Giant of the Grand Siècle, 269.

261 Jean-Baptiste Colbert, marquis de Seignelay took over his father’s post as Secretary of the Marine when Colbert died in 1683. Upon Seignelay’s death in 1690, all fortifications and engineers were centralized under Louvois’ authority. Louvois died the next year, however, and Louis appointed his son Louis-François-Marie Le Tellier, marquis de Barbezieux to be Secretary of War while giving Louvois’ post of directeur-général des fortifications to Michel Le Peletier de Souzy. Barbezieux’s sudden death in 1701 led Louis to appoint Michel Chamillart (already contrôleur-général des finances) as Secretary of State for War. On the administration of the French engineers in the first half
fortifications, Vauban was able to improve the situation he found on his entry into service by submitting candidates to his personal examination after their union in 1690, but this only became mandatory in 1697. Before then, aspiring engineers even in his own land service might be screened by the commissaire-général himself or by one of his appointed subordinates. Depending upon how competent each candidate was in the fundamental mathematics required, he would either be rejected outright or sent on to be tutored by one of the ingénieurs en chef in charge of a region’s fortresses. If the novitiate showed promise under such supervision, he would be given a brevet as engineer and usually specialize in cartography, hydrology, military architecture, or, most frequently, become a simple ingénieur de tranchée dedicated to the siege attack. Those deemed unsuitable for any of these tasks would likely be sent back to the infantry; their knowledge, however, could still be of use during sieges, where they might serve on an ad hoc basis as ingénieurs extraordinaires, as could any volunteer showing some aptitude. Thus, much of

of Louis XIV’s reign, see Trotter, Marshal Vauban and the Administration of Fortifications under Louis XIV (to 1691).


263 Lazard, Vauban, 84. The mathematician and member of the Académie royale des sciences Joseph Sauveur began this job in 1702


265 Vauban considered the ingénieur de tranchée as the least demanding post, an officer needing only three sieges to learn the basics. Blanchard, Les ingénieurs du Roy, 104-106.

266 On the French engineers’ education, see Blanchard, Les ingénieurs du Roy, 118-120.
their training was decentralized and in some respects beyond Vauban’s guiding hand, while many of those working in the trenches as extraordinary engineers did not have even this period of apprenticeship. In this environment Vauban instilled his tactical doctrine in the French engineering corps only with much effort.

At the same time as Vauban disseminated his techniques to his peers, he also sought paradoxically to protect his knowledge as state secrets.267 His attempts to shroud his work in secrecy largely failed. Various copies of his work circulated in manuscript if not available in print, plagiarized copies of his works (or, more accurately, pseudo-Vauban manuals) were published abroad as were those penned by his pupils (such as Goulon).268 Indicative of his wide audience is Fontenelle’s 1707 eulogy read to the Académie royale des Sciences, where we find mention of his 1704 manuscript dedicated to Burgundy as well as identification of his ‘innovations’ of parallels, trench cavaliers and ricochet fire among others.269 However, explicit association of Vauban’s name with specific tactics or techniques was extremely rare, even in French service. Even had Vauban been able to keep his writings secret, many of the elements of siegecraft were almost impossible to

267 Joan DeJean emphasizes Vauban’s desire to control the transmission of his ideas in Literary Fortifications, 34-36. Her distinction between his offensive and defensive works, however, is flawed as she conflates fortress design and fortress defense, hence her statement that contemporaries would have been “baffled” by Vauban’s treatise on defense.

268 Vauban’s first “official” siege treatise was published in 1737, though Fontenelle’s 1707 eulogy mentions Vauban’s 1704 treatise written for Burgundy. Earlier pseudo-Vauban versions appeared as well, such as Sébastien le Prestre de Vauban, The new method of fortification, as practiced by Monsieur de Vauban: with an introduction of all the terms pertaining to that art; made English, (London: Abell Swall sold by W. Freeman, 1691).

269 Reproduced in Virol, Les Oisivetés, 480 on Vauban’s offensive innovations (173-174 in Fontenelle’s original); 484-485 on the 1704 manuscript (169 in the original).
conceal. Fortresses could be reconnoitered during peace or wartime (major fortresses were often part of a touring nobleman’s itinerary), printed maps of greatly varying accuracy both of the various fortresses and of their attacks were available for sale to the public, and in wartime engineers might travel incognito in order to scope out an enemy’s defenses, while old enemies switched sides and brought with them their knowledge of the enemy and his places.270 Offensive tactics were performed in full view of the garrison, whose siege journals focused obsessively on the advance of the trenches to the neglect of the defender’s own actions; interested parties could cull published and manuscript accounts of various sieges (including the observations the garrison recounted) and of projected attack plans for tactical gain.271 The more important personages ordered their subordinates to make frequent reports,272 or sent their own agents to a siege in order to report on its progress.273 The period’s thirst for information described by Lucien Bély, combined with the constant migration of officers and engineers between different nations, ensured that few of Vauban’s siege tactics – in their broad outlines at least – would be kept secret for long.274 The general outline and the tactical components of Vauban’s attack were

270  For an example of a specific intelligence mission, see Postscript to the Postman, From the camp before Doway, 5/16/1710.

271  Such as the siege projects submitted to Marlborough against Mons and Tournai found in BL Add MSS 61199A #15, #21, #25.

272  Voysin reminded Bernières to make daily reports to him on the status of the siege of Douai and their relief efforts. AG A1 2225, #139, Voysin to Bernières 5/2/1710.

273  For accounts of various military intelligence networks of the period, see Lucien Bély, Espions et ambassadeurs au temps de Louis XIV, (Paris: Fayard, 1990), especially 217-230; 603-609.

274  Duffy sees the same broad dissemination of tactics in the Dutch Revolt. Siege Warfare, 89.
well-known beyond France, yet assimilation of the details remained an individual affair without institutions to codify their dissemination.

The Supply of Engineers

Compounding the problem of the widely-varying quality of engineers, the numbers of engineers serving during the Spanish Succession were quite small compared to the tens of thousands of men nation-states could muster. As an initial caveat as well as an indication of their low status in early modern society, it is extremely difficult to find information on the members of the late 17th and early 18th century engineering corps. While the names of the engineers employed by most states are often available, very few lists of which engineers participated at specific sieges exist, especially the lower-ranking ordinary and extraordinary (i.e. “volunteer”) engineers.275 Contrasted with the many lists of regiments and general officers participating in a siege, it is exceedingly difficult to find the names of the directors of the approaches (i.e. those directly under the chief engineer), while sources almost never mention the number of low-ranking engineers serving under them (numbering in the dozens), much less their individual names.276 In only a few siege accounts are specific engineers named even when they are reported killed or wounded, whereas injured officers in the infantry and cavalry are frequently singled

275 For a list of the Dutch engineering corps, see Ringoir, Afstammingen en voortzettingen der génie en trein, (’s-Gravenhage: Militair-Historische Bijdragen van de Sectie Krijgsgeschiedenis, 1980). For the French, consult the list cited by Blanchard in Les ingénieurs du “Roy” de Louis XIV à Louis XVI, 120-121. For a rare enumeration of the Allied engineers present at a specific siege (Le Quesnoy 1712), see J.W. Wijn, Het Staatsche Leger: Het Tijdperk van de Spaanse Successieoorlog, 1702-1715, 8 vols. 3 parts (The Hague: Martinus Nijhoff, 1959), 8 3:416 (this list may only include States engineers).

276 Even Augoyat’s and Allent’s histories of the French engineering corps rarely name more than a few of the top engineers at each siege.
out by name in the correspondence. Otherwise, the individual engineers are largely ignored by the Court’s and general officers’ correspondence. This is not that surprising considering they were, by and large, a heterogeneous corps composed mostly of bourgeois and recently ennobled families (four-fifths of the French total in 1691), while only a rare few could trace their noble lineage back more than a century. Curiously, even the siege journals written by engineers rarely provide such details. Nor do the Allies mention their engineers with any greater frequency. As a result, little detailed research has been conducted on the period’s national engineering corps, existing studies limited by and large to recounting the lives of the most prominent of each nation’s engineers.

The leading engineering power of the age, Louis XIV’s France, fielded the best organized corps, as well as the only one studied in any detail. For his late reign he could call upon an estimated 200-300 engineers at any one time, two-thirds under

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277 Lecomte notes that the siege relations from 1644 to 1654 do not mention the engineers involved. “Du service des ingénieurs militaires en France pendant le règne de Louis XIV,” Revue du génie 25 (1877), part 1:116. This is also the case for most Spanish Succession siege journals and correspondence. For a notable exception that mentions several individual engineers by name, see AG A1 1988, #57 Relation ou journal du siège de Menin, written, of course, by a lower-ranking engineer.


279 The standard (prosopographical) work for France is Anne Blanchard, but even here information on these French technicians becomes plentiful only towards the middle of the 18th century. More recently, the beginnings of the modern Spanish engineering corps c. 1715 have been explored by Juan Miguel Muñoz Corbalan, summarized in his “Les derniers ingénieurs du roi de France en Espagne,” Revue historique des armées 1993, 24-31.
the Secretary of War and the rest with the Marine.280 During the Spanish
Succession, the French recruited a total of 329 engineers from 1701 to 1715, these
numbers representing a dramatic increase from what they brought in during the Nine
Years’ War. As in previous wars, most of these newly-minted engineers were
released once the Treaty of Utrecht was signed, contributing to the lack of
professionalism in the corps.281

To this total France’s allies could add only a few engineers, for the Spanish
Flanders engineering corps was extremely small. The most notable among them, the
Flemish Georges-Prospero Verboom, became suspect after his lands were captured
by the Allies in the wake of their battlefield victory at Ramillies (23 May 1706).
Imprisoned, he was eventually released in 1708 and journeyed to Spain to oversee
the newly constituted Spanish engineering corps.282 Maximilien II Emmanuel,
Elector of Bavaria and France’s other chief ally, similarly lacked an experienced
engineering corps. The Frenchman Jean de La Colonie left French service in 1702 to
serve as chief engineer in their service, since the Elector had extremely few

Vauban, Traité, 56. For secondary discussions, see Blomfield, Vauban, 99; and Chandler, The Art of
Warfare in the Age of Marlborough, 221


282  Wauwermans, “Le marquis de Verboom ingénieur militaire flamand au service d’Espagne au
XVIIe siècle” Annales de l’Académie royale d’archéologie de Belgique 4th series vol 10 1891; Josy
Muller, “Les ingénieurs militaires dans les Pays-Bas espagnols (1500-1715), ” Revue internationale
d’instruction dans les Pays-Bas espagnols au XVIIe siècle,” Intermédiaire des Généalogistes, (1960),
88; Duffy, The Fortress in the Age of Vauban and Frederick the Great, 98-99. On the Spanish
engineering corps more generally, see Martine Galland-Seguela, “Introduction à l’étude du corps des
ingénieurs militaires espagnols au XVIIe siècle,” Histoire, économie et société, 8 (1989), 551-562;
and Juan Miguel Muñoz Corbalan, “Les derniers ingénieurs du roi de France en Espagne,” which
emphasizes the large French contribution.
engineers (his maritime allies had provided them in the previous war), and their experience was limited to copying fortress plans.\textsuperscript{283} Unable to rely on such allies, France was fortunate to have a well-established corps of its own, even if its composition and numbers fluctuated dramatically from peacetime to war.

The Sun King’s enemies lacked their opponents’ large population base and therefore had a smaller pool to recruit from, but they could nonetheless augment their home-grown talent by recourse to the mercenary market. Pragmatic rather than dogmatic, Vauban complained about the many engineers lost as a result of His Most Christian Majesty’s act of conscience, the revocation of the Edict of Nantes in 1685.\textsuperscript{284} Many of these went into Dutch service; this cosmopolitan republic had a long tradition of military and civil engineering (including more than a century of positional warfare) and relied upon its barrier fortresses to hold back Louis’ marauding armies. Among the Huguenots in the States’ service, the highest ranking were Des Rocques and Lucas Du Mée, who in tandem would be in charge of most of the Allied sieges in Flanders after the death of the Dutch lieutenant-general of infantry and director-general of fortifications Menno van Coehoorn in early 1704.\textsuperscript{285} The Dutch also filled out their ranks with German engineers, allowing them to field

\textsuperscript{283} Cocula, ed., \textit{Mémoires de Monsieur de La Colonie}, 167, 213-214.

\textsuperscript{284} Vauban, \textit{Traité}, 56.

\textsuperscript{285} On Des Rocques, see Augustus Veenendaal Jr.’s entry in Linda Frey and Marsha Frey, eds., \textit{The Treaties of the War of the Spanish Succession: An historical and critical dictionary}, (Westport, CT: Greenwood, 1995), 132-133. The well-known Huguenot author Charles Goulon had also served with the Dutch after leaving post-Nantes France, finishing up his career in Imperial service in Italy. See F.J. Hebbert, “The Memoirs of Monsieur Goulon.”
a large corps over the course of the war, at least 275 engineers of all ranks seeing service during some point of the War of the Spanish Succession.\textsuperscript{286}

The Dutch shouldered the Allied burden of siegecraft in much the same way as the French did, as neither British nor Imperialist allies could make a significant contribution. The British Isles had few engineers to send to the Allies’ sieges. Their native school was necessarily small given the limited exposure their troops had to the latest techniques of siege warfare.\textsuperscript{287} Unlike the more specialized technicians on the Continent, the English engineering and artillery corps shared a single administrative organization and even shared some of the same personnel.\textsuperscript{288} The commission lists of English engineers between 1707 and 1714 total thirty-seven individuals listed as “engineers” in all theaters (including North America).\textsuperscript{289} Their expertise in siegecraft (as contrasted with fortress design and construction) was largely dependent on gaining experience across the Channel: much of the siege warfare conducted in the Irish campaigns of the 17\textsuperscript{th} century, for example, pitted either Irishmen with continental experience against one another or Jacobite-allied

\textsuperscript{286} This figure comes from a count of Ringoir’s Afstammingen en voortzettingen der génie en trein. Wijn, Het Staatsche Leger, 8 3:492 mentions 34 engineers first class and 22 engineers second class on their roster. On the (relatively rudimentary) cartographic output of Dutch engineers, consult F.W.J. Scholten, Militaire topografische kaarten en stadsplattegronden van Nederlanden, 1579-1795, (Alphen aan den Rijn: Canaletto, 1989). His count of Dutch engineers in the staten van oorlog (the annual military budget) fluctuate between forty and eighty per year over the course of the Spanish Succession. At the end of the previous war (1697), there were about seventy, mostly Huguenot. Duffy, The Fortress in the Age of Vauban and Frederick the Great, 66.

\textsuperscript{287} On England’s backwardness in siegecraft c. 1700, see Scouller, The Armies of Queen Anne, 173-187.


Frenchmen against William III’s Dutch engineers.\textsuperscript{290} The best studied engineers of the period are the three Irish brothers Michael, John, and Jacob Richards. Indicative of England’s backwardness, Jacob followed the standard practice of being sent into foreign service (in this case, Imperial) in order to learn the Continent’s siege techniques earlier in the 17\textsuperscript{th} century – those who remained in English pay also sought experience across the Channel.\textsuperscript{291} Forced to travel overseas for employment, all three brothers saw service (under a number of different rulers) in England, Hungary, Ireland, Flanders, Newfoundland, Venice, Poland, Portugal and Spain.\textsuperscript{292} Otherwise, there were few English, or even British, engineers of note on the Continent, the most prominent serving in Spanish Succession Flanders being Holcroft Blood (who learned his trade while in French service) and John Armstrong.\textsuperscript{293}

One indication of how little the Allied armies could rely on British engineers is displayed in Marlborough’s response to a request from the Board of Ordnance,


responsible for both the engineers and artillery train, for technicians to see to

England’s home defenses:

I have received your letter of the 22nd of May, and am sorry to understand the difficulties the Board is under for want of engineers. They are so scarce with us, that I cannot readily think of one to be sent from hence; when any such occurs I shall not fail to dispatch him away. In the meantime I hope England is not so destitute but that you may find a fit person to be employed in the service required, while Mr. Edwards is, by her Majesty’s order, continued elsewhere.294

England must have indeed been destitute of suitable candidates, for the Board informed Marlborough four years later that: “We only have four engineers here in Great Britain who are employed in the several places... but we wish that there could be found other engineers of abilities to join with them respectively here.”295 This branch of service would continue to be poorly represented in British service, for even in the Napoleonic wars their engineers were still found to be in a “pathetic” state.296

The Austrians, who contributed substantial numbers of troops and their best commander to the later Flanders campaigns, also provided a limited number of engineers, but primarily concentrated on defending their German and newly-

294 Murray, ed., Letters and Dispatches, 2:105 from Elft 6/16/1705. See also Murray, ed., Letters and Dispatches, 1:595 Marlborough to the Earl of Leven, St. James 2/10/1705 O.S., when winter quarters freed up at least a few for domestic service. See also Murray, ed., Letters and Dispatches, 4:32, Marlborough to the Board of Ordnance, Bellingen 5/28/1708.


acquired Italian holdings, as well as reconquering rebellious Hungary.\textsuperscript{297} Many of the German princes provided even their subsidy troops reluctantly, and along the Rhine river they could not provide the requirements demanded of major sieges: “In short the Imperialists undertake sieges without cannon, ammunition or engineers with as much assurance as they did a war without money credit or troops.”\textsuperscript{298} Marlborough further signaled the confederate army’s reliance on the United Provinces’ States-General when discussing the potential sieges of Metz and Thionville: “we have seen by long experience that we can by no means rely upon any promises from Germany, so that the whole expense of this enterprise must unavoidably fall upon the Dutch, which I can hardly think they will be willing to bear.”\textsuperscript{299} As Marlborough knew, it fell to the United Provinces to provide the vast majority of engineers for the many sieges in the Low Countries and even in Germany.

The Demands on Engineers

With only two Western European powers able to field a significant engineering contingent, it is not surprising that, during a period of siege-dominated warfare, the supply of engineers was rarely able to keep up with the demand.

\textsuperscript{297} On the lacunae of information on these engineers in Austrian service, see Erik Lund, \textit{War for the Everyday}, 44, and 62 note 111. On the significant role of Catholic, noble, Italian and German engineers in the Imperial army’s technical branches (contrasted to the Protestant middle-class stereotype) as represented by the general officers, see Lund, \textit{War for the Everyday}, 43-47.


\textsuperscript{299} Murray, ed., \textit{Letters and Dispatches}, 1:94, Marlborough to the English diplomat George Stepney, Bonn 5/9/1703.
France, even with several hundred engineers, never had enough to divide them comfortably between four theaters of operations: from the Channel to the Ardennes in the Low Countries, on at least two fronts in Iberia, along the Rhine, and in northern Italy and the French Alps. In each region, a dozen or more threatened fortifications had to be repaired and put in a state of defense, while dozens more engineers would be required for each individual siege that was undertaken. Two factors provided the French with a small amount of consolation as the war turned against them. First, the theaters under contention dwindled as their fortunes waned—the Italian and German theaters became secondary to the mounting importance of Flanders. Second, their defensive posture, while demanding engineers to cover a large swathe of threatened territory, required fewer engineers than what a besieging force would demand.

In addition to the mental demands required of engineers, the dangers associated with being an engineer kept every nation’s pool of engineers small. Particularly hazardous were the risks associated with besieging a town. Vauban’s dozen sieges under Condé had already taught him the deleterious effect attrition could have on the corps’ expertise:

What one must say in their favor, however, is that their science demands a great deal of courage and spirit, a solid genius, perpetual study and consummate experience in all the principal parts of war. And if nature rarely brings together in one man the first three qualities, it is even more extraordinary to see him escape the violence of our sieges and live long enough to acquire the other two.... The profession is great and very noble, but it demands a genius especially

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300 As reported in *The Postman*, the 1710 siege of Douai required more than fifty engineers. See the 4/25/1710 O.S. issue #1876, from Brussels 5/2/1710 N.S.
made for it and continuous application throughout many years, something that nature and the vigor of our sieges accord but rarely.\footnote{301}

These “martyrs of the infantry” in the attack trenches were exposed to danger constantly, much more so than their peers in garrison, and even more than most other besiegers, who were to serve in the trenches only one day out of every four or five.\footnote{302} In charge of developing a plan of attack, besieging engineers were to reconnoiter as close to the covered way as possible with only a small detachment (so as to avoid detection), exposing themselves not only to possible capture by enemy parties,\footnote{303} but also to the garrison’s gunners, who were ordered to fire on those who ventured too near the glacis.\footnote{304} From the very start these technicians courted mortal danger, as the chevalier de Quincy illustrated in his account of the French siege of Marchiennes in 1712:

The trench was therefore opened the night of the 28\textsuperscript{th}. M. de Villars [i.e. Villars-Lugein], chief engineer and brigadier of the King’s armies, was killed with three other engineers as they were observing

\footnote{301} Rothrock, ed., \textit{A Manual}, 169.

\footnote{302} For example, the otherwise bloody siege of Tournai cost the French garrison only two engineers killed and five wounded, while Aire’s garrison numbered only eight engineers to begin with. On Tournai, AG A\textsuperscript{1} 2152, #145 Estat des officiers, soldats, dragons, invalides, tués et blessés pendant le siège de la ville et citadelle de Tournai; on Aire, AG Article 15 Section 2 §1 Aire Carton 1, #5 \textit{Journal du siège d’Aire en 1710 par un père Jésuite qui étoit dans la ville}, 22. For a general discussion of engineer casualties, see Charles Albert Samuel Lecomte, \textit{Les ingénieurs militaires en France pendant la règne de Louis XIV}, (Paris: Librairie militaire, 1904), 121. This book is a collated version of his earlier “Du service des ingénieurs militaires.”

\footnote{303} Siege manuals encouraged garrison commanders to send out parties to capture such reconnoitering parties. For example, see Rothrock, ed., \textit{A Manual}, 39. For attempts at an actual siege, see AG A\textsuperscript{1} 1940 #22 \textit{Journal du siége d’Ath} 10/2/1706, published in Vault and Pelet, \textit{Mémoires militaires}, 6:563.

\footnote{304} See for example, AG A\textsuperscript{1} 1939 #204 \textit{Journal du siége de Menin}, 7/28/1706, published in Vault and Pelet, \textit{Mémoires militaires}, 6:536.
together the terrain where we were to open the trenches... The same cannonball sent all four of them to the afterlife.\textsuperscript{305}

After they had drawn up a plan of attack, engineers were then called on to expose themselves day after day (and night after night) supervising and directing the workers in the trenchworks. Engineering skills were often demanded at the most dangerous point of attack, where only technical knowledge could overcome stiff resistance. As the Englishman Humphrey Bland explained:

\begin{quote}
And tho’ it is not only the Duty of the Engineers to instruct the Officers, that they may direct their Men in the making of the Works; but likewise to Visit them from time to time, to see that each Part has its true Proportion; yet as those Gentlemen are liable to Accidents, from the Danger they are often exposed to, that may render them uncapable of performing their Duty, by which the Works may be retarded, or ill executed, unless the Officers, from their own Experience, can supply the Defect; I thought the inserting of the above Particulars would be of use to young Officers, by giving them some Notion what Trenches are, and in what manner they are made, that, when they shall be ordered on those Commands, they may not be entirely at a loss how they are to proceed, in case they should fail of the necessary Directions and Assistance of the Engineers, which proves too often the Case at most Sieges; nor is it to be much wondered at, for if the Engineers do their Duty, they are so often disabled, that their Want must be supplied by the Diligence and Skill of the Officers.\textsuperscript{306}
\end{quote}

The particularly perilous job of establishing a lodgment on the covered way demanded technicians to direct the workers under fire, all the while facing the constant threat of garrison mines and counter-attacks.\textsuperscript{307} Building properly-blinded

\begin{footnotes}
\item[305] Lecestre, ed., \textit{Mémoires du chevalier de Quincy}, 3:161.
\item[306] Humphrey Bland, \textit{A Treatise of Military Discipline; in which is laid down and explained the duty, of the officer and soldier, thro the several branches of the service. By Humphrey Bland, Esq; Lieutenant-Colonel of His Majesty's Own Regiment of Horse}, (London: for Samuel Buckley, 1727), 264-265.
\item[307] Sixteen were killed or injured in the first storm on Lille’s counterscarp; see Des Rocques’ letter in John Campbell, \textit{The military history of the late Prince Eugene of Savoy, And of the Late John},
\end{footnotes}
galleries and bridges across ditches required an engineer’s oversight as well, placing them again at the point of most resistance. Expected to keep the big picture in mind while attending to the minutest detail of the trenchworks, engineers both high and low necessarily put themselves in harm’s way throughout a siege. Those who were fortunate to live to see a decade or more of sieges undoubtedly had numerous wounds to show for their service. Vauban’s forty-plus sieges gave him over a dozen injuries (including a prominent scar on his cheek received at the 1667 siege of Douai), while his younger second cousin Dupuy-Vauban claimed sixteen injuries.\footnote{Maurice Sautai, “Une lettre inédite du Gouverneur de Béthune du Puy-Vauban,” Bulletin de la commission historique du département du Nord 28 (1911), 518, Dupuy-Vauban to Orléans. In addition to his broken leg suffered at Tournai, Des Rocques also broke a bone late in the siege of Douai. Algemeen Rijksarchief (ARA), collectie Staten-General (SG), vol. 5185-2, Field Deputies to States-General, Brebières 6/8/1710. Du Mée was killed attacking Tournai’s citadel.}

Field officers seeking promotions often mentioned a wound suffered on the field of battle as evidence of their faithful service – engineers fortunate to serve the same number of years could count a dozen injuries or more. When the threats posed by powder and lead are combined with constant laboring in the heat or cold in the often squalid conditions of trench warfare, the engineer’s life was not an easy one. With such high attrition rates suffered by such a small group, it is not surprising that there were rarely enough skilled overseers in the trenches to approximate Vauban’s ideal attack.

The many Low Countries sieges of the Spanish Succession steadily bled the engineering corps white. Even the French found themselves short of skilled men,

\cite{Duke of Marlborough...}
spread as they were across four theaters. While on the defensive in Flanders, they were hamstrung by the need to shuttle their engineers between the many threatened fortresses.\footnote{For example, Valory was sent from Douai to inspect Valenciennes a mere week before the former was invested. AG A¹ 2214, #96, maréchal de France Pierre d’Artagnan comte de Montesquiou to Voysin, 4/14/1710. We can find other concerns about assuring engineers would get into a town before it was fortified, such as at Bouchain, AG 1 K 299 (Papiers Montmorency-Tingry) folder 7, Le Peletier de Souzy to Christian-Louis, chevalier de Montmorency-Luxembourg 4/12/1711.} On the defensive, their losses were limited in contrast with the Allies, as their engineers were less exposed than those toiling in the trenches. Nonetheless, even after this decade of “respite” they still lacked enough experts when the maréchal de France Louis-Hector duc de Villars went back on the offensive in 1712. Hopes of conducting two Flanders sieges at the same time were dashed when a French general declared that they simply did not have enough engineers to manage two concurrent attacks.\footnote{AG A¹ Carton 8 folder 2 (Flandre août-octobre 1712), maréchal de camp Gabriel, chevalier de Hautefort to Louis-Auguste Bourbon, duc du Maine 9/29/1712. In his discussion of army sizes and siege trends, Lynn highlights the manpower demands concurrent sieges required. To this we should add the difficulty of freeing up nearly one hundred engineers for two simultaneous sieges – this would have required almost a third of France’s entire corps! Lynn, “The trace italienne,” 311-312.} As it was, Villars had to scrounge up engineers and gunners from throughout the theater in order to conduct the siege of Douai.\footnote{Marquis de Vogüé, ed., Mémoires du Maréchal de Villars publié d’après le manuscrit original, 6 vols. (Paris: Librairie Renouard, 1889), 3:161; and AG A¹ 2382, #138, Bernières to Voysin, 8/25/1712.} Le Quesnoy also saw inexperienced, undersized engineer brigades conducting the attacks.\footnote{AG Article 15 Section 2 §1 Douai folder, #19 Siège du Quesnoy en 1712, 12 and 16.} The butcher’s bill for the French corps between 1701 and 1714 in all four theatres came to more than fifty-four engineers killed by enemy fire.\footnote{Blanchard, Les ingénieurs du Roy, 119. The sieges in the next major war would claim one-sixth of the force between 1744 and 1748, and helped spur the creation of an official Ecole du Génie at Mézières to provide a more regular supply (189-191). Of 1,490 French engineers between 1691 and
The Allies were even worse off than their opponents. Throughout the war the Dutch field deputies frequently warned the Dutch Grand Pensionary (raadpensionaris) Anthonie Heinsius of how poor the conditions of service were for their engineers. The Dutch discovered that they alone would have to bear most of the burden in their very first siege of the war, that of Kaisersweert on the Rhine in the Archbishopric of Cologne. With separate Prussian and Dutch attacks, the Prussians’ advance lagged far behind theirs. The Raad van State’s field deputy Adriaen van Borssele, heer van Geldermalsen, advised Heinsius that they had to delay their attack because their ally lacked engineers and artillery, which the States-General would have to supplement with their own. The need to coordinate the two attacks, bad weather and garrison reinforcements forced the Dutch to postpone on several occasions a storm of the covered way throughout the month of May; in 1791 traced by Blanchard, 14% of them were killed in combat, 22% of the lower-ranking engineers and only 8% of the ingénieurs en chef. This percentage is probably as low as it is due to the decreased frequency of major wars fought by 18th century France as contrasted with the numerous sieges in Louis XIV’s many wars. Blanchard, Les ingénieurs du Roy, 292-301.

The raadpensionaris Heinsius became the most important Dutch political figure after Stadhouder William of Orange died in early 1702, particularly in the field of foreign policy. A close associate of William, his central position in government encouraged correspondents from throughout the Dutch military and diplomatic communities. The Dutch field deputies were annually appointed by the States-General to serve as a liaison with the army in the field and to coordinate the army’s administration with their paymasters, the provincial States. Their numbers varied by year (from three to six), but Holland and the Raad van State (literally “Council of War”) – the committee in charge of daily military administration – always had their own representatives among them.

the end, it would be forty-two days before it could finally be implemented.\footnote{Veenendaal, Jr., ed., Briefwisseling Heinsius, 1:275 #477, Wassenaar-Obdam to Heinsius, 6/9/1702; Wijn, Het Staatsche Leger, 8 1:688, Blainville to maréchal de France Louis François, duc de Boufflers, Kaisersweert 6/10/1702.} The introduction into the theater of British troops later that year and Imperial troops in 1708 did little to improve the situation. The reliance of the Allies on the States’ engineers would continue throughout the war: the Dutch were the only state well-positioned to provide the large number of siege experts, munitions and breaching pieces that the theater’s many sieges would require.

The Flanders sieges of 1703 through 1705 provided only a small threat to the Allied engineers, but beginning in 1706 they began suffering significant losses. Stronger fortifications and larger garrisons demanded more engineers to oversee more extensive trenchworks; engineer casualties accelerated as well. The garrison of Menin, despite its poor performance, still managed to kill five Allied engineers during the short defense.\footnote{ARA Collectie van der Hoop (CvdH), 142 list printed in Wijn, Het Staatsche Leger, 8 2:759.} By the end of the 1706 campaign, the Frisian field deputy Sicco van Goslinga was already petitioning Heinsius on behalf of the technicians, reporting that of thirty-four engineers participating in the siege of Ath, only fourteen were still available for service after a mere twelve days of open trenches.\footnote{Veenendaal, Jr., ed., Briefwisseling Heinsius, 5:570 #1105, Goslinga to Heinsius, Ath 10/2/1706. The overall casualties for this siege totaled only 843 men. Heinsius shared Goslinga’s concerns, and encouraged him to keep an eye out for promising soldiers that might be willing to join the engineers, “the most important people in the army,” 5:581 #1127, Heinsius to Goslinga, The Hague 10/6/1706.}

Their shortage of engineers became particularly acute as they forced their way through Vauban’s \textit{pré carré}. During the two-month siege of the town of Lille
in 1708, sixty-five engineers were wounded or killed. Goslinga reiterated his earlier pleas on their behalf:

> Our infantry is weak and exhausted, half of our engineers are dead or wounded. We lost three just this night, among others the director Longuené. On this subject I must repeat again what I have said many times, that we do not adequately reward them. They are almost all in dire straits, they have few posts, often poorly paid if at all. And with this situation there is no hope of them exerting themselves, the highest ranking must limit themselves to the rank of lieutenant-colonel. They are much better treated in France and everywhere else. What will happen in the future if no one wants to serve in a corps where one is almost certain to meet death on one side and neither profit nor honor on the other? The director Du Mée justified his conduct at this siege to Eugene in the following terms:

> But I hope your Highness will accept this [siege journal] as the Tribute of my Duty, and then I am sure the Publick will forgive the errors I may commit upon this Account, or have already committed, in the management of that part of the siege under my care, which I discharged to the best of my capacity, considering the hardships the directors of that siege were forced to undergo by the loss of so many engineers, which were more considerable for their number and experience, than has been known to be lost in any siege these hundred years.

But the campaign was not yet finished, for Marlborough hoped to conduct yet one more siege after Lille’s citadel fell, that of Ghent. For this task, he informed Heinsius of the need for even more engineers, “for we have very few left.”

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320 Veenendaal, Jr., ed., *Briefwisseling Heinsius*, 7:519 #1130, Goslinga to Heinsius, Lille 9/13/1708.

321 de May, *An exact journal of the siege of Lille*, The Dedication, 2.

322 Van ‘t Hoff, ed., *Marlborough-Heinsius Correspondence*, 413 #693, Marlborough to Heinsius, Beerlegem 12/5/1708.
Goslinga repeated his petition on behalf of the engineers again as they lost their lives and livelihood the next year before Tournai. He warned Heinsius that the combination of poor wages, few opportunities for advancement and high casualties would decimate their ranks: “Allow me to advocate to you the interests of the engineers, you will lose them completely if you do not compensate them better with both promotions and money; it is a terrible job, there are already a good number dead or wounded; consider this as soon as possible, I beg you.”323 The highest ranking among them had already been put out of service: Des Rocques broke his leg before the trenches at Tournai were even opened, and at the end of August Du Mée suffered a fatal head wound during the siege of the citadel.324 The Raad van State’s field deputy Philip Frederick Vegelin van Claerbergen echoed Goslinga’s concerns: “There are no other directors here, and as for the engineers, of which there are only a few, their insubordination is increasing daily, and I fear that this cannot continue much further if we do not encourage them with promotions or some other improvement in their service.”325

The 1710 campaign exerted even larger strains on the engineering corps. At the early siege of Douai, Vegelin van Claerbergen repeated the by-now-commonplace complaint, warning that they had twenty to thirty engineers wounded

323 Veenendaal, Jr., ed., Briefwisseling Heinsius, 9:94 #190, Goslinga to Heinsius, Tournai 7/25/1709. He reiterated his request a week later, counting ten already out of service, 9:115 #236, Goslinga to Heinsius, Tournai 8/1/1709.

324 On Du Mée, see Murray, ed., Letters and Dispatches, 4:585 Marlborough to Secretary of State for the Northern Department Henry Boyle, Tournai 8/31/1709.

325 Veenendaal, Jr., ed., Briefwisseling Heinsius, 9:238 #497, Vegelin van Claerbergen to Heinsius, Tournai 9/7/1709. Marlborough also warned of the dwindling number of engineers at the siege. Murray, ed., Letters and Dispatches, 4:528, Marlborough to van den Bergh, Tournai 7/4/1709.
or killed already in this one siege, and no more volunteers were stepping forward to replace them.\textsuperscript{326} Marlborough explained the reasons for their delays before the mediocre fortress: “The town, through the strength and obstinacy of the garrison, has held out longer already than we expected; the want of engineers has not a little contributed towards it.”\textsuperscript{327} By the end of the siege, the Dutch counted twelve dead and another thirty-three wounded, while only the engineers’ dented cuirasses had prevented even further losses.\textsuperscript{328} Marlborough informed a correspondent of the continuing shortage of subordinate technicians at the next siege: “I am almost ashamed to tell you that we are still before Bethune, but we lie under a great misfortune of being obliged to carry on the war here by sieges almost without engineers.”\textsuperscript{329} Des Rocques complained a mere week after he had opened trenches before Aire that he had barely enough engineers (six at each attack) to rotate their duty.\textsuperscript{330} In the 1711 campaign, the single siege of Bouchain did not approach the bloodletting of the previous years’ marathon of sieges, yet it still cost the Allies nine

\textsuperscript{326} Veenendaal, Jr., ed., \textit{Briefwisseling Heinsius}, 10:478 #956, Vegelin van Claerbergen to Heinsius, Brebières 6/26/1710. By the end of the siege, this number reached 46 engineers (30% of these were killed). C. Hipssich, \textit{Spanischer Successions-krieg. Feldzüge 1710}. (Vienna: 1887), 607 #16 Verluste der Alliierten während der Belagerung von Douay, vom 4 Mai bis zum 25 Juni 1710, C.

\textsuperscript{327} Murray, ed., \textit{Letters and Dispatches}, 5:44, Marlborough to the English ambassador to Berlin Thomas Wentworth, baron of Raby, Douai 6/7/1710.

\textsuperscript{328} Wijn, \textit{Het Staatsche Leger} 8 2:805. On the many damaged breastplates needing replacement, see ARA \textit{Raad van State} (RvS), vol. 688-1, Vegelin van Claerbergen to \textit{Raad van State}, Douai 7/9/1710.

\textsuperscript{329} Murray, ed., \textit{Letters and Dispatches}, 5:104, Marlborough to the military commander James Stanhope, Villers Brulin 8/18/1710. The dispositions for the siege called for 10-12 engineers at each approach. ARA RvS 1897, #8 Mémoire pour le siège en question fait le 13 juillet 1710. Marlborough appealed to the deputies at Brussels to send a reinforcement if at all possible. Murray, ed., \textit{Letters and Dispatches}, 5:126, from Saint André 9/4/1710.

\textsuperscript{330} Veenendaal, Jr., ed., \textit{Briefwisseling Heinsius}, 11:159 #291, Des Rocques to Heinsius, Aire 9/18/1710.
dead and thirteen engineers injured. By the last year of Dutch participation (1712), their engineering corps had been decimated by a dozen major Flanders sieges. Those available during the campaign consisted of three directors (Christiaan Frederik Hertel, Zas van den Bosch and Bruijn), as well as thirty-six ordinary engineers, all headed by Des Rocques. Another thirty-five extraordinary engineers would join them for the first siege of Le Quesnoy. After this single, short siege, almost one third of those available at the beginning of the campaign had been killed, wounded or deserted. As quickly as they could fill their ranks, the rigors of sieges depleted them.

Despite English accusations that the Dutch engineers were protected by interests within the States-General, the perpetual shortage of engineers meant that Allies had few alternatives. Even the harshest detractors acknowledged that the engineering ranks were constantly short of capable members – “incompetents” at the top could hardly be replaced from below when their subordinates were censured just as harshly. The shortage of qualified engineers forced highly-critical commanders to set aside charges of gross incompetence and keep those responsible for botched attacks in positions of authority. The 1710 campaign illustrates the point. Des Rocques retained his post as director-general of fortifications despite

331 This total comes from Wijn, Het Staatsche Leger, 8 3:309; An English participant John A. Millner claims nineteen engineer casualties in A Compendious Journal of all the Marches, Famous Battles, Sieges And other most noteworthy, heroical and ever memorable Actions of the Triumphant Armies, Of the ever glorious Confederate High Allies..., (London: 1733), 313. For specific examples, consult The Post Boy, 9/4/1711 O.S. #2546, Journal of the Siege of Bouchain continued; and a further continuation of this journal in The Post Boy 9/11/1711 O.S. #2549.

332 Wijn, Het Staatsche Leger 8 3:416-418.

333 BL Add MSS 61310, f. 3, Blood to Marlborough, Menin 8/2/1706.
widespread condemnation from both British and Dutch generals, but after his widely-criticized attacks at Douai, he was initially refused the direction of Béthune as a veiled punishment. The Dutchman Hertel, a director of approaches, replaced Des Rocques, but fared little better. A week after investing Béthune he had still not opened the trenches while Des Rocques provided evidence that he had significantly underestimated the strength of the town’s works in his projected attack. Soon afterward Hertel returned to his original position and the Huguenot was put back in charge of the siege. The return of the “discredited” Des Rocques indicates the difficulties the Allies encountered finding skilled engineers. To those who criticized the competence of the engineers, Heinsius could offer little assistance. Despite telling Goslinga several years earlier to keep his eye out for “extraordinary” soldiers who might be cultivated as “the most necessary men in war,” he grumbled several years later at the meager results of this effort: “I am frustrated to hear that our

334 Veenendaal, Jr., ed., Briefwisseling Heinsius, 10:546 #1095, Holland field deputy Willem Hooft to Heinsius, Aubigny 7/16/1710; and Ryksargyf Friesland (RA), familie collectie Eysinga-Vegelin van Claerbergen 775, Johan Vegelin van Claerbergen (younger brother of the Raad van State field deputy Philip Frederik), Beschryvinge van myn Reys en veltogt de anno 1710, 29 7/10/1710. The cover for Des Rocques was that he had to oversee the repairs to Douai’s fortifications. ARA RvS 688-2, Vegelin van Claerbergen to Raad van State, Aubigny 7/14/1710; and Veenendaal, Jr., ed., Briefwisseling Heinsius, 10:519 #1044, Vegelin van Claerbergen to Heinsius, Douai 7/7/1710.

engineers are so incompetent, but I do not see any remedy. If we were able to get
them from elsewhere, this would be good.”336

In short, a decade of sieges resulted in constant attrition, while such dangers –
coupled with poor compensation – discouraged volunteers from filling the
depleted ranks of an already small force. Over the course of the Spanish Succession,
sieges had cost the Dutch engineering corps – the one Allied country able to support
a large and experienced engineering establishment – dozens of dead and probably
two or three times as many wounded, many suffering injuries on multiple
occasions.337 As both the French and Allies knew, the first requirement of Vauban’s
“scientific” tactics, technical experts to conduct them, was a precious commodity. It
slowly bled away just when they were being put to good use.

Command and Control Friction

Even if a besieging force could muster an adequate number of competently-
trained engineers, their knowledge and expertise would count for little if their orders
were either ignored or badly applied. The battle-centric modern historiography gives
little reason to expect such resistance. One of Villars’ biographers provides us with
the conventional wisdom: “A war of siege, however adventuresome and honorable,
left little initiative for the individual commander.”

Students of Marlborough concur:

Marlborough could do little to speed up siege operations. The British army still did not have the organization and personnel with the experience and technical expertise to carry out a major siege on its own, but had to rely on Dutch engineers. They were nothing if not methodical, meticulously following conventional methods.

Despite this impression, several sources of friction steadily eroded the engineers’ ability to conduct the siege according to Vauban’s strict standards. Organizational factors in particular worked against those trying to implement an efficient Vauban-style attack – engineers were poorly integrated within the command structure of the regular army, thus they had to struggle to compel recalcitrant non-engineers to follow their advice. First and foremost, general officers’ varying opinions of the engineers and their profession necessarily influenced the willingness to accept their recommendations. Frequent conflicts between the engineers themselves could further complicate the situation by presenting siege commanders with a cacophony of voices on the best tactics to pursue. Although the artillery was integral to the siege attack, its officers also sought to maintain their independence from the engineering corps. As a result, the engineers’ “expert” opinions were often contradictory and always only one consultative voice among many competing for the attention of the commander. With a plan of attack finally agreed upon, engineers then had to rely on non-engineers to translate their sketches onto the terrain. When

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officers cooperated in this effort, the workmen digging the trenches might have their own reservations, adding yet another hindrance to the smooth implementation of an engineer’s designs. Together, these many sources of resistance slowed down the attack and help explain Vauban’s constant quest for ever-greater efficiency – the engineer had to compensate for failures committed by those beyond his control.

Engineers versus Generals

The first source of friction was the incomplete integration of the engineers into the army. The technical experts served in a strictly advisory role even in sieges. Assuring that an engineer’s precise directions were followed was often difficult because engineering posts were not the same as a regular army commission.340 Thus the “ranks” of director-general, director of approaches, first, second, and third engineers, down to the extraordinary engineers were all outside of the normal military chain of command (infantry or cavalry). As a result, some held an engineer brevet at the same time as they held a commission in the foot – Des Rocques, for example, received a titular lieutenant-colonelcy in 1707 and became brigadier of infantry in 1710. The lower ranking pluralists among them might at times be expected to perform the duties required of both branches, even if these were in different theaters!341 At the highest level of military service this distinction between


341 Blanchard, Les ingénieurs du Roy, 106-108. In one English case, Marlborough had ordered a Colonel Bennett to sell his infantry company because of his long absence, but the Board of Ordnance wrote to remind the Duke that Bennett had been serving as an engineer in Iberia since the beginning of the war, and that he should be excused for this reason. BL Add MSS 61166, f. 124, Board of Ordnance to Marlborough, 5/11/1710.
the services was also observed. As Vauban himself admitted, his marshal’s baton was different from his peers’ since his expertise and experience involved the design of fortifications and the conduct of sieges, rather than the maneuvering of armies in the field or on the battle plain.342 Unused to taking orders from engineers in the field, many officers were hesitant to blindly accept their recommendations even in sieges.

The overall responsibility for the town’s capture was entrusted to the highest-ranking general (usually of the infantry).343 Ideally the commander would solicit advice from the engineers on the attacks and follow their recommendations, but the decisions were ultimately his to make. The subordination of the chief engineers to the commanding general was taken for granted by Vauban. His early treatise made the engineer’s consultative role quite clear:

[The engineer] should sketch the design; he should inspect the camp with the general and show him the layout he has made and explain his reasons for it. Since the general must give the necessary orders, the engineer should show him alternative plans of the works, explaining the strengths and weaknesses of each and offering estimates of the construction time needed in each case.344

Several pages earlier he had highlighted the necessity of reconciling the engineer’s plan with the means at hand, writing that the camp’s layout “should be done in conjunction with the lieutenant-general, for he is better acquainted than anyone else with the battle order, the ranks of the brigades and the regiments, and the size of the


Louis and his ministers placed faith in Vauban’s technical judgments, but this did not guarantee Vauban unquestioned authority, even with decisions requiring technical expertise.\(^{346}\) The Secretary of War Michel Chamillart delineated the chain of command quite clearly in a 1703 letter: “in order to convert Vauban [to the need to attack Freiburg], the duke of Burgundy must speak to him as the master; Vauban has the King’s orders, he knows the King’s wishes and the necessity [of the siege].”\(^{347}\) Expertise was not the same as authority: from the very beginning of a siege the engineers depended on the general officers for military authority.

One of the most important decisions in a siege was determining where to attack a town, and here the engineer’s consultative role is quite evident. Fortification manuals might create for pedagogical purposes an imaginary regular fortress with each side sporting the same defenses in a flat plain, but few fortresses ever reached this ideal, forcing besiegers to weigh the pros and cons of each front. An engineer’s detailed understanding of the strengths and weaknesses of fortifications was called for, but early in Louis’ reign Vauban acknowledged that, ultimately, it was the commanding general who decided where to open the trenches.\(^{348}\)


\(^{346}\) On the relationship between Vauban and Louis, see Lecomte, “Du service des ingénieurs militaires en France pendant le règne de Louis XIV,” 195; and Wolf, “Louis XIV as Soldier-King,” 199.

\(^{347}\) Vault and Pelet, Mémoires militaires, 3:441-442, Chamillart from Versailles 8/30/1703. In the end, the fortress was not besieged.

Nonetheless, commanders more often than not followed their experts’ advice on the approaches to make. At Menin, for example, the directors reported their recommendations to a council of the commanding general, lieutenant-generals and field deputies; together this body concurred on the approach to be made.\textsuperscript{349} Commanders and generals often granted such acceptance only begrudgingly, however, for they bitterly complained of their engineers’ choices at the same time as they allowed them to determine the attacks Villars quelled rumors that they were attacking Le Quesnoy at its strongest side rather than its weakest, and reaffirmed his trust in the engineers on their choice of approach.\textsuperscript{350} Later, when he was forced to pick between two projected attacks he settled on his least-favorite choice (proposed by the chief engineer) in order to avoid potential obstructionism: “if I were of a different opinion from [the engineers], I would still go along with their ideas anyway because it is too dangerous to make them do something against their wishes.... [Brigadier of infantry Erasme] Contades says that the engineers are like wet nurses [\textit{nourrices}] which cannot be denied anything they want...”\textsuperscript{351} In 1713 at Freiburg near the Rhine, competing projects surfaced once again. Villars personally agreed with one sieur de la Battue, who had previously commanded in the château, but he allowed the chief engineer Valory to conduct his attack on a different sector.

\textsuperscript{349} Veenendaal, Jr., ed., “De Mémoires van Sicco van Goslinga,” 27.

\textsuperscript{350} AG A\textsuperscript{1} 2384, #106, to Voysin, 9/25/1712. The language used in his memoirs made sure to indicate the central role he played in deciding on the attacks with the engineers. Vogüé, ed., \textit{Mémoires du Maréchal de Villars publié d’après le manuscrit original}, 3:192 and 3:217.

\textsuperscript{351} AG A\textsuperscript{1} 2384, #1, Villars to Voysin 9/16/1712. See also AG A\textsuperscript{1} 2382, #101, Jean-Robert, LeFebvre d’Orval to Voysin 8/22/1712.
nonetheless: “Thus it is that one is often forced to give in to the reasoning of those who are directly charged with the attack, because if you force them to do otherwise [quand on leur fait violence], they are more than happy to make sure that nothing succeeds.”352 The willingness to follow the experts was fickle, often based on mistrust that boded ill for future cooperation.

Allied generals felt particularly conflicted by their inability to refuse the attacks projected by the engineers. Commanding one of the approaches at Lille, Schulenburg’s initial faith in the Allied engineers decreased steadily as he waited for them to decide where to open the trenches.353 Two years later, the cavalry general Albemarle excoriated the engineers’ conduct, illustrating his contempt for the corps and highlighting a puzzling Allied inability to disregard their “obviously” mistaken plans:

I cannot stop myself from telling you that our engineers are extremely ignorant of how to attack a fortress. It is certain that if we had attacked this place on any other front than where we did, we would have captured it in eight days. This is a truth that everyone must acknowledge, it being as clear as day; our conduct shouts out to our enemies our obvious incompetence and will force us to think twice before attacking another fortress.354

Schulenburg summed up the general officers’ shared wisdom of Douai 1710, bitterly complaining that had the town been attacked properly, it would have lasted less than two weeks instead of seven, and cost them only 1,000 men instead of

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353 BL Add MSS 61245, f. 68, Schulenburg to Marlborough, Lille 8/23/1708.
354 Veenendaal, Jr., ed., Briefwisseling Heinsius, 10:500 #1004, Albemarle to Heinsius, Douai 7/2/1710.
8,000.\textsuperscript{355} Douai’s conduct did not bode well for future efforts, particularly when the generals were unwilling or unable to correct their advisers’ mistakes. Schulenburg repeated his earlier formula again at Béthune:

These gentlemen... want to continue as usual, that is, to attack places at their strongest point and spend two or three months at a siege and suffer 8,000 or 9,000 casualties as they did at Douai, so that if you trusted them and let them proceed, they would attack this front for three or four more weeks, another two months at least. ... Messieurs the Directors [of the approaches], as ignorant as they are malicious, cross me and obstruct me wherever they can, and Mr. Des Rocques having been shown quite clearly the mistakes made at Douai, would be happy if this siege went about the same.\textsuperscript{356}

In an extreme case, commanders preferred to add their own attacks rather than refuse the engineer: Eugene’s restlessness at the progress of the two approaches against Tournai led him to start a third one on his own initiative.\textsuperscript{357} Frightened of petulant engineers undermining their siege projects, generals were just as incapable of resisting the “faulty” plans of their experts.

If commanders and generals were rarely willing to overrule the choice of approaches, they did restrict the engineers’ autonomy in later phases of the siege.

\textsuperscript{355} Johann Mathias reichsgrafen von der Schulenburg, \textit{Leben und Denkwürdigkeiten Johann Mathias Reichsgrafen von der Schulenburg, Erbherrn auf Emden und Deliß, Feldmarschalls in Diensten der Republik Venedig, Zus Original-Quellen bearbeitet}, (Leipzig: 1834), 459 7/5/1710. Landsberg’s post mortem concluded the same, claiming that he had warned the other engineers of their folly. Landsberg, \textit{Nouvelle manière de fortifier les places}, 42.

\textsuperscript{356} Schulenburg, \textit{Leben und Denkwürdigkeiten Johann Mathias Reichsgrafen von der Schulenburg}, 471-472 letter of 8/13/1710. Schulenburg probably meant in his last sentence that Des Rocques wanted to see his replacement Hertel fail as he himself had at Douai.

Vauban’s advice for the siege commander indicated his hopes that the proper amount of deference would be paid to the experts:

it is very important that the general-in-chief visits the trenches, but only occasionally and not every day; because his visits necessarily being long, they will cause too many distractions and delay the siege.... He only needs to visit from time to time with only a small retinue, to be personally informed of what is being done...\[358\]

Vauban envisioned a hands-off commander who implemented the chief engineer’s plan of attack, yet commanders, Villars in particular, felt confident enough to meddle in their affairs. Ever one to take charge, he imposed himself on the engineers, ignoring Vauban’s advice. He described his hands-on approach at Landrecies 1712: “I’m going to lodge myself as close to the head of the trench as I can for the best view, because if there is a task where the commander’s eye is necessary, it is there.”\[359\] Generals leery of their technicians sought to grasp the reins of command more firmly whenever possible.

The commanding general was not the only brake on an engineer’s freedom of action –lieutenant-generals offered even greater sources of friction in the trenches.\[360\] Once the chief engineer and his associates had drawn up the plan of attack and had it approved by the commander, its implementation would be entrusted to each attack’s commander (usually the next-most senior general), each of whom would have a director of the approaches as his technical assistant. In

\[358\] Vauban, *Traité*, 234.

\[359\] AG A\(^1\) 2382, #124, Villars to Voysin 8/24/1712.

\[360\] On the French tradition of lieutenant-generals’ independence, see Lynn, *Giant of the Grand Siècle*, 296.
Vauban’s later work he enumerated how the lieutenant-generals and their subordinates were to post the troops, regulate the detachments, supervise their service in the trenches, and furnish the necessary number of workmen. Daily siege dispositions drawn up by the engineers illustrate this dependence, as they provided the infantry generals with lists of the number and types of soldiers to be provided when and where for what service. The details of each day’s work in the trenches would be overseen by the general of the day (usually a lieutenant-general), seconded by their majors of the trench (*majors de la tranchée*). The workmen and guards in the trenches rotated daily and were drawn from the siege army regiments, commanded by their regimental officers with the various engineers marking out the locations of the trenches and batteries and supervising the construction of the ramparts. Vauban’s emphasis on the need for generals to follow the engineers’ plans, however, shows his recognition that, too often, this was not the case:

...the lieutenant-general of the day commands the cavalry, infantry and artillery, engineers and miners, and generally everything related to the security and progress of the attacks; but he must consult with the director of the trenches, and neither undertake nor decide to do anything without the engineer’s participation; because this last is the soul and the prime mover [*la véritable mobile*] of the attacks.

One of the chief engineer’s most valuable assets was a good relationship with the general officers.

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362 For examples, see Coehoorn’s dispositions for Liège 1702 in BL Add MSS 61187, ff. 41-50b; for Bonn 1703 BL Add MSS 61187, ff. 56-80.

Unfortunately for Vauban’s Method, the generals did not consider themselves nearly as dependent on the engineers as the engineers were on the generals. Vauban had first recognized the dangers of the noble officers’ independent mindset decades earlier:

The rivalry among general officers often leads them to expose their troops needlessly, demanding feats beyond their capabilities, and thinking little of the loss of thirty of them as the price of advancing four feet farther than other generals. On their own authority they direct the line of the trenches as they please, breaking the design at every turn and negating all the precautions that the engineer has taken. Then, far from being able to observe an orderly conduct which might lead to a successful conclusion, the engineer finds himself forced to serve as an instrument of their various caprices. I say various because of the practice of alternating commanders, so that one will command one day in one fashion and another who relieves him tomorrow in another; as they are not always endowed with the greatest capacity for this sort of thing, God only knows the omissions and the wasteful expenditures they occasion and the amount of blood they spill needlessly by slowing the siege.364

The chevalier de Quincy, himself with a noble pedigree, illustrated how little change had occurred by the end of Louis’ fifty-year reign:

It will not suffice to leave to the desires and caprice of the general officers of the day in the trenches to attack the covered way or other works that we besiege; because we can say, to the credit [à la louange] of the majority of these Messieurs (we have already remarked on it far too often), that they are extremely ignorant on the day they find themselves in the trenches.... To remedy this abuse, it will be necessary that the chief engineer be called by the generals of the trenches to determine if the work that is to be attacked is indeed ready to be assaulted. Certainly, this precaution would save many men and we would no longer make such stupid mistakes [et on ne feroit point de cacade].365

If the ranking generals did not wish to provide the engineers with the requested number of troops, there was little that the engineers (and even the commanders of the approaches) could do other than complain.\textsuperscript{366} In addition to informing the generals of the number of men necessary for the trenches, the engineers also drew up lists of all the supplies that would be needed (fascines, gabions, tools, wooden planks...), but it was up to the army administrators (whether French provincial and army intendants or Dutch field deputies) to transport the supplies on site, where the lieutenant-generals and their subordinates were charged with bringing them into the trenches. At Bonn in 1703, Coehoorn had to draft a \textit{Memoire preparatif pour l’ouverture de la trenchée} to remind the generals to provide the tools, fascines, wagons and munitions that he would need for the trenchworks – his authority did not allow him to requisition the supplies directly, nor did he have the engineers to transport these materials to the trenches himself.\textsuperscript{367} In every aspect of implementation, engineers had to rely on men who cared little for Vauban’s efficiency.

\textit{Royal Favoritism and Engineer Authority}

The two most famous engineers of the period, Vauban and Coehoorn, suffered the least from these limitations, for their political rulers granted wide-

\textsuperscript{366} For several examples: at Menin 1706, BL Add MSS 61310, f. 3, Blood to Marlborough, Menin 8/2/1706; at Ghent 1708, BL Add MSS 61312, f. 226, Bengt Oxensnierna (a Swedish lieutenant-general in Dutch service) to Marlborough 12/1708; at Béthune 1710, BL Add MSS 61245, f. 120, Schelenburg to Marlborough, Béthune 8/14/1710.

\textsuperscript{367} BL Add MSS 61187, f. 54-54b 5/1703. Coehoorn’s dispositions were often phrased as a request for the generals to take care to provide the necessities, for example: “Les generaux commandants les attaques sont prié de faire toute leur possible de fournir les travailleurs necessaire...” BL Add MSS 61187, f. 65 Disposition pour le 6 de Mey 1703.
ranging authority. Royal recognition gave them a degree of authority that made it
difficult for others to challenge them within their sphere of influence, whether or not
the King was present on site. As long as they continued to win, they retained their
posts. But as the personal bonds between servant and monarch inevitably weakened
with age, so too did the unquestioned authority of these two fade.

Vauban’s success as a besieger derived in large part from the almost
unfailing support he received from the King and his ministers.368 With his rapid
sieges in the War of Devolution, he quickly gained the King’s trust. His unhindered
conduct at Maastricht in 1673 was a significant step marking the elevation of the
engineers – Louis’ personal authority now allowed Vauban to direct the attacks
largely as he saw fit.369 The confidence that Louis had in his first engineer, built on
Vauban’s unprecedented series of successes and reinforced by the King’s personal
interactions with him at numerous sieges, clearly identified him as a royal
representative. This could not last. In the latter part of his reign, Louis gave up
campaigning, losing this immediate contact with a newer generation of engineers.370
The King and his close advisors could follow the progress of the siege and still
invest Vauban with the mantle of ingénieur du Roy, but as Louis aged, as he lost his
youthful enthusiasm for martial pursuits, as Vauban spent less and less time in the

369 Wolf, Louis XIV, 232, 531-532. Lynn wrote: “Whereas in the past, generals had commanded
sieges at their whim with engineers simply as technical experts, Louis gave Vauban direct authority
over the conduct of siege operations.” The Wars of Louis XIV, 120. Other qualifications to this will
be explored below.
370 Lecomte, Les ingénieurs militaires en France pendant la règne de Louis XIV, 122-123.
trenches (by royal command), and as the amount of information on fortresses, sieges and campaigns increased dramatically, the monarch’s contact with the engineering corps increasingly began to be filtered through the information and recommendations his wife, Madame de Maintenon, and his chief secretaries passed on to him. This took a toll not only on the authority of the engineers at sieges, but also resulted in a more general loss of the prestige previously associated with the engineering corps when it had been directly under the King’s gaze. As a result, a chagrined Vauban noted that his Majesty’s personal absence had led to a reduction in the ranks of engineers. Thus, without Vauban present in person and without the King’s active attention, the engineers lost much of the moral authority at sieges that they had enjoyed previously.

Unlike Louis, William III led his troops in the field up until his death in early 1702, thus keeping in much closer contact with the engineers than his arch nemesis. He also facilitated good relations between the English and Dutch allies in the field because he enjoyed unquestioned authority not only as stadhouder of the United Provinces but as King of England as well. With incontestable authority in the field he supported the tactics of Coehoorn over those of his titular engineers. Coehoorn, called the “Dutch Vauban,” rose through the infantry ranks, yet William made him director-general of Dutch fortifications (as well as master-general of

371 In the War of the Spanish Succession, the French Secretary of War’s incoming correspondence (series A1) alone fills close to one thousand volumes, more than one hundred thousand individual documents to be read, acted on (or ignored), and then filed away.

372 Vauban nevertheless assured Burgundy that there would be enough engineers to allow three per approach. Vauban, Traité, 56. This number seems rather small, particularly when the inevitable casualties the engineers would suffer is taken into account. Virol, Les Oisivetés, 104.
artillery) and backed his proposed tactics at several sieges, including the (in)famous attack on Namur’s citadel in 1695.373 The Stadholder-King’s death in early 1702 dissolved the glue that had held together English and Dutch, engineer and non-engineer. Almost immediately the argumentative director-general clashed with the Dutch field deputies over whether to carry out their planned siege of Venlo in 1702. Slated to direct the attack, the Frisian firebrand quickly changed his mind when the promised supplies were slow to arrive and argued that the Allies should abandon the siege altogether.374 He was eventually cajoled into continuing the attack, a siege that lasted only eleven days of open trenches. Albemarle attributed its capture more to luck than Coehoorn’s wisdom. After seeing its Fort Saint Michel stormed and the defenders put to the sword, the town’s garrison quickly beat the chamade when the Allies fired a _feu de joie_ to celebrate the capture of Landau in Germany – the French had feared the salvoes were a signal for a storm on the town.375

After quickly capturing two other weak posts on the Meuse (Stevensweert and Roermond), the Allies fell upon Liège, where “the great Coehoorn” (as he purportedly referred to himself) had his ego bruised by noncompliant colleagues. Here, according to Coehoorn’s son, Geldermalsen intentionally deprived him of the

373  Duffy argued that the largest difference between Vauban’s and Coehoorn’s method of attack was that the Dutchman did not have the same authority as the French engineer. _The Fortress in the Age of Vauban and Frederick the Great_, 64-65.

374  Veenendaal, Jr., ed., _Briefwisseling Heinsius_, 1:415 #835, Wassenaar-Obdam to Heinsius, Venlo 9/6/1702. One of Marlborough’s engineers (Holcroft Blood) reported back that Coehoorn was indeed justified in complaining about the lack of supplies. BL Add MSS 61306, ff. 35-36 Blood to Marlborough, 8/1702.

necessary supplies for the siege.\textsuperscript{376} Then, after the preparations were finally ready for opening fire, Coehoorn gave orders to the colonel of artillery Willem IJssel to hold his fire in the morning until the meester-generaal could arrive and make corrections. Awakened by the sound of guns firing without him, Coehoorn rushed to the scene and was told that Geldermalsen had ordered the early bombardment. Hunting down the field deputy, he confronted Geldermalsen and belittled the Raad van State representative before storming off. The situation was eventually smoothed over, and the weak forts of Liège quickly fell to the Allies in a matter of days.\textsuperscript{377}

Without a strong hand such as William’s and with an increasingly visible division between allies, such arguments over seniority were fated to increase during the Spanish Succession. The death of the irascible Coehoorn in early 1704 may have removed a difficult personality, but it also eliminated William’s handpicked favorite. Against weak fortresses like Liège such controversies had little impact on the end result, but efficiency suffered all the same.

\textit{Engineers versus Engineers}

The successors to Vauban and Coehoorn undermined their own corporate authority when they disputed among themselves. Vauban’s long tenure allowed him to shape the French corps in his own image once the Marine and Army corps were

\textsuperscript{376} Wassenaar-Obdam pinned much of the blame on the belligerent hypochondriac Coehoorn, informing Heinsius that he never let anyone know in advance what supplies he required and got into frequent quarrels with the other generals. Veenendaal, Jr., ed., \textit{Briefwisseling Heinsius}, 1:440 #898, Wassenaar-Obdam to Heinsius, Venlo 9/24/1702; 1:456 #935, Wassenaar-Obdam to Heinsius, Roermond 10/2/1702.

united in 1691, although this conventional wisdom deserves further examination. The Allies’ engineers, composed of many nationalities, came from varying traditions and did not always mesh well together. Upon Coehoorn’s death, candidates began jostling to win the posts he left behind. With no single individual firmly in charge of the engineers, it was not until June 1709 that the States-General appointed director of approaches Des Rocques as director-general of Dutch fortifications. Disputes over status festered in the interim. At the siege of Menin in 1706, Marlborough informed Heinsius: “The reason of our siege going on so slowly proceeds from all our Inginiers being on a leavel, so that no one has the directions, which occasions many unreasonable disputes.”378 These disagreements notwithstanding, the town capitulated the next day, one of the strongest fortresses in Spanish Flanders lasting only eighteen days of open trenches. At the siege of Lille in 1708, the Allied dispositions were designed to minimize these continuing quarrels: the junior Du Mée was charged with conducting the attack on the town, while Des Rocques was slated to lead the effort against the citadel.

Besieging Tournai in late July of 1709, Des Rocques had still not received his new rank, which only fueled the continuing feud with the younger director of approaches Du Mée. The result was a field deputy’s report stating that Du Mée refused to serve under the newly-appointed director-general, complaining to anyone who would listen that his older rival was being far too cautious in his attacks. With the experts squabbling among themselves and the siege dragging on, it was with

378 Van ’t Hoff, ed., Marlborough-Heinsius Correspondence, 259 #429 Marlborough to Heinsius, Helchin 8/21/1706.
evident relief that Vegelin van Claerbergen could report at the end of his 28 July
report that the town had finally beaten the chamade. Goslinga’s suggestions to
craft a compromise that would appease both Des Rocques and his junior became
moot when the younger engineer suffered a fatal head wound during the attack on
the citadel. Despite the elimination of this particular conflict, complaints continued
to filter in from the Dutch administrators the next year. At Béthune, the Raad van
State’s deputy complained of the animosity that surfaced between Des Rocques and
another director of the approaches, the Dutchman Hertel. Infighting and
accusations of incompetence weakened the corps from within and gave generals yet
another reason to hesitate before following their advice.

Engineers versus Artillery

Just as the engineers were an independent branch of the army, so too was the
artillery. With a separate chain-of-command (except in England), and headed in
France by the grand-maître d’artillerie and in the Netherlands by the meester-
general der artillerie, this autonomous arm guarded its privileges as closely as did

379 On these disputes at Tournai, see Veenendaal, Jr., ed., Briefwisseling Heinsius, 9:103 #209,
Vegelin van Claerbergen to Heinsius, Tournai 7/28/1709; and 9:115 #236, Goslinga to Heinsius,
Tournai 8/1/1709.

380 Veenendaal, Jr., ed., Briefwisseling Heinsius, 10:559 #1117, Vegelin van Claerbergen to
Heinsius, Bevri 7/21/1710.

381 On Louis XIV’s artillery, see Susane, Histoire de l’artillerie française (Paris: Bibliothèque
d’Éducation, 1874), chapter 4; Ernest Picard, L’Artillerie française au XVIIIe siècle (Paris, Berger-
Levrault, 1906); Michel Decker, “Louvois, l’artillerie et les sièges,” Histoire, économie et société
15(1) 1996, 75-94; and most recently Frédéric Naulet, L’artillerie française (1665-1765): Naissance
d’une arme, (Paris: Economica, 2002). On the Dutch artillery, see F.H.W. Kuypers, Geschiedenis der
Nederlandsche artillerie van af de vroegste tijden tot op heden, (Nijmegen: Adolf Blomhert, 1869).
the other branches. Its mission also differed from the engineers and thus they held divergent interests. Whereas the engineers’ wider interests encompassed fortifications, military architecture, cartography and hydrology, the artillerists’ purview included not only the siege trains, but also extended to the use of lighter cannon in field battles, as well as the design, construction and maintenance of artillery and the munitions they required – cannon foundries, artillery schools and gunpowder mills. French artillery schools established under Louis included an extensive curriculum that focused on casting, firing, maintaining and transporting a wide variety of artillery pieces, and in this formal setting gunners developed a professional identity that stressed their autonomy from their sister service. Pierre Surirey de Saint-Rémy’s textbook for aspiring gunners mentioned the critical topic of artillery-engineer coordination in sieges only long enough to discourage gunners from following engineers’ orders to place their batteries in the trenches rather than construct separate batteries. Not surprisingly then, relations between these two branches were problematic, as gunners were particularly hesitant to surrender their initiative and follow the orders of engineers.

Vauban, despite his close relationship with Louis, would experience this conflict first hand. Before rising to prominence in Louis’ armies, he had already discovered examples of the artillery’s ignorance:

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382 Blanchard, *Les ingénieurs du Roy*, 137. The Marine department had their own gunners, which on occasion might see service at a terrestrial siege. For an overview of the office grand-master of artillery, see Lynn, *Giant of the Grand Siècle*, 99-100.

383 For the duties of artillery officers during sieges, see *Mémoires*, 2:255-269.
Instead of emplacing our batteries in accordance with a carefully designed plan, we pound whatever comes first to view, paying no attention to whether the angle is direct or oblique. However, any shot that is not fairly direct has little effect, merely sliding along the revetment though intended to batter a breach. Thus, it is necessary to have the batteries crossing their fire upon a fortress.384

At a number of subsequent sieges he lamented his inability to convince the gunners of the error of their ways; his lack of authority over them prevented him from fully systematizing the attack in spite of his friendship with several of the highest-ranking officers.385 At Charleroi in 1693 he identified several weaknesses that eroded the siege’s efficiency:

I have moreover suffered greatly from the ignorance of the cannoniers and bombardiers, who, with the exception of a small number, I cannot be pleased with. The proper use of artillery and bombs requires an exact art with precise rules that not a single one of these people know. They do things as they have always done them, and have primarily their own interests in mind, which means that all the batteries are defective and imperfect. Furthermore, as none of them understand the principles of fortifications, they know neither where nor how to fire against the works. They are not familiar with their own guns, which does not surprise me, because they are only infantrymen that serve the cannon and who obey the artillery officers only when it pleases them; and since there is usually only one artillery officer for several pieces and because the officers cannot keep an eye on everything when they are aiming a piece, it is often the case that more than half or two-thirds of the rounds are squandered or miss the target completely.386


385 Vauban, for example, co-wrote a proposal for artillery reform with the artillerists François Frézeau marquis de la Frézelière, lieutenant-general of French artillery during much of Louis XIV’s reign, and Armand de Mormes, sieur de Saint-Hilaire. Printed in Vauban, Traité, “De l’artillerie.”

386 Rochas d’Aiglun, ed., Vauban, 2:399 Vauban to Le Peletier de Souzy, Charleroi 10/13/1693. Saint-Rémy confirmed the reliance on conscripted soldiers to serve the cannon, much as engineers were forced to oversee regular soldiers as sappers (see below). Surirey de Saint-Remy, Mémoires d’artillerie où il est traité des mortiers, pétards, arquebusies à croc, mousquets, fusils, et de ce qui peut servir à l’execution et au service de toutes ces Armes; des bombes, carcasses, grenades, etc...., (The Hague: chez Jean Neaulme, 1741), 2:265.
Once Louis-Auguste Bourbon, duc du Maine and a legitimized son of the king acquired the post of *grand-maître d’artillerie* in 1694, he moved to further assert its independence from the engineers. The journalist of Ath 1697, echoing this divide, described the gunners’ traditional ineptitude and initial conservatism in very similar terms to what Vauban had described thirty years earlier:

> Every body knows that the common practice of the officers of the train is to fire at all before them, with all the fury that is possible, ruining without distinction all objects that present themselves to view, whether works, batteries, towers, or cavaliers; they even forget themselves so far as to fire upon any building which affords a fair mark, as gates, bridges, corps de gardes, sentry-boxes on the walls, sometimes at houses and steeple, for the mattrosses [gunners] only want to make havoc appear, which was not Monsieur de Vauban’s taste, who had so frequently seen the fruitlessness of it at so many sieges.... Bounce and clatter and readiness for action had hitherto composed the whole merit of the train at sieges.

There was a faint glimmer of hope, however, for after seeing the effects of Vauban’s ricochet fire the artillery officers in the trenches soon accepted its merits.

Notwithstanding this short-lived conversion, in broader terms little seems to have changed by the end of Vauban’s life, witness his admission that ricochet fire remained poorly known almost a decade after its introduction. The same old complaints of poorly-constructed battery breastworks and poorly-served guns can also be found in his final siege, (Alt-)Breisach 1703, where he was driven to write:

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387 Lecomte, “Du service des ingénieurs militaires en France pendant le règne de Louis XIV,” 123, 127ff. He exercised his patronage, for example, by choosing one sieur de Magni over the universally-lauded La Vallière to command the artillery at the 1712 siege of Douai. AG A1 2381, #114, LeFebvre d’Orval to Voysin, Cambrai 8/7/1712. La Vallière would rise through the ranks and later in the century spearhead an attempt to standardize France’s artillery.

388 Goulon, *A Journal of the Siege of Ath conducted by Monsieur de Vauban*, 103. Goulon made this same point when advising garrisons to frequently move their pieces, for “the besiegers instantly cease firing on those parts which do not immediately incommode them, without troubling themselves about what may come from thence afterwards.” Goulon, *Memoirs of Monsieur Goulon*, 10.
.... if the artillery had done its job, we would very soon be inside the
town; but it is infinitely difficult to direct them. They are all men
who have hardly ever seen a siege and who know only how to fire
straight ahead; they do not even know how to construct proper
ramparts. I must exclude from this ignorance the person who
commands them [de la Frézelière], who is a man of qualité and very
well cultured [honnête], who has more ability than his age
suggests.\textsuperscript{389}

As Vauban well recognized, even a competent artillery officer was hamstrung when
served by inexpert subordinates.

At the end of his career Vauban was forced to acknowledge he had been
unable to change the employment of the siege guns or the training of its crews. Nor
were such complaints limited to the commissaire-general. Besieging Huy in 1705,
the French commander noted that the gunners’ profligate consumption of
gunpowder was having very little effect; he concluded that further improvements
were needed in the artillery schools.\textsuperscript{390} Evidence of continued friction between
engineers and artillerists comes from the Secretary of War’s reiteration to an
artillery officer of the rather fine division of labor between the two branches: “All
your capacity must be confined to promptly constructing the batteries and serving
them with as much dexterity as diligence; but it is up to the engineers to indicate
where they want them to be placed.”\textsuperscript{391} Forced into such intimate dependence on
each other, it was not often that the \textit{maréchal de France} James Fitz-James Stewart

\textsuperscript{389} Rochas d'Aiglun, ed., \textit{Vauban}, 2:525 to Chamillart, Biesheim 9/3/1703. Vauban is referring here
to the 31-year old Jean-Angélique Frézeau marquis de la Frézelière, brigadier of artillery, son of the

\textsuperscript{390} AG A\textsuperscript{1} 1835, #269, Henri duc d’Harcourt to Chamillart, 6/13/1705.

\textsuperscript{391} Quoted in Lecomte, “Du service des ingénieurs militaires en France pendant le règne de Louis XIV,” 131, Chamillart to d’Houville, 8/3/1705.
duke of Berwick could write, as he did in 1707, of the “assez rare” coordination between the two arms. Such harmony was short-lived, for Pierre d’Artaignan comte de Montesquiou and newly-minted maréchal de France noted the return to bickering at Douai in 1712:

This siege is going too slowly for my taste, there is too much division between the engineers and the artillery and as no one person is charged with overall command of the siege, the service is often delayed. To negotiate such dialogues a man who follows each step and who has overall command is needed, but as no one has overall authority each general officer in the trenches follows his own ideas.

From an engineering perspective, the efficiency of Vauban’s vaunted attack was eroded by the intransigence of the artillery; the gunners naturally contended the reverse. Without expertise in both areas, observers could easily agree with one contemporary’s sensible opinion that “the lack of cooperation between these two corps” was as much to blame as incompetence in either service.

As with the French, the Allied artillery’s performance provided a frequent source of friction as well. It was further exacerbated by the mix of nationalities in the confederate force. At Kaisersweert 1702, Geldermalsen complained of the gunners, “It is a pity to see how slowly the gunners are working, they are my principal complaint, but in general I do not know if it is these four years of peace or the large number of new recruits, or new regiments, or because they are without a

393  AG A¹ 2382, #173, Montesquiou to Voysin 8/27/1712.
commander who would be able to discipline and reward them.” At the next siege, general Jacob van Wassenaer heer van Obdam continued to bemoan the poor quality of their gunners. After Coehoorn’s death in 1704, Johan Wijnand van Goor briefly held the post of *meester-generaal der artillerie* before being killed later that year at Donauwörth. The position remained unfilled for the rest of the war, with the predictable result of further disputes among the artillery officers. When the colonel of artillery Willem IJssel was wounded at Oostende in 1706, field deputy Goslinga complained of the resulting insubordination among the remaining gunners, while the siege commander Field Marshal Hendrik van Nassau, heer van Ouwerkerk lamented the resulting delays to battery construction. At the bombardment of Dendermonde, the English Lt.-Gen. Thomas Meredith expressed exasperation with the Spanish bombardiers and some satisfaction with the Dutch, although the latter’s effectiveness ended when they collectively decided to “work [no] longer without being refreshed” with bread, beer and brandy – he was forced to search for others with experience firing batteries. Later, at the more demanding siege of Tournai, we find the leaderless artillery officers clashing with the generals in charge of the

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398 BL Add MSS 61163, f. 223, Meredith to Marlborough 6/24/1706.
approaches. The resulting squabbles began to create serious problems for the attackers:

The good of the service demands that we appoint a general of artillery; subordination is not very great in this corps, but it is above all necessary in order to prevent further squandering of our munitions; we have preached this need over and over to the [infantry] generals, and they follow it as long as we are there, but once we leave, things return to how they were before. Each general, low-ranking or high, competent or ignorant, acts as if they were generals of artillery. If the colonel [of artillery] or his subalterns don’t obey them, the generals quarrel and accuse them of sparing ammunition at the expense of the lives of soldiers; they even say such things in the troops’ presence, which can only have a very bad effect on their morale. These reasons will convince you, as they have me, that we must fill the vacancy...

A few days later Vegelin van Claerbergen confirmed the ill-effects of inter-service rivalries: “Our artillery are firing furiously here, and perhaps to little effect. The colonel [of artillery] blames the generals, and I do not know if either of them have gone too quickly, faster than the condition of the attack allows.” Naturally reluctant to accept engineering leadership and lacking their own commander (who could defend them from overbearing generals), the Allied artillery proved as unmanageable for the engineers as the generals.

Engineers versus Workmen

Engineers had another problem which complicated implementation of Vauban’s attack – the variable quality of the workmen. Getting the officers and gunners to accept the engineers’ authority was not enough to assure an efficient

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siege, for the rank and file did the digging for the engineers, just as they assisted the gunners with their pieces. Properly-constructed ramparts were only one cause for concern; flight was another. Soldiers on guard duty had their weapons to reassure them, whereas the workmen – motivated primarily by money and drink – were armed only with pick and shovel. With only picks and shovels to counter matchlocks and bayonets, laboring soldiers often chaotically abandoned their works when sallying defenders approached, and sometimes even when they did not: “nothing is more common than for the workmen to take to their heels.”

Focusing the troops’ attention on constructing the trenches to the exclusion of thoughts about their own personal safety was a challenge for both officers and engineers alike.

Vauban had recognized this critical weakness and constantly petitioned the King for independent sapper and miner brigades, soldiers who would become experts in the dangerous task of advancing the trenches under enemy fire and undermining the garrison’s works. Just as importantly, they would be trained to abandon the advanced trenches for the safety of the rear parallel in an orderly fashion. The best plans accounted for little without skilled workmen, and in 1669 he warned that his method for attacking a fortress

demands intelligence both on the part of directors and workmen, I should add that we cannot hope to make the best use of it with those whom we usually employ in our sieges. They are naturally maladroit and surly; besides they are neither trained nor drilled to execute with precision the tasks to which they are assigned. It is, therefore,

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402 The issue of unreliable workmen is discussed in Lecomte, “Du service des ingénieurs militaires en France pendant le règne de Louis XIV,” 124-126.
absolutely essential to form and train a special body of well-versed men, either drawn from several regiments or raised separately, as a corps of engineers. 403

Refused this request, at Charleroi in 1693 Vauban warned of the dire results if his petition continued to be rejected:

as the King will not make the company of sappers that I have proposed to him many times, it must be accepted that we will always lose a lot of engineers and many more soldiers and officers, and that it will always cost him more time and money to reduce the places; beyond which from the very first day of the siege it will cost me my life, because I am forced to be almost constantly in the trenches due to a lack of skilled people, which is killing me with fatigue and exposes me to death one hundred times every day. 404

After complaining of a shortage of skilled miners at Breisach in 1703, he repeated at the end of his career the same request for three regiments of artillery and a separate company of sappers. 405 Turning to the younger generation, his treatise dedicated to Burgundy explained that sapper companies officered by engineers could quickly learn the trench skills that would speed up the siege attack and at the same time decrease the number of casualties among the engineers, the artillerists and the common soldiers alike. 406 But his requests were continually rejected for being too costly. Here too Vauban was unable to eliminate the engineers’ reliance on others, a fundamental source of inefficiency.


405 On Breisach, see Rochas d’Aiglun, ed., Vauban, 2:522 at Biesheim 8/22/1703. For his later call, see Vauban, Traité, 269-295 for the artillerie and 296-309 for the sappers.

Although participants in Spanish Succession sieges rarely commented upon the skills of the workmen, when they did it was in the form of complaints about their tendency to run away in the dark, particularly in long, difficult sieges. The English Lieutenant-Colonel John Blackadder reported his difficulties at Douai in 1710:

I find the command far less troublesome when the regiment is in [the trenches on guard duty], than with the workers; there is always a great deal of confusion at any business of that nature, in the night; and so it was yesternight. We were to make up the lodgment on the other side of the outer fossé [ditch], which we had been put from the night before; and indeed our workmen did their business very ill, for the French came out several times with great noise on purpose to frighten the workmen; and it had the effect, for they ran away so that it was impossible to get the third part of them kept together. However there was a lodgment made. These commands are exceedingly troublesome, because of the vexation it gives an officer when his men do not do their duty.407

The German engineer second-class J.H.D. Landsberg echoed Blackadder’s frustration at keeping his own workmen together:

The enemies chased my workers away four times. Confusion reigned supreme! I say again… that a soldier is a coward when he is working in the trenches, no matter how brave he may be anywhere else; I’ve seen this many times. The enemies’ first sortie consisted of only ten or twelve troops and immediately my men ran away over the bridge of the advanced ditch. I sent a few sous-lieutenants to retrieve them, which they did, and I put them back to work. Other times the enemies had only to scream “Kill! Kill!” and my men would flee yet again. I tried to encourage them, telling them that it was nothing, I even posted grenadiers as guards and I stayed with the workers in the trenches myself, but I was the only one to stay put, and when they returned to the trench and I berated them, they told me that they had neither enough cover nor enough support, that a dozen grenadiers on

the other side of the bridge was not enough to protect them. The sappers also take flight, and don’t return for the rest of the night.408 Proper supervision was critically important to a constant advance; once officers were killed or incapacitated, their troops often halted their assault under heavy enemy fire or fled for the safety of the rear trenches if working on lodgments or trenchworks.409 Similarly, casualties among their compatriots might also frighten the workers, prompting one journalist at Aire to recount: “after the first volunteers were killed or wounded, we could not find anymore no matter how much money was offered.”410 So traumatic were many sieges – and not just in the Spanish Succession – that some workers even deserted into the besieged town in order to avoid the slaughter in the trenches.411 The Allies encountered similar experiences at Béthune and Aire, where the garrisons conducted frequent sorties.412

408 Landsberg, Nouvelle manière de fortifier les places, 43. One report from the Dutch field deputies specifically mentioned Johan Willem Friso’s (Prince of Orange) efforts to repair the blinds protecting the trench so that their workers would not desert. ARA SG 9193 #48 Field Deputies to States-General, Brebières 6/9/1710. See other examples of the difficulties at Douai 1710 in: Crichton, ed., The Life and Diary of Lieut.-Col. J. Blackadder, 385; 386, letter to his wife; 387, to his wife; and ARA SG 9193, #76, Field Deputies to States-General, Brebières 6/23/1710.

409 For example, at Tournai 1709 see Schulenburg, Leben und Denkwürdigkeiten Johann Mathias Reichsgrafen von der Schulenburg, 398 8/30/1709.

410 AG Article 15 Section 2 §1 Aire carton 1, #5 Relation du siège d'Aire en 1710 par un officier de l'armée des Alliés 9/23/1710. Similarly, the miners at Douai refused to return to their work after an explosion killed one of their own. Relation de la campagne de l'année 1710, contenant un journal de tout ce qui s'est passé aux sièges de Douay, Béthune, St-Venant et d'Aire..., (La Haye: chez Pierre Husson, 1711), 49.

411 At Venlo 1702, see Veenendaal, Jr., ed., Briefwisseling Heinsius, 1:448 #916, Wassenaar-Obdam to Heinsius, Venlo 9/27/1702. The most striking case was Tournai: AG 1 K 299 1, Tournai 7/20/1709 and especially AG A1 2151, #263, Villars to Voysin 7/26/1709.

412 On Béthune, see Veenendaal, Jr., ed., Briefwisseling Heinsius, 11:17 #24, Hertel to Heinsius, 8/4/1710. For Aire, AG Article 15 Section 2 §1 Aire carton 1, #5 Relation du siège d'Aire en 1710 par un officier de l'armée des Alliés, 9/20/1710.
unreliability of those digging the trenches was yet one more item in a long list of uncontrollable factors that engineers had to manage.

**CONCLUSION**

The variety of complicated tasks required in a siege demanded a wide range of skills that could only be met by experts in several different fields – engineers, gunners, miners, and sappers. These independent services naturally struggled with each other for prominence, while the same tension could occur within each service among its own officers, particularly where the hierarchy was dimly elaborated. To make matters even more confusing, all of these technical branches relied on often unsympathetic generals to order untrained soldiers to provide them with their manpower. From his earliest sieges Vauban recognized the many inefficiencies that resulted, and was able to eliminate or neutralize some of them in French service over the length of his career by receiving overall authority from the King himself, carefully planning his siegeworks in advance and keeping a constant eye on their implementation, as well as by demanding technical competence in his subordinate engineers. His aptitude in all of these fields is well-evidenced, ranging from his recognition and perfecting of ricochet fire and experimentation with stone-firing mortars (*pierriers*) to his concern with proper trench construction to his attempts to improve the morale of the infantry workmen with better pay and improved safety.

On the other hand, Vauban could not enlarge the scope of the engineer’s authority to include other branches, nor could he enforce strict discipline when he was no longer present. Allied engineers did not even have a Vauban of their own to put their engineers in order. Thus both French and Allies sieges in the Spanish
Succession, to different degrees, suffered from fragmented command. The engineers, the “experts” of siegecraft, had the daunting task of coordinating the efforts of these many branches without royal authority. At the top of the chain of command, the chief engineer had to implement his geometrical trenches and lines of fire against a specific fortress using the artillery’s gun crews, relying on military administrators to provide the necessary arms and munitions, counting on foot soldiers lured or coerced into digging the laid-out trenches, while maneuvering against fellow engineers and other officers in order to convince the siege commander to follow his projected attack. When disputes arose among the engineers, or between the engineers and artillerists, the generals took control. The full impact this had on Vauban’s legacy of efficient sieges is the focus of the next chapter.
CH 5

REVERSING VAUBAN’S OFFENSIVE LEGACY

As we have seen, realizing Vauban’s systematic attack required surmounting a number of hurdles. Military engineers in the Spanish Succession were stretched thin across sprawling theaters, their numbers masking their widely-varying quality. Even the most skilled engineer might have his orders poorly-implemented or even ignored. Nonetheless, these sources of friction could be minimized if the chief engineer could win the trust of or receive authority over the commanding general and his approach commanders. It was almost impossible for a chief engineer to implement Vauban’s efficient attack when the general officers actively opposed his techniques. Contrary to the assumption held jointly by the Vauban and Marlborough scholarship – that Vauban’s method of attack served as the paradigm for most besiegers – there was fundamental rift within the military community over the nature of the attack, even the very nature of warfare itself. General officers savagely criticized their engineers for incompetence, but not necessarily because they were identified as disciples of Vauban (at least this is never stated explicitly). 413 Rather their censure derived from a philosophical belief: the

413 Oddly, while contemporaries never directly refer to an attack in the Vaubanian style, French commanders (and apparently only French commanders from the documents I have consulted) do discuss an attack “à la Coehoorn,” in opposition to the slower techniques of Vauban.
engineers were incompetent because they accepted tactics (whatever their origins) that elevated safety above speed. They simplified his precise balancing of casualties, delays and costs into a much more straightforward calculus – capture the town as quickly as possible. Spanish Succession war generals in particular fought Vauban’s formal techniques whenever they could in order to advance this alternative vision of the attack. Though the Allies in particular hesitated to micromanage the choice of attacks and the twists and turns of the trenches, in every other aspect of the siege generals on both sides used their authority to constantly press their engineers to accelerate its progress. To do so, they adopted techniques directly opposed both by Vauban himself and his French and Allied heirs. In the ensuing struggle over the nature of the attack, Vauban’s vision lost the most important battles, for his opponents were not afraid to take the reins at critical stages and shape the siege to meet their own requirements. The results were often poorly-conducted sieges, straying far from the efficient siege Vauban conducted at Ath in 1697 and even further from the perfect siege he had envisioned in his writings.

CRITICIZING THE ENGINEERS

Vauban’s reputation, as impressive as it appears today, did not impress many general officers of his day. Though the Vauban-centric literature does not pay much attention to the details of his offensive method during its formation, it does recognize that at the end of his career his ideas were challenged by a number of French commanders who either criticized or rejected out of hand his proposals, even if he had designed the fortress himself. The King may have valued his judgment, but this did not convince
French generals to blindly implement the projects they were sent.  

In Germany in 1703, Villars ignored Vauban’s proposal when attacking Fort Kehl and succeeded, against the advice of the majority of the engineers present. Encamped before Landau later that year, Camille d’Hostun, maréchal Tallard chose an artillery officer’s proposal over that of Vauban. At Nice in 1705, Berwick also refused Vauban’s siege plan and went on to capture the town by a different approach. Pressured to accept Vauban’s recommendations, head-strong Louis d’Aubusson, duc de La Feuillade, son-in-law to Chamillart and a commander in Italy, made a point of reminding his father-in-law that Vauban considered Nice unassailable where Berwick attacked it, but the town only held out for 27 days. The blue-blood continued to insist on his independence when besieging Turin: he flatly rejected Vauban’s proposals and refused to relent even when the great engineer publicly criticized its conduct. Other commanders expressed a less lineage-based view and justified their explicit rejection of such ‘meddling’ by arguing

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that “those who see from close up are to be believed over those who see from far away.”

Nor did Vauban’s reputation protect from attack those who were entrusted with his secrets. A few criticized the engineers for not living up to Vauban’s standards. Antoine de Pas, marquis de Feuquières and lieutenant-general of Louis’ armies, for example, denounced the engineer Lapara de Fieux for his conduct of sieges in the Nine Years’ War (Coni 1691 and Barcelona 1697), concluding that: “he was much inferior to M. de Vauban, and his errors can be only imputed to his incapacity.” Yet Lapara was widely acknowledged as one of France’s most gifted engineers, an opinion shared by Vauban himself. More often, the corps as a whole was indiscriminately condemned. The young La Feuillade complained of the “crass ignorance of all the engineers that I have here with me.” A little later he informed his father-in-law of his unfaltering position: “M. Pelletier will not compel me [to follow the engineers’ advice] with the praise that he gives to those that are here with me; between you and me, they are all asses except for M. Filley. Excepting him, they all lack courage…” At Douai in 1712, a failed attack on an outwork (one whose success the engineers had assured) prompted the lieutenant-general Yves marquis de Tourzel et d’Alègre to note that such broken promises were “nothing new... it always happens at every siege.” The duc du Maine,


422 Esnault, ed., *Chamillart*, 2:10 #147, La Feuillade to Chamillart, Nice 4/11/1705.

423 Esnault, ed., *Chamillart*, 2:16 #152, La Feuillade to Chamillart, Toulon 5/10/1705.

424 AG A² Carton 8 2, Alègre to duc du Maine 9/4/1712.
commenting in the margin of this letter, echoed both the tension between the engineers and his own artillery officers as well as the declining status French engineers had suffered since Vauban’s departure: “We have only too many examples that the engineers are no more infallible than other people.”425 Jean-Robert LeFebvre d’Orval, a member of France’s Flanders parlement and frequent correspondent on military affairs, reported the disgust of French officers at the engineers’ poor conduct attacking a town they had defended two years earlier: “when I left the siege [of Douai] everyone was murmuring against the engineers, who appear to have run out of ideas, and who can only respond ‘we will see when we are able to examine the works,’ as if it has been a century since they last saw the fortress. This highlights how little attention these engineers have paid to studying a place when they are in it....”426 Most surprising of all, Joseph Sevin, chevalier de Quincy,427 who defended the engineers against impatient general officers, nevertheless expected the reader to believe that he single-handedly resolved a dispute among them (featuring an indecisive Claude-François chevalier d’Asfeld, future director-general of fortifications) over how to trace a line to a troublesome retrenchment in 1713. Quincy reported that d’Asfeld immediately sided with his suggestion and declared him “un grand ingénieur;” but he modestly admitted that “only good sense inspired me at the moment.”428 He concluded this anecdote by appealing to his readers:

425 AG A⁴ Carton 8 2, Alègre to duc du Maine 9/4/1712.

426 AG A¹ 2382, #101, LeFebvre d’Orval 8/22/1712. This probably referred most directly to Valory, who had defended the town in 1710 and was now in charge of the attacks. As it was, the besiegers captured Douai after attacking both the Fort Scarpe and town for 25 days – less than half of the Allied siege’s length against the town itself.

427 Younger brother of the marquis Charles, author of a seven volume history of Louis XIV’s wars.

It is to be hoped that every infantry officer would study *le génie*; because I have remarked many times that many officers and even generals have been quite embarrassed when they are forced to cover themselves with retrenchments; they must always call for the engineers in such critical moments. Every infantry officer must know mathematics.429

So low had the French engineering corps apparently fallen, that such a story was to be taken at face value.

Allied commanders were even more livid with the conduct of their own engineers. Criticism of their behavior increased dramatically as the sieges became longer, the attacks following Ramillies providing the first occasion for sustained critiques. The beginning to the siege of Menin was not encouraging:

Yesterday Saliss [Dutch General Ernst Willem van Salisch] complained to the States of the ingeneer [Guillaume le Vasseur Des Rocques] that he minded nothing nor did nothing, which in truth they doe not for the lines of circumvalation that they have been a doeing ever since we came here and might have been done in half the time are not yet so good as the ditches that was there before they begun.430

The attacks on Oostende, Menin, Dendermonde and Ath all progressed much faster than expected, however, so Lille in 1708 was the first town to plunge the engineers’ aptitude into serious, sustained doubt. Several months into the siege, Marlborough was driven to write to his confidante back in London:

It is impossible for me to expresse the uneasyness I suffer for the ill-conduct of our ingeniers att the siege, where I think everything goes very wrong. It would be a crewel thing if after we have obliged the enemy to quit all thoughts of releiving the place by force, which they have done by repassing the Schell, we should faile of taking it by the ignorance of our ingeniers, and the want of stores; for we have already fiered very near as much as was demanded for the taking the town and cittadell, and as yett


we are not intier masters of the counterscarp; so that to you I may own my dispair of ending this campagne, so as in reason we might have expected.\footnote{Snyder, ed., \textit{Marlborough-Godolphin Correspondence}, 2:1099 #1100, Marlborough to Godolphin, Lannoy 9/20/1708. See also Murray, ed., \textit{Letters and Dispatches}, 4:237 Marlborough to the Earl of Sunderland, Lannoy 9/24/1708; and Christopher Atkinson, “Gleanings from the Cathcart MSS,” \textit{The Journal of the Society for Army Historical Research}, 29 (1951), 66.}

A few days later he vented his frustration to Heinsius as well:

\begin{quote}
You will know that last night we made a thord attack on the counterscarp, and by the very ill conduct of our ingeniers we are not yett masters of itt. I shall say no more of this matter till we meet, but most certainly we are very ignorant if there be nothing worse; for this day five weekes the canoon begane to fyer, by which you may beleive we have noe great quantity of stores left. I have the spleen and dare say no more.\footnote{van ‘t Hoff, ed., \textit{Marlborough-Heinsius Correspondence}, 402 #670, Marlborough to Heinsius, Lannoy 9/24/1708.}
\end{quote}

The attack on the citadel was conducted with more dexterity, although Marlborough was still frustrated with the “negligence of the engineers, who only stay in the [Duke of Württemberg’s] trenches one hour a night, having in their heads that this can only be a false attack.”\footnote{Murray, ed., \textit{Letters and Dispatches}, 4:381, Marlborough to Goslinga and Geldermalsen, Merelbeke 12/29/1708.} Summarizing his own experience at the siege, Landsberg proclaimed that: “There are people who believe that when a man is called an engineer, he acts according to the best science, but one would be mistaken and this is obvious from the engineers’ conduct at Lille. Those who reflect on the matter will note that when sieges drag on, it is not always due to the good defense of the enemy.”\footnote{Landsberg, \textit{Nouvelle manière de fortifier les places}, 43. See also 35.}

At the bloody siege of Tournai’s citadel, a fort endowed with an extensive system of countermines, Schulenburg bemoaned the lack of competent people to oversee this new experience of subterranean combat: “This is a siege altogether different from the
others that we have undertaken thus far; the most embarrassing is that there are few
officers and even engineers that know how to execute them, at least as far as how they are
to be attacked.”435 He was also quite severe concerning the chief engineer’s subordinates:

Mr. Du Mee [du Mée] has few engineers and what is worse not one of
them is good, the miners cause me more trouble than I can possibly say,
the sappers make so many mistakes that I must personally go check
everything they do, which requires me to be in the trenches all day long.
Such a siege requires far more than this – competent people who take
things seriously and who are willing to cooperate with each other.436

With this siege winding down, Albemarle conveyed Eugene’s fear of another siege to the
Grand Pensionary, stemming primarily from their lack of “capable” engineers.437

The chorus of Allied complaints reached a crescendo in 1710. Two months into
the 1710 campaign, the Allied generals had lost all patience with the engineers.
Marlborough’s secretary Adam Cardonnel echoed his employer’s own feelings when he
complained that “our siege [of Douai] goes on but slowly for want of good engineers.”438
A week later the scribe continued to another correspondent: “Our siege goes on still very
lamely through the ignorance or timorousness of our engineers, which costs us daily great

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435 Schulenburg, Leben und Denkwürdigkeiten Johann Mathias Reichsgrafen von der Schulenburg, 397
8/18/1709. At the very beginning of the siege Goslinga had already noted that they had an insufficient
number of miners. Veenendaal, Jr., ed., Briefwisseling Heinsius, 9:9 #21, Goslinga to Heinsius, Tournai
7/3/1709.

436 BL Add MSS 61245, f. 106-106b, Schulenburg to Marlborough, Tournai 8/1709.


438 BL Add MSS 61401, f. 32b, Cardonnel to Colonel Hales, Douai 5/22/1710. He felt the same about the
attack on the town of Namur in 1695. Childs, The Nine Years War, 282. See Marlborough’s own views on
Douai 1710 in van ’t Hoff, ed., Marlborough-Heinsius Correspondence, 495 #850, Marlborough to
Heinsius, Douai 6/9/1710; Murray, ed., Letters and Dispatches, 5:23, Marlborough to the Austrian major-
general Ferdinand Alexander Franz Maffei, Douai 5/12/1710. According to a chronicler at the French court,
rumors circulated that Marlborough had publicly cursed his engineers and their progress on a 6 June visit to
the trenches. Edouard Pontal, ed., Mémoires du marquis de Sourches sur le règne de Louis XIV, (Paris:
Librairie Hachette, 1882), 12:239, 6/9/1710.
numbers of poor men’s lives.” 439 A few days later still, the Dutch general Albemarle averred: “I assure you that we must tremble every time we besiege a place, because we do not have any subjects competent enough to conduct such tasks.” 440 Prince Eugene, overseeing the siege, was livid with “the mistaken ambition of the engineers, who try to invest themselves with the same authority that was enjoyed by the late General Coehoorn. I never met Coehoorn, but I know that there can be no comparison between his ability and that of the horrible little men we have with us now.” 441 Albemarle penned his frustration yet again to Heinsius: “I have become increasingly aware that sieges do not suit us, because each presents us with difficulties; before we arrived here we were told that the place was very poor, but now we are told that it is very strong.” 442

In siege after siege Spanish Succession generals vehemently castigated the engineers for their perceived faults. 443 Though an engineer himself, Landsberg neatly summarized the widely-held judgment of the engineers and their conduct, while at the same time ingratiating himself with the commanders: “we have very talented generals which give us the means to besiege; it is only a question of the engineers directing the

439 BL Add MSS 61401, f. 41, Cardonnel to the diplomat Frances Palmes 6/4/1710. To the paymaster James Brydges he wrote of the “want, unskillfulness & timourousness of our engineers.” BL Add MSS 61401, f. 41, 6/5/1710.


441 Hipssich, Spanischer Successions-krieg. Feldzüge 1710, 140, Eugene to Austrian minister Ferdinand Sinzendorff, Douai 6/20/1710, quoted in Duffy, The Fortress in the Age of Vauban and Frederick the Great, 37.

attacks better and capturing places more quickly than they do at present, that they save lives, and that they do not waste the Sovereign’s treasure uselessly.” The volume and hostility of this criticism is even more remarkable given that engineers were otherwise ignored. There is an almost complete absence in the correspondence of positive comments about their siege service (no more than a handful of examples among the thousands of documents I have consulted) and even very little neutral discussion of the individuals as well –engineers were either invisible or culpable to most officers.

As the previous pages attest, generals did not think much of their engineers. Although they complained about them, whenever it was possible they preferred to ignore them and follow their own council. Though not completely surprising, the vehement and universal criticism raises a fundamental challenge to the idea of Vauban’s legacy of the paradigmatic siege. Vauban historians have advanced a cursory explanation to explain the abuse he personally suffered, tied to the specific context of Louisquatorzian France. Paralleling the twilight of the Sun King, some scholars describe the reaction against him as a generational response of relative newcomers seeking to displace his status as one of Louis’ most trusted military advisors. Although this explanation has not advanced beyond single-sentence suppositions, the question of why Vauban’s method was rejected is an important one for a larger understanding of the period’s warfare.

443 This was more than mere rhetoric, for – as the next chapter will illustrate – generals rejected their engineers’ advice and implemented their own tactics whenever possible.

444 Landsberg, Nouvelle manière de fortifier les places, 84. Note that while Landsberg attacks his peers, he also accepts the values Vauban encouraged – an efficient siege that saved lives and money.

445 Both Blanchard (Vauban, 509-511) and Lynn (Giant of the Grand Siècle, 578 and “Vauban” entry, 459) briefly mention the role of a rebellious, younger generation.
The hypothesis of a generational reaction requires much more evidence before it could be considered convincing – generations are extremely slippery objects to identify and test.\footnote{446 If there was a defining event for the anti-Vauban generation, what was it? Did they all recognize the importance of this seminal event? Erik Lund, for example, speaks of the Austrian generation shaped by the Turkish siege of Vienna in 1683, a reasonable argument given the long-standing Ottoman threat. Who all was included in the anti-Vauban group? Did they all react in the same way, and if not, what basis is there for combining them under this single rubric? Even more confusing, since Vauban’s view of the perfect siege changed over the course of his life and his tenure was so lengthy, were individuals reacting to the same Vauban (e.g. Vauban circa 1669) or different Vaubans (Vauban c. 1669 versus c. 1704)?} We can certainly find both French and Allied examples of younger commanders criticizing the advice of their respective engineers: Burgundy, La Feuillade, Berwick, Albemarle, Schulenburg, and Eugene were all at least 27 years younger than Vauban. On the other hand, there were almost no generals of Vauban’s generation (b. 1633) still active during the War of the Spanish Succession to resist his techniques in any case – only a thorough examination of the opinions of Vauban’s peers from the 1680s and 1690s can adequately test this theory. Nor were younger generals the only ones to criticize the attack \textit{à la Vauban}. Two of the oldest commanders with decades of military experience were the least inclined to accept Vauban’s methods – Marlborough (b. 1650) and Villars (b. 1653). Coehoorn, who is said to embody the “reaction” against Vauban’s methodical approach, was only a year younger than his competitor. We must also recall that Vauban was himself struggling against unsympathetic officers for his entire career, as he indicated in his treatises. Thus, rather than reacting against Vauban’s tenure, generals had held anti-Vaubanian views all along, but those serving during the pinnacle of his career were denied the ultimate authority over sieges that Louis gave to him. The great engineer stopped actively serving in sieges in 1703, which now made it much easier for commanding generals to refuse his projects (sent through correspondence) without fearing the King’s censure. Opposition to Vauban’s ideas never went away; it plagued
him throughout his career. Ultimately age forced him to fade from the scene, and then commanders took back much of the authority that Louis had given the engineers. We could just as easily posit any other number of hypotheses to explain the anti-Vauban reaction: nationality, social origin, branch of military service, and so on. Without a clearer definition of “generation” and clarification of the mechanism that prompted this reaction, we must search elsewhere for an explanation for his waning military influence.

Vauban’s end-of-life troubles make more sense when put in a broader military perspective, one that examines the different receptions French generals gave not only to Vauban, but also how Allied generals reacted to Coehoorn, and how both sides treated the successors of these two. This wider viewpoint stretching beyond national borders is a necessity given the cosmopolitan nature of early modern armies, particularly those engaged in wars that forced all of Europe into allied camps. These “national” armies were far more heterogenous than the term implies: at the top of the command structure we might cite the French-born Prince Eugene commanding in Austrian service and the English Duke of Berwick fighting in French service, not to mention the campaigns conducted by coalition armies of British, Dutch, Austrian, Portuguese and German forces fighting French, Spanish and Bavarian forces, with Savoy switching sides two years into the war and the Swiss fighting on both sides as well. Only in this wider view do we see the striking similarities between both French and Allied discourses over the nature of the siege attack. In the historical literature this task falls to the Marlburists, who, while accepting the reality of Vauban’s “scientific” attack, also believe the contemporary complaints against Allied engineers and assume that they were inept because they had not
been trained in the French system. Taking a wider perspective than most, Duffy compared the Spanish Succession protagonists in the Low Countries:

Since [the age of Condé, Turenne and Montecuccoli], the perfection of such mysterious-sounding devices as parallels, trench cavaliers and ricochet batteries had elevated siegework into something of a black art, which became less and less accessible to busy field commanders. France owned a whole generation of engineers who had been bred up by Vauban to put the new techniques at the service of Louis’ marshals. The Allies, on the other hand, had to rely on a dwindling, overworked and demoralized band of cosmopolitan experts. Marlborough and Eugene had precious little confidence in their ageing Huguenot engineers, but they could not trust themselves to take over in their place.447

While the tenor of his passage is accurate, several important details require clarification and elaboration. First, as we have already seen, Vauban and his students did not enjoy universal acceptance; ignorance of these “black arts” prevented neither widespread complaints nor, as we shall soon see, interference. Engineers were rarely given carte blanche to conduct the siege however they saw fit. On rare occasions generals intervened in the choice of approaches, but throughout the rest of the siege they called upon their expertise in field warfare to override the engineers’ decisions. When we ask what exactly opponents of his techniques disliked about its implementation in the Spanish Succession, we discover that all of these different interventions were dedicated to a single goal: the desire to accelerate the tempo of campaigning by making sieges as brief as possible.

Putting Vauban back into his larger military context, we see a reservoir of hostility to Vauban’s ideas among both French and Allied generals not simply because they were jealous of Vauban’s authority or because the great engineer represented the status quo, but because his attack appeared to avoid casualties at the cost of lost time. Copious

447 Duffy, The Fortress in the Age of Vauban and Frederick the Great, 40; see also 37. This is also the view of earlier scholars, e.g. Maurice Sautai, Le siège de la ville et de la citadelle de Lille en 1708, (Lille: Lefebvre-Ducrocq, 1899), 275.
claims of engineering incompetence, problematic to prove, stemmed from this basic impatience with Vauban’s solution to the defensive strength of the trace italienne.

**Time versus Casualties**

Looking closer, we soon discover that almost every criticism of the engineers concerned the time that was lost as a result of their incompetence, highlighting the essential tension of delays versus casualties.\(^448\) The commanders most vocal in their criticisms of the engineers highlight this distinction the most clearly and in almost every stage of the siege. The vast majority of their complaints focused on the delays the sieges required, whether it was delays opening the trenches, the slow pace of the trenches, or delays encountered capturing the counterscarp. The broader historiography’s focus on duration as a measure of sieges is not a coincidence, for this was by far the single most important variable for politicians and commanders alike.

Time was of the essence. Seasonal warfare, long distances and slow transportation technologies dictated significant delays when coordinating armies and fleets across several theaters.\(^449\) Thus strategic planning had to be done many months in advance and unforeseen delays might throw off coordination between theaters and allies, perhaps requiring missions to be canceled altogether. Whether or not commanders felt a sense of urgency in siege operations, their leaders back home constantly reminded them of the campaign clock. Political leaders were always anxious about when the army could start

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\(^{449}\) Scholars have examined the tyranny of distance in a number of works, most memorably in Fernand Braudel’s *History of the Mediterranean*. In early modern European military history, the best recent example is Geoffrey Parker, *The Grand Strategy of Philip II*, (New Haven: Yale University Press, 1998), chapter 2.
the campaign, and that the army move on to further operations once it had started – reinforcements might need to be sent to shore up another theater, or an approaching enemy corps might soon prevent the investment of another town or eliminate the possibility of a battle with numerical superiority, or peace negotiations might require a kick-start from a military victory. As we saw in Chapter 3, Vauban stressed that haste made waste, preferring to plan the siege attack in as much detail as possible for optimal effect. Others lacked his patience – taking a longer-term view of the campaign but a rather short-sighted view of the siege. Even at Vauban’s best-conducted siege, Louis hoped for it to proceed a little more quickly. The King wrote from Versailles that “It does not appear that the governor of the Ath garrison merits an attack in strict form. This is why I am persuaded that you can without concern go faster than you believe; it is important to finish it promptly and to not lose any time.”450 During Vauban’s siege of Breisach, the King showed a similar concern over the perceived delays. Louis’ grandson Burgundy wrote to Chamillart from the siege: “I have received another letter whereby the King orders me to press the siege; I can assure you that we are doing all that we can and we are even going much faster than M. the maréchal Vauban would like.”451 This is confirmed by Vauban’s own correspondence, in which is reflected yet again his perfectionistic quest for efficiency:

It appears that His Majesty is resolutely determined to besiege Fribourg; he even orders Monseigneur [Burgundy] to press the conclusion of this siege; on this point I must tell you that we opened the trenches five or six days before the siege lines were finished against custom and only with a


view toward accelerating it, and that it was pushed with so much speed that the batteries did not have enough time to have their effect with all the success we should expect.\footnote{Rochas d'Aiglun, \textit{Vauban}, 2:527 to Chamillart, Biesheim 9/5/1703.}

The town fell quickly enough, but the tension between the King and his more-exacting expert is evident. Once the French returned to the offensive in Flanders in 1712, they abandoned their defensive strategy of delays and sought to shorten the lengths of their sieges. Louis’ court sent mixed signals, the Secretary of War writing to Villars that the King thought the siege could be conducted “with a bit more liveliness,” as time was precious, but he also warned “not to expose the troops too carelessly.”\footnote{AG A\textsuperscript{1} 2382, #146 Voysin to Villars, 8/25/1712.} Chamillart’s replacement Daniel-François Voysin acknowledged the concerns Villars had raised about its progress, but counseled that although he too did not fully understand their design, he hoped the engineers would find ways to speed up the attack all the same.\footnote{AG A\textsuperscript{1} 2384, #45 Voysin to Villars 9/19/1712. See also Louis’ misgivings but ultimate acceptance of the proposed front to be attacked in AG A\textsuperscript{1} 2384, #26, Louis XIV to Villars 9/17/1712.}

Allied political leaders generally took a less active role in military affairs, leaving most of the details to Marlborough, Eugene and the Dutch generals.\footnote{The distance of Vienna from the theater made it particularly difficult for the Habsburg court to dictate military operations.} Nonetheless, political administrators reflected their interest in the calendar as well. On the Dutch side, Heinsius made clear his desire to see sieges end quickly.\footnote{In 1704, van ‘t Hoff, ed., \textit{Marlborough-Heinsius Correspondence}, 144 #229, Heinsius to Marlborough, The Hague 10/21/1704; and 148 #233, Heinsius to Marlborough, The Hague 10/31/1704. For 1706, see van ‘t Hoff, ed., \textit{Marlborough-Heinsius Correspondence}, 240 #398, Heinsius to Marlborough, The Hague 6/28/1706. In 1709: Veenendaal, Jr., ed., \textit{Briefwisseling Heinsius}, 9:87 #176, Heinsius to Albemarle, The Hague 7/24/1709.} In early 1710 the United Provinces’ highest representative body, the States-General, hoped to eliminate the delays
by taking a closer interest in the siege; they gave “orders that an express be sent hither from the army every day.” The English Lord-Treasurer Sidney Godolphin for his part also considered how siege delays might affect the rest of the campaigns. Politicians back home, unable to demand specific courses of action because of their distance from the scene, nevertheless focused their armies’ attention on the passing days.

Many commanders needed little prodding from home. After the front of attack had been decided, they expected the project to be quickly implemented. Lost time might put a halt to successful post-battle pursuit. Excessive delay could allow the enemy time to shift reinforcements from another theater. A siege might end too late in the season to start another one. A region’s supplies might be consumed before a siege’s end was projected. In addition to the strategic and diplomatic concerns, commanders had their own set of operational and logistical matters to attend to.

Waiting to Open the Trenches

To illustrate how impatient Allied generals were, we can begin by looking at their opinion of the “anti-Vauban,” Menno van Coehoorn. While French generals of the time might have idealized the Coehoorn-style attack as an escape from the plodding of a Vaubanian attack, English and Dutch officers were more ambivalent about the Frisian’s conduct. Coehoorn’s acerbic personality gave plenty of opportunity for disputes to arise, but just as Allied commanders complained about his successors, so too had they complained about Coehoorn’s method. For them, his tactics may have been an


458 For example, Snyder, ed., Marlborough-Godolphin Correspondence, 3:1464 #1501, Godolphin to Marlborough, St. James 4/17/1710 O.S. For an appreciation of the defensive possibility of delay, see Snyder, ed., Marlborough-Godolphin Correspondence, 1:540 #560, Godolphin to Marlborough 5/10/1706 O.S.
improvement over Vauban’s predilection for formal techniques, but his sieges were still not fast enough. The lengthy preparations his tactics demanded appeared to jeopardize the potential time savings offered in the first place.

From the very beginning of the war Allied commanders had trouble restraining their eagerness. The delays in Coehoorn’s preparations for an attack on Venlo – once he had been convinced that the siege was possible – concerned them as a result. One English participant in the theater predicted: “Couhorn is causing all thing be maide reddie and wont faire a shot untill all things are in good order, so that its thought when once they begin the town wont keek out fouer dayes.”459 Those in command wrote less-approvingly of the engineer’s efforts. An anxious Marlborough sent the English gunner/engineer Holcroft Blood to report on the siege’s status, and Blood’s description, although exonerating Coehoorn from charges of outright insubordination, included the unsettling suggestion that he may have shared Vauban’s general concern for avoiding casualties even at the cost of lost time. As Blood recounted his discussion with the director-general: “he tould me he was sorry to see the time run away and fine wether spent in daring of nothing as much as any body, but to begin a ffoulish [foolish] thing and that that must cost severall lives mal a propos he could give no consent to.”460 The town fell quickly (eleven days of open trenches, a week of firing), but only after the engineer had been browbeaten by his superiors into pressing the attack.461 And while Marlborough was


460 BL Add MSS 61306, f. 35 Holcroft Blood to Marlborough, 8/1702.

461 Veenendaal, Jr., ed., Briefwisseling Heinsius, 1:456 #935, Wassenaar-Obdam to Heinsius, Roermond 10/2/1702. It is even conceivable that the quintessential Coehoonian attack, the bloody storm on Namur’s citadel in 1695, was pressed on him by William in order to end the siege quickly.
forced to acknowledge Coehoorn’s justified complaints at Venlo, this did not immunize the engineer from further criticisms along the same lines in later sieges.\footnote{After Blood was sent to examine the situation, Marlborough acknowledged the serious supply shortages Coehoorn had been complaining about. Snyder, ed., Marlborough-Godolphin Correspondence, 1:100 #89, Marlborough to Godolphin, Everbeek 8/10/1702; 1:109 #96, Marlborough to Godolphin, Asch 8/31/1702.} Prior to Roermond’s investment, the Dutch general Jacob van Wassenaer-Obdam complained of the Republic’s chief engineer: “Mr. de Coehoorn enrages us with his delays and the measures that must be made for him, because he never lets us know beforehand what he needs...”\footnote{Veenendaal, Jr., ed., Briefwisseling Heinsius, 1:440 #898, Wassenaar-Obdam to Heinsius, Venlo 9/24/1702.} A few weeks later he wrote despairingly:

> We are furious with M. de Coehoorn who always wants to act so methodically and will start nothing before having twice as much as is needed and everything complete, which makes us lose much time, but as the siege’s direction is confided to him, we must manage him because he is un esprit extraordinaire; I do not know any remedy.\footnote{Veenendaal, Jr., ed., Briefwisseling Heinsius, 1:462 #949, Wassenaar-Obdam to Heinsius, Roermond 10/5/1702.}

Cardonnel, again mirroring the Duke’s own opinion, informed the politician Robert Harley back in England:

> I hope in my next to send you the like good news of Roermond, where we reckon Mr. Cohorn is more nice than wise. He is losing time there as he did before Venlo, and will not begin till he has everything ready to a tittle, though half the preparations might do the busyness; for we reckon Stevensweert must be the strongest of the two.\footnote{Quoted in Wijn, Het Staatsche Leger, 1:171. Coehoorn’s “farther demands of stores,” wrote Marlborough, “gives mee the spleen.” van ’t Hoff, ed., Marlborough-Heinsius Correspondence, 25 #47, to Heinsius, Everbeek 8/21/1702.}

Similar complaints were made at the siege of Bonn in early 1703. Marlborough grumbled to Heinsius that “Wee shall not bee able to make a farther step till M. de Coehorn has all that he expects; which gives mee a good deall of concern, for he complains very
Just as Vauban had been forced to accelerate the attack on Breisach in 1703, by early May the Duke had finally convinced his recalcitrant engineer to open the trenches before all their supplies arrived:

> Notwithstanding we have not yet above half our boats, for fear of losing too much time I have prevailed with M. Coehorn to open the trenches, which we did last night with very little lose. I hope everything will be here by the time our batteries will be ready, which will be by Tuesday.\(^{467}\)

Several years later, Marlborough indicated how entrenched a practice this annoyance had become even after Coehoorn’s death, as he wrote hopefully to Godolphin: “And that we might not continue entirely idle, though it be against the rule to open the trenches before we have our cannon, we think of doing it tomorrow, or the next day, at farthest, for if it were possible we would faine be masters of this town in this month of May.”\(^{468}\)

Surprisingly then, even the brusque Coehoorn, renowned for his love of bombardments and storms, was too methodical and systematic for Allied generals in a hurry. That such grumbling surfaced at almost every siege directed by Coehoorn in the Spanish Succession, most of which lasted only a few weeks – from nine to twenty-five days (five to eleven days of open trenches) – illustrates how powerful and almost instinctual was the commanding officers’ distaste for delays. It also illustrates how generals refused to believe the engineering explanation that time spent preparing for a siege would shorten its overall length, despite several examples (Venlo, Oostende, Venlo, Oostende, Venlo, Oostende,

\(^{466}\) van ‘t Hoff, ed., Marlborough-Heinsius Correspondence, 61 #101, Marlborough to Heinsius, Köln 4/21/1703. See also Snyder, ed., Marlborough-Godolphin Correspondence, 1:165 #157, Marlborough to Godolphin, Köln 4/9/1703.

\(^{467}\) van ‘t Hoff, ed., Marlborough-Heinsius Correspondence, 65 #106, Marlborough to Heinsius, Bonn 5/4/1703.

\(^{468}\) Snyder, ed., Marlborough-Godolphin Correspondence, 3:1468 #1505, Marlborough to Godolphin, Flines 5/1/1710.
Menin...). While we can in some cases blame the Dutch logistical system for not providing the chief engineer with all the supplies he demanded, Allied commanders were certain that Coehoorn wasted time demanding far more guns and ammunition than were actually needed to capture the towns. He may have improved upon the stereotyped Vaubanian attack in his superiors’ eyes, but he did not go far enough, was still unwilling to take the necessary shortcuts the operational situation demanded. He was still too wedded to the engineers’ insistence on preparations and planning. Coming from generals who did all they could to avoid sieges in the first place, such impatience is not surprising.

General Pressure to Accelerate

Nor were engineers given a free hand once ground was broken. From the Allies’ first sieges, Marlborough wrote diplomatically-worded reminders to those conducting the sieges to push their attacks forward as quickly as possible.469 Goslinga reported on Marlborough’s strident insistence that they accelerate the attack on Oostende; the field deputies responded by pointing to the severe shortages of supplies.470 Nevertheless, even the field deputies felt the time pressures. Halfway through the siege, Goslinga noted in his diary entry of 3 July that “We did nothing this night except perfect the works and extend our parallel a little to our right. We could have advanced further, but our directors wanted to advance more carefully.”471 With such cautious engineers directing the attacks,

469 For Venlo 1702, see Murray, ed., Letters and Dispatches, 1:34, Marlborough to Coehoorn, Asch 9/10/1702.

470 Veenendaal, Jr., “De Mémoires van Sicco van Goslinga,” 22.

471 Veenendaal, Jr., “De Mémoires van Sicco van Goslinga,” 23.
Salisch promised at Menin to “push the siege as much as will be possible.” Lille was a particularly frustrating experience. Schulenburg begged the Duke to intercede personally, “in truth I can understand neither the reason nor the obstacles that have prevented us from capturing the two tenailles which would ... change the countenance of the entire attack.” He was particularly adamant that they step up their advance as the defenders were quickly running out of powder: “Many would have thought that we would have already captured the covered way several days ago, but the enemies have profited much from the mistakes [faux démarche] that the engineers have committed...” Marlborough was particularly pessimistic at Lille: “However, I am sorry to tell you our situation is such, through the lateness of the season, the slowness with which the engineers have proceeded in their approaches, and the great difficulty we shall meet with in bringing up a further supply of ammunition, as to make us doubt of the success of the siege.” The attacks on the citadel prompted a chorus of complaints against the poor conduct and lack of vigor in the attacks both in the siege camp and back in England. So too did the Duke stress to Des Rocques the need to push this attack as expeditiously as possible – after Du

472 Veenendaal, Jr., ed., Briefwisseling Heinsius, 5:482 #931, Salisch to Heinsius, Menin 8/21/1706. A camp journal mentioned Marlborough going to the camp “in order to carry on the siege with all possible vigour.” BL Add MSS 4742, f. 73b, 8/18/1706.

473 BL Add MSS 61245, ff. 75b-76, Schulenburg to Marlborough, Lille 10/1/1708. Tenailles were low-lying outworks positioned in front of the curtain wall that sheltered it from direct breaching fire.

474 BL Add MSS 61245, f. 82, Schulenburg to Marlborough, Lille 10/14/1708. For a French perspective, see Vault and Pelet, Mémoires militaires, 8:456, Senneterre to Chamillart, Douai 9/28/1708.


Mée’s bungled storms on the town, the chief engineer had re-imposed control and insisted on slowing down the siege by sapping up the citadel glacis.\footnote{Murray, ed., \textit{Letters and Dispatches} 4:293 Marlborough to Des Rocques, Rosselare 11/8/1708; and 331 from Beerlegem 12/2/1708.}

At Tournai’s countermined citadel, Schulenburg “wanted to storm the outwork the day before yesterday with the grenadiers, but because of the difficulties and perils that several imagined this undertaking would meet, the resolution was taken to approach it underground and capture it foot by foot.”\footnote{Schulenburg, \textit{Leben und Denkwürdigkeiten Johann Mathias Reichsgrafen von der Schulenburg}, 396 8/18/1709.} Albemarle complained from camp that “the attack on this citadel goes very slowly; order and good conduct are lacking, and I fear that the siege will be lengthy.”\footnote{Veenendaal, Jr., ed., \textit{Briefwisseling Heinsius}, 9:194 #406, Albemarle to Heinsius, Tournai 8/24/1709.} Later in the siege, Schulenburg explained the delays he was experiencing trying to pass the ditch: “all this would have been finished already if the engineers had not made so many detours, such as occupying the \textit{place d’armes}, which had to be completely demolished to make room. These Messieurs are stretching out the length of this siege, no doubt so they don’t have to conduct any others this year.”\footnote{Schulenburg, \textit{Leben und Denkwürdigkeiten Johann Mathias Reichsgrafen von der Schulenburg}, 466, 8/1710.} With Du Mée’s death they lost an engineer more amenable to their concern for speed.

Reflecting later on his passing, Goslinga concluded that Des Rocques was “sage, well-versed in the craft, but a little slow and circumspect,” whereas Du Mée was “very capable, lively, brave and determined to proceed as fast as possible when necessary. A little more age would have moderated his great fire and would have rendered him more
capable in his art.... To tell the truth, he was worth more than Des Rocques.”481 The contrast between an older Des Rocques who had fully accepted the engineer’s philosophy and the younger Du Mée who was not yet fully indoctrinated shows that, even among those considered the engineers’ supporters, the engineering mindset was considered too cautious.

The first conquest of the 1710 campaign would be the most frustrating of all. Promising to use “all possible diligence in going on with the siege,” the Captain-General explained the larger picture to the raadpensionaris: “The French continue to march all their troops towards this frontier, but if M. de Rock could go so fast as my wishes, we should have [Douai] before they could be together, which would be une coup de party.”482 Almost a month later, the British quartermaster William Cadogan conveyed to Lord Sunderland his hope of capturing the town by 12 June, “accounting in this calculation for accident and the slowness of the temper as well as of the manner of attauning of the ingineer De Roque, who has the principal direction.”483 The town finally fell at the end of June, but the extra month delay forced the Allies to abandon their project against Arras.484 Instead they shifted westward to Béthune. Des Rocques was

481 Veenendaal, Jr., “De Mémoires van Sicco van Goslinga.” 23. Des Rocques was 42 in 1709, and at the end of the war he claimed to have participated in 28 sieges. Veenendaal, Jr., ed., Briefwisseling Heinsius, 13:462 #706, Des Rocques to Heinsius, Ruesnes 6/20/1712. Du Mée’s exact year of birth is unknown.

482 Van ‘t Hoff, ed., Marlborough-Heinsius Correspondence, 489 #839 Marlborough to Heinsius, Douai 5/8/1710. The “coup de party” presumably refers to the positive effect the town’s fall would have on domestic politics back in England, where Godolphin’s position as Lord-Treasurer was becoming increasingly tenuous. See also Murray, ed., Letters and Dispatches, 5:13 Marlborough to Boyle, Douai 5/1/1710; and van ‘t Hoff, Marlborough-Heinsius Correspondence, 492 #843 Marlborough to Heinsius Douai 5/22/1710.


484 Villars had used June to consume all the fodder surrounding the town. ARA RvS 1897, Considérations sur les suites de la campagne et projet de la disposition pour les quartiers d’hyver 8/10/1710.
secretly refused direction of this new endeavor as punishment for his mistakes at Douai, but things did not improve much with the change in leadership. Albemarle remarked of the new chief Hertel’s dalliance before the town:

It appears that our affairs are hardly prepared or advanced for commencing the attack. However, the town has been invested for six days. I think even that we will not be able to open the trenches until the end of the week, which would be a great blunder for the time we will lose, as the season advances rapidly while we do nothing.\footnote{Veenendaal, Jr., ed., \textit{Briefwisseling Heinsius}, 10:558 #1114, Albemarle to Heinsius, Villers Brulin 7/21/1710.}

Once the trenches were opened, Fagel assured the Duke that he was placing pressure on the engineers to accelerate their attack.\footnote{BL Add MSS 61181, f. 149, Fagel to Marlborough, Béthune 7/26/1710.} After it had finally fallen, Schulenburg averred that the town would have been captured ten or twelve days earlier if he had been given enough munitions, enough men and if the plan of attack had not been changed several times.\footnote{Schulenburg, \textit{Leben und Denkwürdigkeiten Johann Mathias Reichsgrafen von der Schulenburg}, 472 8/31/1710; and a letter to Friedrich I Augustus of Poland 8/31/1710.}

French commanders were also perpetually in a hurry, especially the one \textit{maréchal de France} who was able to stand up to the Allies’ best generals. In his memoirs, Villars used every opportunity to highlight the contrast between the correctness of his own decisive judgment and the overly cautious attitude of his engineers.\footnote{See a reproach of Albergotti on the capture of Fort Manheim in Vogüé, ed., \textit{Mémoires du Maréchal de Villars publié d'après le manuscrit original}, 3:194.} Villars wrote of pressing Valory and Albergotti to accelerate their attack at Douai in 1712, accepting their excuses only begrudgingly.\footnote{AG A¹ 2382, #148, Villars to Voysin, Douai 8/26/1712. One correspondent commented on Villars’ desire to accelerate the siege “because he had other things to do,” as well as his inability to speed up its pace. AG A¹ 2382, #102, Valenciennes 8/23/1712.} Recalling his successful rebellion against Vauban’s advice
at the siege of Fort Kehl in 1703, he notified Voysin that as the attack on Douai was going slowly, he would give Valory two more days and then “conduct the siege according to my taste.”  Later in life he recalled of Valory’s expectation of a fifty-day defense: “That was not my calculation, and I was used to leading the engineers a little bit faster than was their rule.”  The cavalry brigadier François-Marie comte de Broglie, from his perspective, also considered their attacks far too cautious given the undersized garrison.  The town quickly fell and French troops were immediately sent to invest the next target.

With the engineers still deemed out of practice, Villars interjected himself yet again at Le Quesnoy: “As we have not conducted sieges in a long time, my involvement was necessary to speed its pace.”  Made acutely aware of the time constraints, Valory promised to quicken his attack to please both his commander and Court.  The 1713 campaign in Germany saw the maréchal exercising his freedom of action yet again.  Describing his behavior in the third person, he once again emphasized the time variable:

He [Villars] forgot nothing in order to accelerate the preparations for the siege of Landau. The place was excellent, defended by a very strong garrison composed of the best Imperial troops. Thus people who like precautions had good reasons to object to the briskness of the marshal Villars, but as he followed the principal that vivacity is almost always necessary when it is not done carelessly, he only considered the precautions which were absolutely necessary.

490  AG A1 2382, #88, Villars to Voysin 8/22/1712.


492  AG A1 2382, #196, Broglie to Voysin, Douai 8/29/1712.


494  AG A1 2384, #22, Valory 9/17/1712.

After nine days of open trenches, he forced the commanding general to accelerate the siege, as not even an isolated redoubt well beyond the outworks had been captured.496 Lecturing Valory, he admonished: “one must not underestimate the enemy nor overestimate their strength, and, in judging its defense, even the enemy’s greatest courage and skill is not enough to deter us from going faster.”497 Villars actively intervened in the details of siegecraft in order to overcome the ‘lethargy’ of his engineers.

Whereas the engineering interpretation of “efficiency” weighted heavily the minimizing of casualties, most commanders saw efficiency much more in terms of minimizing the amount of time spent at the siege. The engineers were focused on their sphere of expertise whereas the generals had to consider the larger operational issues beyond the siege lines. While both French and Allied commanders saw the need for haste, only one side apparently felt confident enough in their own abilities to direct this phase of the siege in person. Once the trenchworks began, Villars, although raised in the cavalry, did not hesitate to enter the trenches himself and take command of the well-established French corps of engineers.498 While Allied commanders were insistent on opening the trenches before the engineers were ready, they do not appear to have interfered much with the trenchworks, especially Marlborough, who usually remained in


498 Villars directly addressed this stereotype of the siege-ignorant cavalier Vauban had warned about, writing of himself that: “Although the marshal Villars had risen up through the cavalry, we saw in the beginning of these memoirs that he nonetheless had occasions to experience it from the infantry’s perspective, and with this experience he was better equipped to competently [sainement] judge the engineers’ projects.” Vogüé, ed., Mémoires du Maréchal de Villars publié d'après le manuscrit original, 2:65 after his successful siege of Fort Kehl in 1703.
the observation army. Instead, they only harped about the attack’s progress until they came to a stage of the siege where they could once again intervene with confidence.

**Capturing the Covered Way**

The most time-consuming stage of a Vaubanian siege was the slow trench advance towards the fortifications – much of this delay could be avoided if they could jump forward to the next phase, the capture of the covered way. This obstacle was composed of a gently sloping glacis, a zone where interlocking fields of the garrison’s fire converged against any attacker brave enough to charge up it, crowned with a double row of palisades at the crest of the covered way (or counterscarp).499 Once this work was in their control, the besiegers could establish their breaching batteries on its crest and begin the breaching task, firing directly at the base of the outwork or curtain wall. Several days of breaching would soon lead to the town’s surrender. As Vauban had identified in his early treatise, this was the most important tactical challenge, since capturing the covered way by storm accounted for three-quarters of a besieger’s casualties during the entire length of a siege.500 All three of his tactical “innovations” consequently improved the odds of seizing this work, while two of them (trench cavaliers and ricochet fire) were solely dedicated to making this task easier and safer. Industry was now to replace the brute force of a storm whenever possible.501 In his tome dedicated to Burgundy he provided his mature judgment that capturing the counterscarp with the use of ricochet fire

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499 Technically, the covered way referred to the walkway and firing step ringing the outermost edge of a fortress’s works, while the counterscarp was the retaining wall in the ditch holding up this platform. Contemporaries, however, used the two interchangeably when speaking of storms.


and trench cavaliers was preferable to bloody assault whenever possible.\textsuperscript{502} Vauban’s first choice was perfectly clear by the end of his life, as the non-engineer marquis de Feuquières explained half-way through the Spanish Succession:

\begin{quote}
I am not very copious in my Maxims on this subject [of attacking the covered way], because I am entirely averse to the antient Practice of attacking Counterscarps by Storm, as being an Operation very destructive to the Assailants. The manner of forcing the Besieged to abandon their Counterscarp, and Covert-way, practiced by Mr. de Vauban, is certainly best, and most effectual, at the same time that it is least fatal to the Men.\textsuperscript{503}
\end{quote}

Noticeably, here is where the Vauban method was most strenuously resisted by both Allied and French commanders.

Consistently, siege commanders chose the quickest, most-direct route – foregoing the recommendation of Vauban and successive chief engineers to sap up the glacis. Instead, they chose the ancient practice of frontal assault, sending a ‘forlorn hope’ of grenadiers charging up the glacis, past the shattered remains of palisades into the covered way itself, which had already been softened up with artillery fire and handgrenades.\textsuperscript{504} Scores of fusiliers would follow, as well as a group of workers directed by an engineer to construct a secure lodgment. Additional waves of reserve troops would be thrown into the fray as needed, in all several thousand men dedicated to establishing posts on the work. This storming tactic was know by contemporaries as the attack “à la Coehoorn,” after its most famous supporter. Once such lodgments were constructed (usually at the salient angles), the besiegers could then begin the task of sapping to the right and left, clearing

\textsuperscript{502} Vauban, \textit{Traité}, 263, maxim XIV. In those rare cases where the effectiveness of ricochet fire was neutralized by terrain, he gave additional advice on the best way to weaken the covered way before storming. Vauban, \textit{Traité}, 87-89, 128-130.

\textsuperscript{503} Feuquières, \textit{Memoirs Historical and Military}, 2:286; also 2:289.

\textsuperscript{504} On the popularity of frontal assaults during the Hundred Years’ War, see Kelly DeVries, \textit{Joan of Arc: A Military Leader}, (Glouestershire: Sutton Publishing, 1999), 3-4, 103-105, 187-189.
the branches of the covered way and starting descents underneath it towards the ditch. Against major fortresses, the casualties resulting from this massive effort numbered a thousand men or more, yet in siege after siege the commanders chose this bloody option rather than accept the several-day delays that were required for the slower process of advancing à la sap. They justified it, as modern commanders do, with a counterfactual argument: we would take more losses exposing our men while sapping than what we will suffer in the much shorter time needed to assault.505

The Allied commanders were so enamored with covered way assaults that it practically became doctrine. Confederate forces continued to rely on the tactic the “Dutch Vauban” used in his capture of Namur’s citadel in 1695, a strategy that they would pursue for the remainder of the war. In charge of Kaisersweert the French commander Blainville (son of Colbert) appreciated Vauban’s arguments and somewhat incredulously reported to the maréchal Louis François, duc de Boufflers on the enemy’s tactics:

After seeing the manner with which the enemies have attacked us up till this point in time, the slowness and extreme caution that they have shown in all their actions, and their recent attempts to sap towards our angles [of the covered way], I would never have believed that they would decide to attack the covered way by storm, and to risk losing a good part of their troops in order to establish themselves on a work that they could have captured by sap in two or three days without losing hardly anyone; this, however, is exactly what they did yesterday between seven and eight in the evening.506

Blainville misinterpreted the Allies’ slow pace as a sign of their caution – at the Dutch attack at least, they had planned to storm the counterscarp after only a week of


506 Wijn, Het Staatsche Leger, 8 1:688, Blainville to Boufflers, Kaisersweert 6/10/1702.
trenchwork, but bungling at the Prussian approach forced them to postpone their assault and help put their ally’s works in order. It was only after a six-week delay that the besiegers were able to launch storms at both approaches against the divided garrison. The town surrendered within a week, but the storm had cost the Allies 2,800 casualties (500 dead among the Dutch alone). After this bloody start, the next several Flanders campaigns (1702-1705) settled down into a more comfortable rhythm, The Allies conducted a series of short sieges against weak fortresses that did little to tax their resources or challenge their besieging skills (see Chapter 6). The garrisons were small, their powder supply often limited; the small volume of fire they offered made the slow pace of sapping à la Vauban unnecessary. Most of these French garrisons wisely surrendered a few days before a storm was imminent. If they did not, as in a few rare cases, they were to be taken at bayonet point. At Venlo’s Fort Saint-Michel,

the design of the attack was only to drive the enemy from the covert-way, that they might not disturb the workmen in making their lodgment; however, if they found them give way with precipitation, we were to jump into the covert-way, and pursue them, let the consequence be what it would. We all thought these were very rash orders, contrary both to the rules of war, and the design of the thing.

Their risk-taking paid off here, for the assault party forced the few defenders in the covered way to retreat, pursued them into the fort itself and accepted its surrender all in the same day. Storming small forts such as these presented little challenge and reinforced the generals’ decision to use brute force tactics.

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507 For the storm’s casualties, Veenendaal, Jr., ed., *Briefwisseling Heinsius*, 1:285 #497 6/14/1702 Geldermalsen to Heinsius, Kaisersweert mentions 2,800 casualties in total; while Wijn, *Het Staatsche Leger*, 8 1:691 #7 Lijste van dooden en gequesten van de troupes van Den Staat, bij de attaque van de contrescarpe voor Keysersweert bekoomen den 9 jini 1702 enumerates 2,101 casualties for the Dutch. French losses were initially reported as 700, but they were quickly revised downward to only 350. Wijn, *Het Staatsche Leger*, 8 1:690, Blainville to Boufflers, Kaisersweert 6/14/1702.

The situation began to change in 1706. After Ramillies, the Allied army eventually arrived before the coastal fortress of Oostende. Des Rocques’ initial plan for its siege indicated his intention to postpone opening the trenches until all the supplies were ready, and then to push back the decision whether to capture the covered way by storm or sap depending on the effectiveness of their artillery fire and the garrison’s dispositions.509 Ten days later Goslinga apologized to the Grand Pensionary for the unexpected length of the siege, three days after the trenches had been opened, but eleven days since the town was invested.510 Despite early delays due to a shortage of fascines and the high water table, it quickly became obvious that the garrison was performing far below expectations. By 3 July the siege commander Ouwerkerk was already discussing the upcoming attack on the counterscarp, which took place two days later.511 Resistance was quite light, and the grenadiers quickly chased the defenders away and lodged on the covered way with only 54 casualties.512 The very next day the town capitulated, to the relief of those who had expected a much longer defense.513 Thus far, the 1706 campaign looked like a continuation of previous sieges.

Menin was their next objective, described as one of the strongest fortresses in the entire theater; it presents a clear example of the conditional nature of the engineers’ authority over the siege, as well as providing a flashback to Kaisersweert. Unhappy that

509 ARA SG 9188, #86, Disposition des points principaux pour faire le siege d’Ostende, 6/20/1706.
510 Veenendaal, Jr., ed., Briefwisseling Heinsius, 5:357 #674, Goslinga to Heinsius, Oostende 7/1/1706.
512 Europische mercurius, July 1706, 86; BL Add MSS 61180, f. 5, Ouwerkerk to Marlborough, Oostende 7/5/1706. According to the semi-official Dutch monthly, the besiegers suffered 438 casualties in all. Europische mercurius, 7/1706, 87.
once again the siege’s advance was slower than promised and emboldened by their success at Oostende, the generals and field deputies decided to halt Des Rocques’ sapping and instead demanded a storm.\textsuperscript{514} The assault took place on the night of 17 August, resulting in lodgments along the covered way. The cost, however, was far greater than what Oostende might have given them hope to expect: 1,300 casualties instead of the hundred or fewer experienced in most previous assaults.\textsuperscript{515} The campaign culminated in the siege of Ath, where we find a similar pattern: Du Mée appeared flexible, preferring to judge the garrison’s countenance before deciding how to capture the counterscarp.\textsuperscript{516} As before, the commanders again chose assault, being proven right on this occasion with only 150 casualties.\textsuperscript{517} The 1706 campaign presented a mixed picture, then, of engineers following Vauban’s adage of adapting their tactics to the resistance of each fortress, with a preference for the sap, and of generals pushing for storms with sporadic success.

Things were soon to change dramatically, however, for the higher casualties seen at Kaisersweert and Menin would be repeated again and again when the Allies collided with the main fortresses of Vauban’s pré carré. Engineers’ initial attempts to sap gave way quickly to the generals’ insistence on shock tactics. The Allied siege of Lille is a particularly instructive example. Here Goslinga described a council of war, wherein the

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\textsuperscript{514} Veenendaal, Jr., “De Mémoires van Sicco van Goslinga,” 30. In a letter Goslinga showed his annoyance that they had “lost” four days sapping and they would still have to storm the counterscarp. Veenendaal, Jr., ed., Briefwisseling Heinsius, 5:476 #915, Goslinga to Heinsius, Menin 8/18/1706.

\textsuperscript{515} On the storm itself, see Veenendaal, Jr., “De Mémoires van Sicco van Goslinga,” 30. Wijn, Het Staatsche Leger, 8 part 2:758 Lijste van de dooden en gequetse van den 17en tot den 18en augustij 1706 enumerates 1,305 casualties; Goslinga also mentioned 200 dead and 1,100 wounded.

\textsuperscript{516} BL Add MSS 61310, f. 74, Du Mée to Marlborough, Ath 9/27/1706.

\textsuperscript{517} ARA RvS 1897, Lyst van doode en gequetsten soo becoomen zijn in de belegering voor Ath van den 16 september tot 2 oktber inclus printed in Wijn, Het Staatsche Leger 8 part 2:761 lists 835 casualties for the entire siege.
\end{flushright}
chief engineer expressed his desire to continue sapping towards the covered way rather than storm it outright: “We wanted to assault the counterscarp, but Des Rocques believed it was necessary to lodge on it by the sap. This method requires more time, but it will save us many brave men if it succeeds. We have decided with Prince [Eugene] to give him several days to attempt it.”\textsuperscript{518} This deadline was not extended, for after a few days of digging, the generals soon tired of such trenchwork and on the night of 7 September stormed the covered way. Goslinga described the results:

Yesterday at sunset we assaulted the counterscarp; the success did not meet expectations, the heavy fire added to the darkness put many of our workers in disorder, of the 4,000 we could only gather together 1,600 to make the lodgments. Our poor men and regiments however were obliged to withstand the enemy fire and could only lodge at a few angles.\textsuperscript{519} These few lodgments cost the confederates 2,667 casualties.\textsuperscript{520} This would become a pattern at almost every major Allied siege in Flanders from 1706 on, with the three exceptions of Lille’s citadel, Tournai’s citadel, and Douai in 1710. At every one of these (except for Aire) the engineers preferred sapping while the generals demanded assaults.\textsuperscript{521}

In this context, it is not surprising that Marlborough was sure to attribute sapping to the engineers when observers might otherwise blame him for the siege’s slow pace: “the enemy now make very little fire, and we have carried on our several approaches

\textsuperscript{518} Veendael, Jr., ed., Briefwisseling Heinsius, 7:497 #1085, Goslinga to Heinsius, Lille 9/3/1708.

\textsuperscript{519} Veendael, Jr., ed., Briefwisseling Heinsius, 7:509 #1110, Goslinga to Heinsius, Lille 9/8/1708. The “slowness with which the engineers have proceeded in their approaches” was one of three reasons Marlborough gave for why the outcome of Lille’s siege was still uncertain. Murray, ed., Letters and Dispatches, 4:237 to Earl of Sunderland, Lannoy 9/24/1708.

\textsuperscript{520} Wijn, Het Staatsche Leger 8 2:788.
within a few paces of the counterscarp, but our engineers being apprehensive of the enemy’s mines, we now proceed by the sap in order to save our men.”522 Marlborough’s language suggests disapproval, but it was a sensible precaution, for the mines were untouched by the besieging batteries and thus would have posed a significant threat to storm parties. Only by sapping and sending out miners to probe underground could these hazards be neutralized. So serious was this threat – garrison mines exploding underneath lodgments or batteries constructed on the covered way – that a good system of countermines was one of the very few defenses that could prevent the Allies from using their favorite method.523 In fact, all of the Low Countries fortresses whose covered ways the Allies captured by sap had garrison countermines: Lille’s citadel, Tournai’s citadel, and Douai. “We fear the taking of [Tournai’s citadel] will take us up thirty days from this time, for there is not a foot of ground that is not undermined and casemated, which will oblige us for the preservation of our people to approach it à la sapp, which indeed is very slow but sure,” as a Colonel Revett informed a correspondent back in England.524 Rather than acknowledge a necessity, impatient commanders blamed the delays on the engineers’ caution.

521 Des Rocques expressed the desire to speed up the siege of Aire (due to the late season) by storming the covered way. It is unclear if this was his own idea or whether he wrote of it under pressure. Veenendaal, Jr., ed., Briefwisseling Heinsius, 11:212 #387, Des Rocques to Heinsius, Aire 10/2/1710.

522 Murray, ed., Letters and Dispatches, 4:547 Marlborough to Boyle, Tournai 7/15/1709.

523 Another, much less common defense against storms was the use of inundations or an advanced wet ditch at the foot of the glacis – the besiegers would have to build bridges across this moat before starting up the glacis to reach the crest of the covered way. Douai 1710 is the only example from Flanders where the attackers were unable to fully drain the front of attack and thus had to approach by the sap instead.

The French were similarly captivated with shock tactics, Villars using the technique again and again in the 1712 Flanders campaign. The ingénieur en chef Valory perfectly encapsulated the engineering preference for greater certainty and the reluctance to spill unnecessary blood as he resisted pressure to storm Douai’s counterscarp after only a week of trenchwork: “several days more will make the assault’s success certain and our loss infinitely smaller.” The place was finally stormed on 7 September and the garrison beat the chamade the next day. Bouchain and Le Quesnoy quickly followed suit. Alègre identified how countermines at the former prevented them from storming its counterscarp: “the place although small is all the same very strong, fortified regularly enough, reinforced with earth [fort enterré] and the enemies have a quantity of mines which will oblige us to approach the works with a little more ceremony.” Villars remained skeptical of his engineers, however, and at Landau the next year he justified his intention to break with convention in the following terms:

The sentiments of the maréchal Villars, in the first days of the siege, had been to attack the covered way from a little further away than is normally practiced. The reason was that this covered way completely countermined, it was certain that the very wet terrain would force the enemies to charge the mines three days before they expected it to be attacked. The engineers opposed this plan, thinking it rash and too perilous. However, the rest of the siege would show that beyond the loss of time, which is very precious in wartime because thirty days of open trenches were needed to capture the detached outworks, the loss of men was also very considerable during

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526 AG A1 2382, #89, Valory to Villars, Douai 8/21/1712.

this period of time which a premature attack would not have cost, and it
was recognized by the end that the maréchal Villars’ opinions were
proved correct.\footnote{Vogüé, ed., Mémoires du Maréchal de Villars publié d'après le manuscrit original, 3:199.}

Again, rather than acknowledge the necessity of the sap’s delays, Villars was willing to
risk an assault on a covered way only briefly prepared by artillery fire, despite the
example of Marchiennes the previous year. Whether his plan would have succeeded or
not is impossible to know (unlikely if Marchiennes was any indication); instead they
conducted a conventional trench attack and still stormed the covered way at a cost of
2,000 casualties. Duffy disapproved of “such an un-French and costly method of reducing
the stronghold,” yet it was in many ways a typically French tactic – Vauban had
complained in 1669 of just this predilection, was unable even to stop it at some of his
own sieges, and the chevalier de Quincy testified to its continued popularity forty-five
years later.\footnote{Duffy, The Fortress in the Age of Vauban and Frederick the Great, 47. At the siege of Cambrai in the
Dutch War, a demi-lune was stormed against Vauban’s recommendations. Hebbert and Rothrock, Soldier
of France, 54.} This outlook remained popular with many Allied and French commanders.

As the above paragraphs make abundantly clear, counterscarp storms were the
preferred alternative. The historiography explains the perceived rarity of Coehoorn’s
alternative tactics in terms of skill: it was easier to learn Vauban’s scientific attack than to
become skilled at knowing exactly where, when and how to storm the covered way – an
achievement that demanded the gift of coup d’œil.\footnote{On the rarity of Coehoorn’s coup d’œil, see Duffy, The Fortress in the Age of Vauban and Frederick
the Great, 96; Lynn, Giant of the Grand Siècle, 576-577. Elsewhere, Duffy did note that Coehoorn’s
energetic style “corresponded more closely to the instincts of French commanders... than did the apparently
slow march of Vauban’s attack.” The Fortress in the Age of Vauban and Frederick the Great, 65.} However, as Vauban preached,
memorizing his maxims was of little worth without the ability to apply those to a

\footnote{526 Vogüé, ed., Mémoires du Maréchal de Villars publié d'après le manuscrit original, 3:199.}
\footnote{529 Duffy, The Fortress in the Age of Vauban and Frederick the Great, 47. At the siege of Cambrai in the
Dutch War, a demi-lune was stormed against Vauban’s recommendations. Hebbert and Rothrock, Soldier
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energetic style “corresponded more closely to the instincts of French commanders... than did the apparently
slow march of Vauban’s attack.” The Fortress in the Age of Vauban and Frederick the Great, 65.}
particular attack – a skill that required years of practice. So too does this explanation assume good relations with the non-engineers tasked with carrying out the engineers’ plans – applying Vauban’s techniques was only as easy as the other branches allowed it to be. Assaults were in fact far easier for field commanders to understand and control – the ability to quickly recognize the advantages of a battlefield and dispose large bodies of troops for an advance is exactly what made good battle commanders. The unattractive alternative was to rely on distrusted engineers who maddeningly whiled away the campaign season measuring angles and turning dirt. Implementing Vauban’s attack in siege after siege further required a large and well-trained group of engineers (in itself requiring a long-term institutional basis) overseeing acquiescent generals, gunners and workers. Coehoorn’s method required far less, allowing commanders to minimize their reliance on engineers by returning to an older, less systematic technique, the same tactics that had spurred Vauban to reform siegecraft in the first place.

Upon closer examination, we find that the charges of incompetence revolved around one specific fault – failing to capture the town quickly. The losses needed to achieve this preeminent goal were of only secondary importance, the unavoidable wages of war. Notably, in only one or two instances are the engineers castigated for the unnecessary casualties resulting from “their mistakes” – the delays are what agitated the

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531 Vauban’s comment that infantry officers could be taught the proper conduct of an attack in three sieges referred to training ingénieurs extraordinaires, who were only in charge of supervising trench construction and implementing the projected works assigned to them by the directors of the approaches. It was the much more experienced and skilled chief engineer who actually planned the attack on the town.

532 We recall Villars’ assertion that the head of the trenches was most suited to the “commander’s eye.” AG A1 2382, #124 Villars to Voysin 8/24/1712.
generals. Nor do we find commanders agonizing (in writing at least) over the hundreds of men killed during covered way storms as Vauban did. Instead of self-doubt or remorse, we read only of opportunities lost to delays.

**Justified Charges of Incompetence?**

With this clearer understanding of what exactly engineering opponents were criticizing, we need to return again to the issue of the engineers. In this new light, can we still argue that they were truly incompetent, or is this chasm between commanders and engineers better explained by a disagreement over the balance between time and lives? Although we cannot come to a definite conclusion with the limited information available, we can see that both legitimate and unmerited complaints against the engineers assume that time is more important than soldiers’ lives. We cannot agree on whether the engineers were truly ‘proficient’ until we agree upon the criteria by which to measure them.

**Charges against the Engineers**

Whether the engineers were really as incompetent as their superiors claimed is difficult to determine. Practically, we cannot test that an attack *not* made would have gone better or worse than that which was actually carried out. The precise conditions at these 300-year old sieges are unknowable to us today, for extant sources do not provide the necessary detail for completely accurate reconstruction, while almost all of the fortifications and their environs have been destroyed and built-over beyond recognition. Just as importantly, we cannot weigh the two sides’ accounts against each other and draw

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533 It is perhaps worth noting that Landsberg, an engineer who harshly criticized his superiors (and almost any other engineer alive at the time), did bemoan the loss of life caused by his peers’ mistakes, e.g. Landsberg, *Nouvelle manière de fortifier les places*, 40.
a conclusion, as there are extremely few sources in which the engineers bothered to
defend their actions. They were far too busy in the trenches to provide either lengthy
justifications of their conduct or even much correspondence during a siege – Vauban is
not the only engineer to apologize for being too busy to write to Court. As a
representative example from the War of the Spanish Succession, Des Rocques wrote a
total of six brief letters to Heinsius during the 52-day siege of Douai in 1710. He relied
instead on the approach commander and the field deputies to keep the raadpensionaris,
the Raad van State and the States-General informed of what was happening at the siege
on a daily basis. After conducting the attacks, they had to spend time inspecting the
captured fortifications and supervise their repair as well as prepare for new attacks. Nor
did they leave manuals, memoirs or diaries for posterity.\footnote{The exceptions from Louis XIV’s period are Vauban and the Allied engineer J.H.D. Landsberg. Contrasted with Vauban, Coehoorn has left extremely little documentary evidence of his sieges.} The many siege journals – our
main source from the engineer’s perspective – are objective, almost clinical, accounts of
events rather than analysis, highlighting the daily advance of the trenches, the batteries,
the sorties, and other siege actions with almost no mention of disputes, alternative
courses of action not adopted, or, for that matter, much in the way of explanation or
judgments in general. To cite one example, despite the widespread criticism Du Mée
experienced after leading the initial storms against the town of Lille, in his purportedly
self-exculpatory account of the siege (\textit{An exact journal}) he failed to discuss the various
options available to him and why he and Des Rocques made the decisions they did,
beyond a cursory nod to the high attrition suffered by the engineers. In many ways then,
the detailed information necessary to judge a siege was unavailable to those who did not
witness it in person. Without more certain knowledge of conditions at the siege and of the
engineers’ decision-making process we cannot know for certain what motivated their actions, nor what important factors they may have been forced to take into account that were ignored or unknown to the non-engineers. Added to the difficulty of trying to prove counterfactuals, such as the claim that storming the covered way saved more lives than sapping would have cost, there is little opportunity for engineers to prove their worth to posterity.

That being said, the mass of complaints from numerous individuals cannot be perfunctorily dismissed – surely they must indicate some shortcomings on the engineers’ part? Can we assume the generals were skilled enough in siegecraft to be accurate judges of the engineers, that their judgments must have some merit?535 Beyond generic claims of engineering incompetence, three charges are specific enough to test: their inability to accurately predict the duration of their sieges; the extent to which engineers were judged out of practice at many of their sieges; and the tendency to attack a fortress at its strongest front. Upon closer examination, a few specific instances of these three accusations seem justified, but they do not appear to merit the wholesale condemnation the engineers endured, at least when measured in terms of living up to Vauban’s expectations.

The predictability of siege lengths is one of the most frequently mentioned ‘features’ of the Vauban siege. Historians have whittled the Vauban literature down to a wooden stereotype, going beyond the common claim that Vaubanian engineers could

535 Erik Lund, for example, argues that Imperial generals were well educated in those technical arts relevant to siegecraft, although he provides little evidence beyond those who rose through the ranks as engineers. Lund, War for the Everyday, 42-47, 51-52.
accurately predict the day a town would fall, arguing even that “Vauban claimed to be able to predict [a siege’s] course on a daily timetable.” Scholars have based such a position on Vauban’s own writings that includes several timetables of siege stages, although many have ignored warnings not to take it too literally. The unpredictability of siege lengths was particularly annoying to time-conscious commanders who would have rather been engaged in far more decisive actions. It appears to have been accepted (even among generals) that a siege’s duration was difficult to verify before the trenches were opened and the tenor of the garrison’s defense had been measured. Once ground was broken, however, commanders immediately wanted to know how soon they could get their troops back into the field. From the many complaints cited earlier, it appears that the engineers’ estimates always seemed to promise the town in a far shorter period of time than was actually needed – sieges from Kaisersweert in 1702 to Ath and Menin in 1706 to Bouchain in 1711 all witnessed complaints about initial under-estimates. The Earl of Stair reflected the general disgust at Lille: “Our ingeniers tell us again the 19th

536 Dickinson, “Richards brothers,” 77. Duffy says more generally that “if the besiegers made a serious trench attack on the fortress.... the progress of the rest of the siege could be predicted with reasonable confidence.” The Military Experience in the Age of Reason, (New York: Atheneum, 1988), 294.

537 Tallett, War and Society in Early Modern Europe, 51l; Lynn, “Vauban” entry, 459.

538 Although Chandler’s language elsewhere emphasizing the scientific nature of siegecraft belies it, he does acknowledge that Vauban’s 48-day timetable was “only intended to be a rough guide to assist commanders estimate what they were up against.” Marlborough as Military Commander, 246. Duffy also warned readers not to mistake Vauban’s timetable with a prescription of how a siege should unfold, to little avail. Fire and Stone, 101-102.

539 See, for example, Veenendaal, Jr., ed., Briefwisseling Heinsius, 9:275 #578, Dopff to Heinsius, Petit-Quévri 9/19/1709.

wee shall have the town. If they don't keep their words I am for sending them to our
friend the Emperor of Maricco for carrying on his siege of Ceuta.\(^{541}\) The town only fell
on the 23\(^{rd}\), but the threat of exile went unfulfilled. Belying the supposed predictability of
early modern sieges, Cardonnel gloomily informed the English Secretary at War Robert
Walpole that “our siege [of Tournai] goes on in such a dark manner that I dare not give
any guess when we shall be masters of the cittadel.”\(^{542}\) This comment is particularly
surprising as the citadel surrendered only five days later, one of the strongest
fortifications in the Low Countries holding out a mere thirty-four days of open trenches.

The most striking example is Douai 1710, where a witness wrote that although he
knew “we are often too hasty in computing the time that a town can hold out,” the
besiegers still expected the town to last only ten to fourteen days of open trenches.\(^{543}\)
These plans soon proved overly optimistic, Albemarle indicating to Heinsius the
opportunity that had been lost: “Assuming our engineers want to take advantage of [the
French abandoning their relief attempts] it would be of great use, but to my great dismay
I must tell you that things could not be going more slowly than they are at this siege,
because we still cannot judge when we will capture the town.”\(^{544}\) The widely held
expectation was thirty-nine days too short, making it one of the most exasperating of the
Allies’ sieges. Waiting for Béthune to fall, Marlborough’s disgust grew as the engineers’


\(^{542}\) BL Add MSS 61400, f. 190, Cardonnel to Walpole, Tournai 8/19/1709.

\(^{543}\) Royal Commission on Historical Manuscripts, *The Manuscripts of the Marquess Townshend*, (London, 1887), 64.

uncertainties confounded his plans for the rest of the campaign season: “Wee opened the trenches last night before Bethune. Our ingeniers have of late used themselves to go on, as they call it, with safety, [so] that I dare not name a time for our being masters of the town.”545 The irony is that for all the historians’ talk of the predictability of siege durations, commanders could only wish their engineers possessed this talent.

Such expectations were asking the impossible. The origin of the misconception that Vauban could accurately calculate siege lengths lies in his own works, although scholars have ignored similar claims made by early soldiers, witness Tavannes’ claim that early 17th century siege lengths could also be predicted within days.546 In Vauban’s 1669 treatise, he estimated that a siege would require 41 days.547 He prefaced his calculation by stating that it was only an “instructive calculation and not a hard, fast rule,”548 yet his timetable seems to have been taken much more literally than he ever intended.549 The context of the schedule itself gives plenty of reasons for caution in accepting his figures as typical. His estimate’s specific purpose was to calculate the supplies a garrison would need for a siege, since previous sieges had been “shorter than we might have hoped because we had failed to prepare the fortresses adequately to

545 Snyder, ed., Marlborough-Godolphin Correspondence, 3:1567 #1614, Marlborough to Godolphin, Villers Brulin 7/24/1710.

546 Quoted in Duffy, Siege Warfare, 100.

547 This timetable comes from Rothrock, ed., A Manual, 140-141. In the text, 43 days is written, but the days add up to only 41. Duffy mentions a similar timetable Vauban calculated for how long the fortress of Lille could hold out (Fire and Stone, 103-104), while Faucherre and Prost mention a figure of 48 days (Le triomphe de la méthode, 53).


549 In both Fire and Stone (103-104) and The Fortress In The Age Of Vauban And Frederick The Great (153), Duffy warns that Vauban never intended for his estimates to be used to calculate how long a besieged fortress would actually hold out, but it appears Duffy’s admonitions have been in vain.
withstand a long siege." Since his goal was to supply a fortress with enough supplies that it need not surrender early, he made a number of significant assumptions. First, he assumed that the fortress would have an adequate garrison and defend itself competently. Second, he assumed that the besieger would attack the strongest sector of the defenses, thus prolonging the siege and increasing the demand on the garrison’s supplies. Third, the hypothetical fortress he based these estimates on was a regular-shaped, six-bastioned fortress with well-revetted demilunes and ditches, a covered way with good palisades and no other outworks. None of these assumptions could be taken for granted during an actual siege, but they satisfied Vauban’s need to plan. Considering the purpose and assumptions of Vauban’s timetable, it is clear that some historians have misinterpreted its predictive power.

While anecdotes illustrate the irritation officers felt with the engineers, a more systematic examination of the issue is needed to put the matter in perspective: Appendix E provides a sample of length estimates for Allied sieges in Flanders. From the data, we see that a majority of the estimates were only off by 20% or less of the siege’s actual length, their errors amounting to no more than a week – a frustrating delay for generals but hardly a sign of gross engineering incompetence. We also note that the accuracy of the estimates increased as most sieges progressed, as at Venlo, Huy, Limburg, Menin, Dendermonde and Douai, while Menin’s estimates improved initially but thereafter

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551 This data must be carefully evaluated, since the date when the estimates were made (i.e. when during the siege it was estimated) varies from case to case, and as Marlborough usually wrote of his estimates as “we hope that we will have it by x,” rather than the more confident “we will capture it by x.” Furthermore, this data does not necessarily invalidate less specific complaints about under-estimating, as these non-quantified grievances give no specific information to include in the table.
became slightly more inaccurate as the siege went on.\textsuperscript{552} That the engineers were
generally able to improve their accuracy as a siege progressed is not very surprising, and
hardly proves their ineptitude. Noticeably, many of the sieges saw engineers over-
estimate their durations (if only by a few days) rather than under-estimating them,
particularly in the first half of the war – another indication that the engineers do not seem
to have been continually pushing the fall of the town far into the future in order to cover
up their mistakes. Of course all of these conclusions assume that the engineers conducted
the attack as they had planned them; their validity depends on the unknown issue of how
the engineers came to their estimates (and how they were reported by non-engineers). Did
they assume that the commanders would work to accelerate the trenches and storm the
covered way, taking this into account in their estimate? Did they calibrate their estimates
in order to appease the commanders? Balanced against generic complaints, the specific
complaints lack a clear pattern and suggest that the engineers did not consistently, grossly
under-estimate the durations of their sieges. The question of why commanders expected
the engineers’ estimates to accurately reflect the siege when these technicians were not
allowed to conduct it on their own terms is just as important a point.

Furthermore, the expectation that engineers could accurately predict the stages of
a siege ignores a more complicated reality. The case of Douai 1710 – where the engineers
initially underestimated the length of the siege by a factor of four – is difficult to interpret
as anything but a major engineering gaffe; we will discuss this siege later on. The other
sieges’ estimates, however, seem less damning in their inaccuracies. Overall, the
engineers’ failure to accurately estimate the lengths of their attacks would not have

\textsuperscript{552} Again, it should be remembered that these different estimates were not necessarily coming from the
same source, i.e. we cannot assume that a single engineer provided all the estimates at a particular siege.
surprised Vauban, for the master himself preached that such things were impossible to
know beforehand, even when, at the pinnacle of his authority, he could conduct a siege
according to his specific wishes. Vauban was quite explicit about such claims at
prognostication:

You cannot estimate how long it will take to arrive at the outer edge of the
ditch; it depends upon the distance from the point where the trench was
begun, the vigor of the garrison, the nature of the terrain, the availability
of materials, and the availability of good workmen. I have seen some
sieges that advanced steadily at the same speed and others where you
could not make fifty paces in a night once you were close to the fortress;
there were even times in the siege of Montmédy when we could not make
one hundred and twenty yards in a week.553

Vauban’s opinion was only repeating the common sense of the previous generation as
summarized by Mallet: “As it is difficult to find two towns situated in the same way, it is
very difficult to conduct two sieges in the same manner, and ever more difficult to
determine their duration.”554

What is more, Vauban was in a rare position to practice what he preached, since
his expertise and royal imprimatur granted him the ability to speak frankly with his
superiors. An example of Vauban’s blunt correspondence can be seen in his response to
Louvois’ repeated requests for an estimate of how much longer the siege of Luxembourg
in 1684 would last:

553 Rothrock, ed., A Manual, 63. Goulon repeats this: “I shall not pretend to determine in how long or short
a time things may be so far advanced, as that must depend entirely upon the skillful conduct of the
[besieger], and the obstinate resistance of the [garrison].” Memoirs, 18. See also Alain Manesson Mallet,
Les travaux de Mars, ou La fortification nouvelle tant reguliere, qu’irreguliere. Divisée en trois parties. La
première contient la construction des places regulières, citadelles & dehors... La seconde partie donne &
examine les diverses constructiones ou methodes de fortifier toutes sortes de villes... La dernière donne la
connoissance des materiaux qui servent à l’élévation des ramparts, parapets, & chemises des villes..., 3

554 Mallet, Les travaux de Mars, 225. The marquis de Quincy’s mid-18th century manual claimed the same,
It is not possible to tell you when we will lodge ourselves on the grand counterscarp, because this depends on the difficulties and quality of the parallel and the resistance of the redoubts that we are attacking; when I see the day that I can predict the future with some appearance of certainty, I will be sure to tell you; but I am not an astrologer [je ne m’érige pas en mauvais astrologue]. There are some events of which God alone knows the outcome and its timeframe; it is up to men to do all that they can to succeed, as I am doing, God willing...\(^555\)

It was only twelve days later on 26 May that he felt confident enough to inform the director-general that “The time when this place will be captured is not something that a man of good sense would dare to guess at; but as far as I can conjecture, I expect that it will last seven or eight days longer, give or take two days.”\(^556\) The town fell eight days later on the 3\(^{rd}\) of the month, within the rather wide latitude of five to ten days he had given himself. Vauban’s ability to put off the Secretary of War’s demand for prognostication and his refusal to pin down a narrow date range when he did finally provide an estimate derived from his elevated status, his personal standing with the King and his honest yet amiable relationship with Louvois, a rapport built up over years of close collaboration.\(^557\) An undaunted attitude such as this was out of the question for lesser engineers questioned by Marlborough or Eugene or Villars. Vauban was important enough to defer questions that he knew were impossible to answer without fear of consequences; his successors were not, and yet they were consequently criticized for failing to provide something that Vauban knew even he was unable to give: an accurate, precise estimate of a siege’s length in the early stages of a siege.


Then there are the frequent accusations that the engineers were out of practice. While too many sieges led to high attrition rates among the engineers, too few sieges were apparently similarly hazardous and might even lead to the same result. Refused the conduct of the upcoming attack on Landau, Vauban seemed to recognize this problem, sending a long project to those in charge: “I am going to make a general disposition of the attacks concerning the works which are usually used, the essentials of which few people understand, due to a lack of practice and not enough long sieges.”558 From the debacle at Turin in 1706 until 1712, the French would not conduct another siege of import (with the embarrassing exception of Brussels in late 1708) in the theaters known for their fortresses: Italy, Germany and Flanders.559 After seven years on the defensive in Low Countries, their siege of Marchiennes started badly, a lack of siege tools delayed the opening of the trenches. “Apparently,” wrote the chevalier de Quincy, “we forgot that they are needed in order to open the trenches. It was a long time since we had conducted any sieges, so it was even possible that we forgot how to begin one.”560 Once the trenches were opened, Broglie and Villars both surmised that the slow pace of the siege was due to the engineers being out of practice.561 The Allies also noted a similar lethargy among their technicians (including the gunners) at their earliest sieges. These charges might indicate a lack of skill among the engineers, but we have only the comments of time-


559 There were numerous sieges in Iberia, but this theater’s difficult terrain and geography gave siege warfare a very different tenor compared with the cockpits elsewhere in Europe.

560 Lecestre, ed., *Mémoires du chevalier de Quincy*, 3:160-161. Note, however, that the chevalier does not identify whether this oversight was due to the engineers failing to order the appropriate number of items, or whether the infantry generals failed to provide the ordered supplies to the workers in the trenches.

561 AG A1 2382, #99, Broglie to Voysin, 8/22/1712; and AG A1 2383, #102, Villars to Voysin 9/6/1712. More generally, see AG A5 Carton 8 1, Lieutenant-general Antoine de Gramont, duc de Guiche 7/28/1712.
conscious generals as evidence – that the engineers’ lack of practice manifested itself in terms of a slow advance (rather than, say, higher casualties) is slightly suspicious, encouraging one to speculate that this was simply a sympathetic commander’s rationalization for why the trenches were going so slowly. Even if taken at face value, this critique is not very damning, except to those commanders wishing to save every minute of every day. In any case, such a phenomenon was hardly limited to the technical branches.

A final and more serious assault on the engineering corps’ proficiency regards their choice of attacks. To an extent wrapped up with the previous two criticisms, this rebuke is based on the engineers’ failure to accurately judge the strength of a fortress’s works and then attack the weakest of these, thus minimizing the duration of the siege. This should have been an easy thing to do, for the historical literature suggests that almost any contemporary could have precise knowledge of a fortress’s works from published plans.562 Here too, however, the picture is murky, for the clarity seen by after-the-fact critics and historians fades when we examine Vauban’s experience with the issue. Even the great Vauban’s opinion on choosing attacks seems to have drifted somewhat over his life. Early on, he lectured on the dangers of attacking a fortress at its strongest point.563 In his expanded manual he wrote that the debate as to whether to attack at the weaker or stronger point remained unresolved, after he noted that it was not at all easy to distinguish the weak from strong parts of a fortress without intensive

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562 For an example of this claim, see Childs, The Nine Years War, 93. In 1703 Vauban advised his readers to take advantage of published maps while warning them of their faults. Traité, 38.

He then spends nine pages describing various features that make a side weak or strong; he concludes somewhat unhelpfully: “In conclusion, you must always seek the weak sector of the fortress and attack it rather than any other part; at least as long as there is no other significant feature that would force you to do otherwise.”

His general maxim is just as cryptic: “Always attack places by the weakest front and never by the strongest, at least when you are not constrained by better reasons which trump the usually-reliable reasons: this depends on the place, the time and season when the places are being attacked, and on the different situations in which they are found.”

Unfortunately, he never defined what exactly constitutes a weak sector in any concise, objective way (e.g. by the density of garrison fire, the location and spacing of outworks, etc.), nor how to balance the many, often-contradictory factors involved: the strength of a place’s fortifications, the garrison’s size and supply situation (as well as the besieger’s), the inundations and terrain, ease of access to the site, the location of the artillery park relative to the trenches, the direction from which possible relief efforts might come, and so on. Such knowledge was apparently too situational to be written down and had to be learned by experience.

These theoretical complications manifested themselves in the real world, adding further confusion to the matter of choosing a front to attack. Elaborating upon his general maxim Vauban justified why he attacked Valenciennes’ most heavily-fortified front in

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564 The same issue has long been debated on the broader tactical and strategic levels – is it better to attack at the enemy at the strongest point in hopes of destroying the majority of the enemy’s force in a decisive action, or is it preferable to use the “indirect approach” (as Liddell Hart termed it) with the advantage of surprise, and avoid the enemy’s main force, instead forcing it to surrender or disintegrate without a fight?


1677. The decision was based not on the strength of the fortifications, the obvious criteria, but on the ease of access to the site, the close proximity of wood for the construction of fascines, and the terrain, which provided a secure entrenchment that would allow the King to send many more of his siege troops to the observation army in case of a relief attempt.\textsuperscript{567} Given such intangibles, it is not surprising that Vauban’s decisions were questioned, as Feuquières in retrospect did with Vauban’s successful attack on Charleroi in 1693:

He was charged with the conduct of the works, under M. de Luxembourg, and yet, tho’ he was a man of great ability and prudence, and very cautious in hazarding the mens lives, he attacked the place, in a part strong enough to hold out longer than any other quarter, and in a season far advanced.... This good fortune should be no inducement to pursue the same conduct in any future conjuncture, and is only to be ascribed to the incapacity of the officer who defended the place, and to the weakness of the defence, which are accidental circumstances, on which the besiegers should never depend. And the enemies of M. de Vauban have declared, that he had an inclination to discover his capacity, in the conduct of the works for this particular attack.\textsuperscript{568}

We should probably forgive Feuquières for not referring to Vauban’s early admission to ignore the rules if the place is weak, for Vauban later argued just the opposite, leaving posterity with a puzzle. Complaints such as Feuquières’ surfaced at the time, allowing Vauban to affirm his choice of attack as the best available:

I know well that the speed of this siege is not at all acceptable to either the courtiers nor many cavalry officers who like nothing more than to see their horses suffer and who, moreover, only participate in sieges by transporting fascines to the trenches; but I can say they are incompetent judges and very ignorant of the strengths and weaknesses of fortresses, that if all the misguided opinions that evade them they attacked the places where they want to attack [dans les endroits où on tire] with the cold and the rain on their backs, these men would quickly change their minds. In a word, the

\textsuperscript{567} Vauban, \textit{Traité}, 259-260.

courage of a man who has warm feet and who reasons in the comfort of his chamber; it is quite different where there is no peril versus when this same person is in the heat of action. It is one thing to be brave far from danger, and quite another to be brave when under fire...569

Too tired to refute the accusations in detail, his self-justification did little to clarify matters.

The great engineer’s self-assured statements leave us with yet another conundrum. When Vauban criticized sieges conducted by his contemporaries, such as the Allied attacks on Menin and Ath, we are hesitant to reject his judgment given his experience and his successful prediction of the Turin debacle. Yet we must also recall the cases in which his warnings of catastrophe never came to pass, particularly Kehl 1703.570 His infallibility is further undermined by his own logic when defending the Charleroi attacks, for if only those present at the siege are in a position to criticize, then his own judgment away from the scene is of less value than those on site, no matter how familiar he may have been with the fortifications years ago and no matter what intelligence he was receiving from correspondents. As it turns out, the fall of both Menin and Ath were very rapid, leaving Vauban with little option but to comment on how fortunate the besiegers were that the garrison’s defenses were so weak and poorly-conducted, sounding just like Feuquières’ criticism of his own Charleroi attacks.


570 To be fair, it is possible that had Vauban been present on the site, his more formal attack might have been accelerated due to the same weaknesses Villars noted. In any case, this would seem to support the reasonable assumption that those on site are in a better position to judge the merits of projects than those far removed, thus undermining Vauban’s authority at long distance.
Further muddying the waters, even the most blatant Allied gaffe, attacking the town of Douai in 1710 at its strongest point, is less damning than it at first appears.\(^571\) Des Rocques’ failure to provide posterity with an explanation of his decision leaves the field open to his opponents. They attribute it, amazingly enough, to his failure to reconnoiter that side in person, instead assuming that a planned but not-yet-built hornwork displayed on published maps had already been constructed.\(^572\) If true, this would be an unimaginable blunder. However, as it turned out, the attack on the western side of town had some merit all the same. First, almost every map of the fortress indicated the inundations as being far more extensive on the eastern front. More importantly, French galleys from Condé denied the Allies free movement up the Scarpe river, which would have brought the cannon right up to the front under attack.\(^573\) Thus, an attack on the eastern side would have required the heavy siege cannon to have been transported from Lille across the Deule canal and then somehow manhandled past the Fort Scarpe’s guns (probably requiring this place to be captured first). As Vauban had indicated previously in his discussion on Valenciennes, access to the site was a legitimate concern.

The French conjectured that the Allies were motivated less by logistical supply than by relief concerns. The artillerist Armand de Mormes, sieur de Saint-Hilaire posited

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\(^571\) Landsberg made a particularly harsh critique in *Nouvelle manière de fortifier les places*, 48.

\(^572\) Schulenburg, *Leben und Denkwürdigkeiten Johann Mathias Reichsgrafen von der Schulenburg*, 458, 6/30/1710; and Ryksargyf Friesland (RA) familie Eysinga-Vegelin van Claerbergen, vol. 775, Johan Vegelin van Claerbergen, *Beschryvinge van myn Reys en veltopt de anno 1710*, 13 7/4/1710. It appears that the beginnings of a hornwork had been traced out, but it was not completed by the time the town was invested.

\(^573\) BL Add MSS 61401, f. 25 Cardonnel to Walpole 5/12/1710; and Murray, ed., *Letters and Dispatches*, 5:21 Marlborough to Boyle, Douai, 5/12/1710.
this theory, admittedly one unsupported by existing Allied evidence, for why the choice of attack was not as bad as it might seem at first glance:

...the enemy directed his attacks against the gates of Ocre and a legitimate one Esquerchin, although this place was the best fortified. They did this correctly assuming that maréchal would not miss the opportunity of trying to relieve Douai by passing the Scarpe across from Arras, and would present himself in battle before them, and marching by the plains between them both. Thus they would cover their army on this side with good retrenchments erected on the most advantageous and favorable terrain, constructed with all the precautions and rules of the art. In this position their army covered their approaches that were behind them.574

Villars’ efforts to lift the siege did indeed fail on exactly this front, despite his attempts to force a relief battle by attacking several posts along the Allied line. Whether these advantages were worth the additional time and effort spent attacking this front (in total 52 days of open trenches and 8,000 casualties) is a valid question. However, the fact that the biggest Allied “blunder” in the theater could be justified by referring to Vauban’s own successful conduct suggests that blanket condemnations and hindsight criticisms should be accepted only with skepticism.

We further recall that the chief engineer had to get his attack plans approved by the commander and other generals in charge of the siege. Given the town’s ‘self-evident’ strengths, the engineers had surprisingly little difficulty convincing their generals of how weak its defenses were. In fact, even after they had broken ground against the strongest sector, we can still find Albemarle confident of this decision: “And I flatter myself that we will soon capture this place, because it is very weak and the least of all the places we

574 Lecestre, ed., Mémoires de Saint-Hilaire, 5:239. The provincial intendant also interpreted the Allied camp in this way. AG A1 2225, #162, Bernières to Voysin, 5/10/1710.
have attacked this entire war...575 To this list of apparently baffled generals we could add Cadogan, the Dutch quartermaster Frederick Thomas d'Hangest-Genlis Yvoy heer van Binderen, and even Marlborough himself.576 From this we must conclude one of two things: either the generals were incapable of judging the strength of a place, or that the best point of attack was not always as obvious at the time as post-siege critics would have us believe. Even if the non-engineers were misled by their “experts,” we must ask why this happened in siege after siege. Surely they must shoulder some responsibility for their apparently blind willingness to rely on the advice of “experts” whom they considered utterly incompetent?577 No matter which option is true, none of the specific criticisms hurled against the engineers provide overwhelming evidence of systemic stupidity among the engineers. Trying to determine how best to attack a fortress required a careful consideration of many variables; had generals paid more attention to Vauban’s emphasis on applying the general maxims to specific cases, they might have recognized the difficulty of the decision, or at least been more understanding of the engineers’ challenges.

The few specific charges leveled against the engineering corps do not seem to justify the extreme hostility the engineering corps faced. Several mitigating factors

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575 Veenendaal, Jr., ed., Briefwisseling Heinsius, 10:320 #623 Albemarle to Heinsius, Flines 5/8/1710. Even as late as mid-May he continued to believe the town would soon be theirs. 10:343 #663 Albemarle to Heinsius, Flines 5/15/1710.

576 A1 2225 #133; Veenendaal, Jr., ed., Briefwisseling Heinsius, 10:332 #650 Yvoy, Lallaing 5/12/1710; BL Add MSS 61401, f. 25, Cardonnel to Walpole 5/12/1710.

577 If siege commanders were unwilling to reject their experts’ advice, this would be well worth an explanation, as it flies against the tendency of generals to ignore or overrule their engineers at every other stage of the siege. Villars wrote in his memoirs of Le Quesnoy and Freiburg that he accepted the engineer’s siege projects for fear that his preferred attacks would be sabotaged by the snubbed engineers. But his life-end recollections left out the fact that at the end of the siege of Le Quesnoy at least, he admitted in his correspondence that his critiques of the engineers were unfair.
further exonerate the beleaguered engineers, or at least illustrate that the accusations of incompetence cannot be separated from the impatient contemporaries who made them. We must first recall, once again, that the engineers were rarely in full control of a siege, yet were held primarily responsible for its results. Not only were they perpetually short-handed (a fact admitted even by their harshest critics) and suffering from inter-service rivalries that undermined their authority (as we have seen in Chapter 4), but they also had a number of other challenges to contend with. Assuming accurate intelligence was available on the fortifications, a few sieges planned during the winter might not require much preparation time during the campaigning season. But in a theater like the Low Countries there were a large number of potential towns to attack, while most of their targets were chosen on the spur of the moment in the middle of a campaign; the decision to besiege usually became unavoidable once Marlborough and Eugene accepted the reality that they could not force a field battle on the enemy. Such short notice gave the engineers little time to reconnoiter its works and draw up a plan of attack before they were expected to attack it. As we have seen with Coehoorn, generals were not inclined to give the engineers much time between investment and opening the trenches. Also, while Vauban’s skills undoubtedly dwarfed those of his peers and successors, comparing the attacks of a Des Rocques or Valory with Vauban’s can be a bit unfair for another reason: having designed, built and renovated more than a hundred strongholds himself, Vauban had an intimate knowledge of many of the fortresses he would later attack (most notably his model siege of Ath in 1697, where he also spent much time refining his projected attack while on site). Nor could engineers even assume their project would be followed as

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had been drawn up, for they were usually forced to speed up the trenchworks and storm the covered way instead of capturing it by the more certain sap – whether this consideration had any effect on their planning is unknown. Rarely given a chance to conduct the attack according to their own designs, they were unfairly condemned when the timetable did not proceed according to their initial plan. It is hardly surprising that in such a hostile atmosphere the engineers became distrustful and defensive, an attitude which prompted Marlborough’s assurance to Des Rocques: “I ask you to immediately write me in confidence by return of this courier [how long you think the siege of Lille’s citadel will last] and without reserve, since you can be assured that I will not show your letter to anyone.”

Beyond the fact that almost every single criticism of the engineers’ siegecraft identified delays as the sole concern, even some normally critical of the engineering corps acknowledged the popular bias against the corps on a few rare occasions. The French lieutenant-general Antoine de Gramont, duc de Guiche stood up on the French corps’ behalf to one of its most partisan opponents, the grand-maître of the artillery: “it is certain that the engineers [at Douai] have committed faults but it is also clear that there have been unfair complaints leveled against them.” More interesting is the apparent change of heart Villars underwent in 1712. At first quite critical of his technicians during the attack on Le Quesnoy, he later described his softening attitude:

579 Murray, ed., Letters and Dispatches, 4:331, Marlborough to Des Rocques, Beerlegem 12/2/1708. It is probable that Marlborough’s severe criticisms of Des Rocques had made their way back to the chief engineer.

580 AG A4 Carton 8 2, Guiche to the duc du Maine 9/14/1712. Earlier he had complained of the attacks on Marchiennes. AG A4 Carton 8 1, Guiche to Maine, 7/28/1712.
In truth, I cannot praise everyone too highly; my impatience made me think that we could accelerate the siege, but when I examined Valory’s and de Vallière’s explanations, both of whom are quite capable, I was convinced that they must be trusted and that it would be a mistake to force them to go faster than raison would allow.\footnote{AG A\textsuperscript{1} 2384, #174, Villars to Voysin 9/30/1712. See also AG A\textsuperscript{1} 2382, #66, Villars to Voysin 8/21/1712.}

Nonetheless, Villars’ conciliatory attitude towards the engineers was quickly forgotten; it did not lead to a more lasting reliance on the engineers’ judgment, nor did it find its way into his recollections of the siege as written in his memoirs.

Given the lack of positive comments in Allied accounts, their engineers do not seem to have had any supporters among the general officers. The one Allied engineer to have written of his experiences in the Spanish Succession, Landsberg, paints a damning portrait of his peers’ conduct, but his endless series of hyper-critical assessments make him appear as more of a crank than improver of Vauban’s Method.\footnote{AG A\textsuperscript{1} 2384, #174, Villars to Voysin 9/30/1712. See also AG A\textsuperscript{1} 2382, #66, Villars to Voysin 8/21/1712.} Furthermore, it strains credulity to imagine that either the French or Allied engineers were nearly as bad as they were portrayed. If for no other reason, siege after siege the same “incompetents” were left in charge – if directing a skilled attack was truly as easy as some suggested, then these inept men at the top should have been quickly cast aside and more talented ones from below (or even from outside their ranks, like a Coehoorn) taken their place. After all, the chief engineer was subordinate to the siege commander, so messy disputes over seniority and precedence were not a concern, as they might have been had the engineers been fully integrated into the military command hierarchy. There was no reason for the Allied commanders to automatically accept the engineers’ choices, particularly as they felt free to ignore other advice given by these same experts. If the
engineers truly were incompetent, the Allied commanders appear just as foolish as their bungling engineers for giving clear incompetents such freedom in directing the trenches in the first place.

It is difficult to determine conclusively whether covered way storms were always the better option without deciding whether it was better to save time or lives. Regardless of the casualties, generals never admitted that covered way storms were a mistake – unless of course it was to criticize the engineers – but we do find three occasions where overzealous officers made clear mistakes in ignoring Vauban’s counsel, and which illustrate that sometimes there was no reasonable alternative to the cautious approach.583

One Allied account of the siege of Aire informs the reader “At midnight we attacked the salient angle of the covered way across from the bastion which had been occupied by the besieged: this attack did not have the effect we had expected, we were repulsed with loss, which forced us to continue with the sap towards this angle in order to capture it.”584 In 1712 right after Villars’ victory at Denain the comte de Broglie was sent to summon Marchiennes to surrender. The garrison’s refusal led the French lieutenant-general of cavalry to attempt two assaults against the town without any preparation – several hundred French soldiers were wounded or killed as a result of this futile attempt, and the

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582 In fact, Landsberg presented no systematic method, rather a collection of specific criticisms of various techniques.

583 Blaming failed storms on the engineers, whether fair or not, did not appear to encourage detractors to critically examine the viability of their assault tactics.

584 AG Article 15 Section 2 §1Aire carton 1, #5 Relation du siège d’Aire en 1710 par un officier de l’armée des Alliés, 11/1/1710. Murray, ed., Letters and Dispatches, 5:205 Marlborough to St. John, Aire 11/2/1710.
town only fell to a subsequent siege of short duration.\textsuperscript{585} The chevalier de Quincy highlighted another example at Freiburg in 1713 where a \textit{maréchal de camp} and colonel foolishly attacked the covered way before the garrison’s works had been sufficiently prepared by artillery and its countermines neutralized.\textsuperscript{586} Vauban would have shaken his head at the cost of such precipitous actions; he had warned of exactly such setbacks when acting with haste rather than industry – “precipitation in sieges never hastens its end, often retards it and always makes it much bloodier.”\textsuperscript{587} Unfortunately for many of the rank-and-file, impulsive commanders were slow to recognize this reality forty years after Vauban had made his first semi-public appeal.

The willingness to accept high casualties is not surprising. Generals who pressured engineers to accelerate sieges were the same as those who sought battles, for the belief in decisive battle also required a corresponding acceptance of possibly high casualties.\textsuperscript{588} Ideally the victor would suffer only a few thousands casualties while the enemy’s army was crushed, but battle was a dangerous venture, abhorred by the risk-averse. While the length of a battle was far more certain than a siege’s, the casualties suffered in it were as unpredictable as the lengths of many sieges. Marlborough lost only 3,600 at Ramillies but five-times as many at the bloody battle of Malplaquet (11 September 1708). Even the carnage on the field of battle – twice as many Allied losses as

\textsuperscript{585} On Marchiennes’ storms, see \textit{Daily Courant} 7/24/1712 O.S. #3364, from Tournai 7/27/1710. A report from Marchiennes 7/25/1710 in the same edition gives 250 French casualties. From the French side, see Lecastre, ed., \textit{Mémoires du chevalier de Quincy}, 3:159.

\textsuperscript{586} Lecastre, ed., \textit{Mémoires du chevalier de Quincy}, 3:255-256.

\textsuperscript{587} Vauban, \textit{Traité}, 263 Maxim XVII. He cites the examples of Barcelona 1697 and Landau 1703.

\textsuperscript{588} For example, Jeremy Black, \textit{European Warfare, 1660-1815}, (New Haven, CT: Yale University Press, 1994), 112.
the enemy, or some 20,000 soldiers wounded and killed—did not disturb Marlborough enough to waken him from his reverie that this “victory” would force the French to give them “what peace we please.”589 One witness made the connection between siege and battle losses explicit in his description of the Allied assaults on the French field fortifications:

I can liken this battle to nothing so much as an attack of a counterscarp from right to left: and I am sure you would have thought so, if you had seen the field as I did ye day after. In many places they lye as thick as ever you saw a flock of sheep; and where our poor nephew Tully-Bardine was, it was prodigious.590

For commanders who accepted and even embraced the risk of battle’s losses as an opportunity, capturing a covered way at the cost of two thousand further casualties was seen as a bargain, allowing them the consolation that, even if they could not avoid the siege altogether, they could at least buy several additional days with the lives of their men.

Those who had to pay for the generals’ obsession with time certainly recognized the resulting costs, as well as how little their individual lives were worth. We have already seen Vauban’s opinions on the matter, and these were shared by most of his successors. We could even go further, and argue that too many generals interpreted success solely in terms of the rapidity of victory—casualties were practically irrelevant. La Feuillade indicated his ignorance of the matter in his rejoinder to Vauban’s criticism of his projected attack on Turin. Defending his planned attack à la Coehoorn, he refuted Vauban’s warning by noting that Vauban had left out the fact that Coehoorn’s contrary

589 Snyder, ed., Marlborough-Godolphin Correspondence, 3:1360 #1392, Marlborough to Godolphin, Blaregneys 9/11/1709.
method had managed to capture Vauban’s own fortress of Namur.\(^{591}\) In fact, Vauban had not forgotten Coehorn’s attack on Namur’s citadel – how could he when over 2,000 men were cut down charging the covered way? – but he had long ago dismissed it as a model for others to follow. Other indications lead us to the same conclusion, for the more cautious contemporaries interpreted such preferences in just this callous light. So unconcerned was Eugene with the minutiae of feeding armies in Italy, the Dutch administrator in charge of logistics reported, that some quipped he required a new army every year.\(^{592}\) The chevalier de Quincy also lamented the French officers’ penchant for stupidly wasting the lives of their own men in a poorly-planned action.\(^{593}\) And despite Villars’ claim that “I always had for principle to conserve the troops, especially the officers,”\(^{594}\) he had earlier indicated the disposability of individual lives when time was short:

I returned immediately to my infantry, which was in battle order: but as soon as I joined them, I saw the enemy army dashing towards the Escaut in several columns. The marquis Albergotti proposed to make fascines to cross Denain’s retrenchments. “Do you think,” I responded, showing him the enemy, “that these gentlemen will give us the time? Our fascines will be the bodies of our first men to fall into the ditch.” There was not an instant, not a minute to lose.\(^{595}\)

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\(^{590}\) H.H.E. Cra’aster, “Letters of the first Lord Orkney during Marlborough’s campaigns,” *English Historical Review*, (1904), 320 from Bellian 9/16/1709.

\(^{591}\) Esnault, ed., *Chamillart*, 2:33 #164, La Feuillade to Chamillart, Turin 9/20/1705.

\(^{592}\) Veenendaal, Jr., “De Mémoires van Sicco van Goslinga,” 77-78. Responsibility for some of this lay with the poor logistical support provided by Vienna.

\(^{593}\) For example, Lecestre, ed., *Mémoires du chevalier de Quinc\^y*, 3:159.


While the resulting victory at Denain has been applauded by many as decisive (the critical capture of the Marchiennes depot by siege is usually relegated to secondary status), such a statement would have undoubtedly horrified Vauban and many of his engineers: on many occasions he bemoaned the loss of too many experienced veterans to impetuous frontal assaults where industrie would have fared far better. Contemporaries chose tactics based on whether they deemed delays or casualties the lesser evil.

Not surprisingly, the rank-and-file and even some lower-ranking officers often sided with the engineers’ more cautious approach. A thankful Lt.-Col. Blackadder reported the relief his regiment felt when it missed trench duty at Douai: “The regiments are now named and gone to the siege, and Providence has yet spared us. There are seven gone, and it stopt just at ours; and now we are the first. I take it from the hand of God as a mercy and a kind dispensation, come after what will.”596 Later disappointed with service in the siege, he did have one piece of good news to report to his wife: “now most of our labour is sapping, which is a sure and a slow work; and therefore [we] do not grudge the siege lasting eight or ten days longer. The saving of men will recompense the loss of time, though we will still be losing men every day at working.”597 The lower ranks even performed calculations of balancing risks: “Some of us are wishing to be on this siege [of Bouchain], as being easier than it would be at the end of the campaign, at a stronger town

596 Andrew Crichton, ed., The Life and Diary of Lieut.-Col. J. Blackadder, of the Cameronian Regiment, and Deputy Governor of Stirling Castle, who served with distinguished honour in the wars under King William and the Duke of Marlborough, and afterwards in the Rebellion of 1715 in Scotland, (Edinburgh: H.S. Baynes, 1824), 379, to his wife, Douai 4/24/1710 O.S. He also wrote of “a new instance of the Lord's goodness to us in disappointing our expectations of going upon this siege.” 378.

597 Crichton, ed., The Life and Diary of Lieut.-Col. J. Blackadder, 387, letter to his wife before Douai, 5/16/1710 O.S.
and worse weather.”\textsuperscript{598} Lt.-General Schulenburg’s complaints that the engineers were intentionally going slow at Douai in order to avoid another siege would have been fine with the lower ranks: “We hardly wish [the siege of Mons] to be over so soon, for fear we be employed at another siege.”\textsuperscript{599}

Ultimately we cannot know if the engineers’ sapping would have caused as many casualties as the assaults did, although it is doubtful for the most deadly storms, as Blainville’s astonishment at Kaisersweert indicates.\textsuperscript{509} All the same, we do know that storms could not defeat a defensive strategy of attrition altogether – the besiegers could only choose whether they preferred that more time or lives be lost. Whether or not the commanders’ contempt for the engineers was justified, the constant recourse to such bloody measures did have a significant consequence – a serious decline in Allied troop morale that led to widespread desertion by 1711. In a field battle, soldiers knew that however intense the danger, it would be over by the end of the day and it might possibly even end the war. At major sieges, the outcome of an assault was rarely the end of the siege, but only the prelude to yet more dangerous fighting in the ditches and outworks. Particularly discouraging must have been their knowledge that generals wished to throw them into an assault on the covered way while the engineers wished to proceed more cautiously. It was even more deflating to see how little the storms usually gained them. Only in the weakest of fortresses would the garrison give up the covered way entirely after a storm; normally the most that could be hoped for was a number of lodgments at the salient angles of the covered way. Defenders would have to be evicted from the rest

\textsuperscript{598} Crichton, ed., \textit{The Life and Diary of Lieut.-Col. J. Blackadder}, 417, from camp at Bouchain 8/10/1711 O.S.

\textsuperscript{599} Crichton, ed., \textit{The Life and Diary of Lieut.-Col. J. Blackadder}, 366, to his wife 9/29/1709 O.S.
of the counterscarp by yet more digging and firing, grenade-throwing and hand-to-hand combat. And once this town was taken, two more fortresses stood waiting their turn.

The major sieges conducted from 1708 onward slowly drained the fight from the men. While Lille was the Allies’ single most bloody siege of the theater (12,000 casualties in the trenches in front of both the town and citadel), the next year’s sieges of Tournai and Mons added 5,200 additional casualties to the total. Vegelin van Claerbergen detected a new attitude among the rank-and-file at Tournai. The States’ chief engineer Des Rocques had broken his leg at the outset of the town attack, leaving the conduct of the siege up to Du Mée. This was “a significant setback. Not a single director is to be found here; everyone, officer and soldier alike, is concerned about [Des Rocques’] health, I would never have believed he was as popular as he seems now.”600 Another observer was more forthright in writing: “Thus the conduct of the siege will undoubtedly fall on Du Mée, who has lost some of the troops’ confidence for having sacrificed them excessively in the attack on the town.”601 Du Mée was also responsible for the disastrous initial assaults against the town of Lille in the previous year. Nonetheless, this impetuous youth was more highly-regarded than Des Rocques by as passionate a supporter of the engineers as Goslinga. The commanders’ insistence on speed was causing soldiers to fear the trenches. Complaints that the engineers botched the storms are partially beside the point, for they had discouraged its use in the first place.602 If the generals leading the


601 Veenendaal, Jr., ed., *Briefwisseling Heinsius*, 9:23 #49, Caesar Caze d’Harmonville (a Huguenot in Dutch service) to Heinsius, Lille 7/7/1709. Jacob Hop, the Dutch *t resorier-generaal* for the Allied Condominium of the Spanish Netherlands reported along similar lines in 9:24 #52, Lille 7/7/1709. Vegelin van Claerbergen hoped that the injured director-general would still be able to sketch out his attacks on paper so they could be implemented in his absence: 9:27 #56, to Heinsius, Tournai 7/7/1709.
assaults were not to blame, it was at least the fault of the commanders for knowingly and repeatedly ordering engineers whom they deemed “incompetent” to conduct bloody storms at siege after siege. Such generals had already decided that any additional casualties were well worth the time that would be saved, no matter if a thousand men or more would have to be sacrificed by the ineptitude of the so-called siege experts.

Things only got worse the next year, for the campaign of 1710 saw a dramatic increase in the numbers wounded and killed in the trenches. Douai’s defenders inflicted 8,000 casualties on the enemy, the second most costly siege in the theater. All told, 1710 cost the Allies 8,000 at Douai, 3,300 casualties at Béthune, 900 at Saint-Venant, and another 6,500 at Aire – 18,700 wounded and killed in all. As the campaign of interminable sieges dragged on, several thousand others fled the ranks. Douai provides the only estimate of desertions during a siege that I have discovered, some 2,000 troops in addition to the 8,000 casualties.603 The later siege of Aire may have been even worse for the troops’ morale:

Aire is going to take up the rest of the campaign, because it is one of the best places that the French have, and I expect that we will not have it for the entire month of November, which will dissipate our army, especially through desertion and disease. We have never seen so many desertions as we have among our troops, whereas the enemy army does not suffer as we do.604

Thousands of soldiers were voting against sieges with their feet.

602 See, for example, Marlborough’s odd complaint that the engineers compelled them to conduct dangerous night-time assaults at Lille against their inclinations (Vauban declared himself against nocturnal assaults). Murray, ed., Letters and Dispatches, 4:252, Marlborough to the Earl of Sunderland, Ronck, 10/4/1708. Why the commanders, who forced many of these assaults in the first place, would feel constrained to follow the engineers’ recommendations (whom they then declared incompetent) is unclear.

603 ARA familie Surendonck, #146, Jacob Surendonck, Eenige consideratien over de verdene operatien van de tegenwoordige campagne, 7/5/1710.

With this long sequence of bloodletting fresh in their minds, the Allied army continued to hemorrhage, its troops deserting in droves at the mere prospect of another siege. The Dutch lieutenant-general of cavalry and quartermaster-general of the army Daniël Wolf Dopff complained in late April on the eve of the 1711 campaign:

The desertion is terrible in the infantry.... The worst is that desertion is occurring not only among the recruits but among the veterans; even among the Danes and Saxons [i.e. well-paid mercenaries], in general no nation’s troops are exempt. Here is the fruit of the siege of Aire and I can tell Your Excellency in confidence that the foot soldiers are so disheartened that if we were to open our campaign with a siege, some countries’ troop contributions would be at risk and the officers would have difficulty preventing the desertion.... We must give the troops a different idea about the upcoming campaign to make them forget the last one.605

The rank-and-file may have been happy that the siege of Bouchain was easier than expected, but they did not share Marlborough’s impatience for its trenches to be repaired so that further towns might be attacked. “We are at an utter uncertainty still about our future operations. Some are wagering we shall make another siege, others that we shall not; and every body wishes the last may gain. I see none so public-spirited in the army as to wish for another siege.”606

Engineers who strove for Vauban’s efficiency, including minimizing the attacker’s casualties, found themselves with the almost impossible task of living up to Vauban’s reputation. Their problems were many, not least that even their talented


606 Crichton, ed., *The Life and Diary of Lieut.-Col. J. Blackadder*, 425 from camp of Bouchain 9/8/1711 O.S. Almost two centuries later an English officer studying the Anglo-Boer War would rediscover this basic reality of combat motivation. As Colonel G.F.R. Henderson explained the results of British close-order tactics used against rifled weapons in South Africa: “When the preponderant mass suffers enormous losses; when they feel, as they will feel, that other and less costly means of achieving the same end might have been adopted, what will become of their morale?” Quoted in Michael Howard, “Men against Fire: The Doctrine of the Offensive in 1914,” in P. Paret, ed., *Makers of Modern Strategy from Machiavelli to the Nuclear Age*, (Princeton: Princeton University Press, 1986), 516.
predecessor did not act quickly enough for time-conscious generals in a hurry. Notably, Coehoorn was also criticized for the exact same reason – his style of siegecraft was still deemed too ponderous. With such high expectations, the lesser technicians that followed these two bright lights could hardly hope to win the favor of their superiors. They lacked powerful royal patrons. They were understaffed in the trenches and dependent on the other branches for all their supplies and manpower: military administrators for their powder, shot, tools, fascines and gabions; infantry generals for their workmen; artillery officers for their fire support. They were given a limited amount of time to draw up plans that were changed more often than not at the whim of the commander or his generals. Those in charge of the siege, frustrated with the season slipping away and partially indifferent to the cost in lives, gave the engineers only a few days of sapping against some of the continent’s strongest fortresses before declaring their experts incompetent, shelving their plans, and forcing them to conduct storms in many ways antithetical to their training. Given all these obstacles, it is not surprising then that the technicians’ estimates were often inaccurate, their conduct of the trenches less than perfect, and their morale low.

CONCLUSION

As the commanders’ complaints suggest, many of the details of the attack – trenchworks, batteries, gabions and the like – had to be left largely to the technicians, the engineers and artillery officers. However, the overall results of a siege were determined in large part by several critical decisions, and at these pivotal points field generals considered themselves expert enough to ignore their engineers’ advice. There were still areas where the commanders could impose their traditional skill-set to the siege.
As a result, almost every major siege witnessed significant intervention by the non-experts. Most military commanders, interpreting the issue in terms of trading casualties for time, rejected Vauban, his pupils and those sharing his humanitarian impulse. They were just as interested in the siege’s efficiency, but they perceived efficiency in much narrower terms, and replaced Vauban’s concern over minimizing casualties with their own concern to minimize the delays involved with the siege. This reaction against Vauban’s offensive legacy would remain popular into the present, its philosophical elaboration stated most graphically in Clausewitz’s *On War*:

> We are not interested in generals who win victories without bloodshed. The fact that slaughter is a horrifying spectacle must make us take war more seriously and not provide an excuse for gradually blunting our swords in the name of humanity. Sooner or later someone will come along with a sharp sword and hack off our arms.

Although Vauban may have changed the engineering corps’ Method over the course of his lifetime, the underlying assumptions of its commanding officers remained the same. Many Allied and even French generals still sacrificed thousands of men in their quest to accelerate the attack. To the long-established charge that slow, systematic attacks by the sap masked indecisiveness, cowardice, and incompetence, Vauban had countered that blindly rushing the trenches forward and precipitously storming well-fortified covered ways illustrated the opposite extreme – a wasteful disregard for the King’s troops and money that more often than not lengthened a siege rather than shorten it. He approved of accelerated attacks when conditions warranted, but he condemned the techniques commanders chose almost reflexively, for they planned and implemented them poorly and wasted far too many lives to make up for the minimal gains they won.

Describing the situation in Mazarin’s France, he described generals as far too eager to intervene in matters beyond their abilities:

What I find ridiculous is that when these [general officers] have been relieved in the trenches, one will find them talking and complaining, or more often bragging - with a satisfied and contented air - about their loss of a hundred or a hundred and fifty men. Among the dead are always eight or ten officers and some brave engineers, who might yet have given good service another time. Is that not something to cause rejoicing? And does the Prince not owe something to those who manage with the loss of a hundred men what might have been accomplished at the cost of ten with a little industry? .... Proposals to spare the men in a siege are not always too well received, and if a man would mix in such an affair it behooves him to have a well-established reputation lest he be treated as an idiot or be thought too concerned with sparing himself. The general officers, who have but the barest rudiments of this science, will not place much faith in promises, and they will be unwilling to admit that a profession in which they are so little skilled can offer suggestions of much quality. Thus, for fear of making mistakes, they would rather follow traditional usages, even the worst, and when in some predicament, propose vigorous action if they lack the capacity to extricate themselves more honestly. Such men I find excusable. But one even finds men of such bizarre taste and such depraved sentiments that they value a victory only to the extent that it was reddened with the blood of their own men. We can therefore assume that a general who knows little of sieges will be un-receptive to reform proposals, and he will probably prefer to follow usages he knows rather than to trust himself to something possibly better which he does not understand. But in all justice one must admit that even were a general to make good resolutions in these matters, it would be difficult to execute them as things now stand. It would be rashness for him to attempt innovations, since to change the conduct of the entrenchment requires new instructions, engineers well grounded in solidly established principles, selected workmen with special training, good materials in sufficient quantities, and, above all, firm and constant resolution not to be swayed from the rules once reason and experience have endorsed them and have verified their value and utility.608

Although several of Vauban’s siege reforms were widely adopted by engineering corps in the decades after his entreaty had been written, this antithetical preference for casualties rather than delays survived and even prospered among the upper echelon of the officer corps at the beginning of the 18th century. Generals were not just rejecting Allied

engineers, they were attacking all engineers who preferred Vauban’s more careful Method. To the extent that the great engineer’s legacy was to encourage besieging generals – the final arbiters of a siege’s conduct – to choose gunpowder and the spade over blood, Vauban’s lifetime of effort failed to convince the engineers’ masters that such bloodshed was unnecessary.
Despite the claims of engineering incompetence, the numerous complaints about delays, and the explicit rejection of many of Vauban’s sound techniques, besieging forces in the Low Countries were still successful 88% of the time; in the non-Flanders theaters the rate was 82%. Two-thirds of the Flanders sieges lasted no more than a month, 40% held out for two weeks or less. Apparently Vauban’s Method was not the only way to capture places quickly. The competing histories of the period provide few explanations for this unexpected result: the Marlborough historiography presents sieges as a time-consuming betrayal of the Duke’s battle-seeking strategy, while the Vauban literature portrays rejection of his scientific techniques as the highest form of ineptitude. Why, then, were besiegers so successful when their commanders rejected the underlying impetus for Vauban’s method and forced engineers to use exactly those bloody techniques that he had railed against? Why, for example, were the Allies able to capture Ath in 1706 after twelve days of open trenches, when Vauban’s almost-perfect siege in 1697 required fourteen days? Two factors supplemented the besieger’s centuries-old reliance on manpower and trenchworks. To begin with, relatively few strongholds were strong
enough to demand a formal siege using all of Vauban’s techniques. For those that were most formidable, the massive artillery trains targeting them significantly accelerated the destruction of the works. In short, attackers supplemented Vauban’s imperfectly-implemented Method with overwhelming firepower, enabling them to succeed largely without Vauban.

**FORTIFICATION STATUS**

The scholarship on both Vauban and Marlborough emphasizes how the Low Countries theater bristled with fortresses. Vauban endorsed this view by noting his treatises’ applicability to “France, the Low Countries, Italy, Germany, and even Spain, all countries whose frontiers are fortified by a number of strong places, notably the Low Countries, where there are few towns which are not fortified.”  

David Chandler described the theater as a cockpit in which there were so many fortresses that they simply could not be ignored.  

The literature on Marlborough’s victory at Ramillies in particular promotes how heavily fortified the Spanish Netherlands was in order to illustrate battle’s potential, stressing that in its wake “a dozen major fortresses” surrendered without a fight.  

Surveying the early modern military geography of Europe, Geoffrey Parker cited Vauban’s support in declaring

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the Low Countries one of the “heartlands” of the trace italienne, further reinforcing the well-established assumption of a theater bristling with fortifications.\textsuperscript{612}

Just as historians have highlighted the longest sieges as “typical,” so too have they interpreted Vauban’s elaborate siege techniques as an indication that the strongest fortresses were the norm. Imagining the entire theater filled with replicas of Vauban’s masterpiece of Lille, too many scholars have assumed that only his efficient siege tactics could have overcome the defenses of so many strong places. This stereotype is contradicted, however, by the certainty of contemporaries that the critical and often-contested Spanish Netherlands was in fact poorly fortified. Closer attention to the geography of the campaigns reveals the widely varying defensibility of fortifications within the theater (see Figure 6.1). This fact goes a long way toward explaining why so many of the Flanders fortresses fell so quickly with so little reliance on Vaubanian techniques.

\textsuperscript{612} See, for example, the map in The Military Revolution, on xiv-xv which might encourage the idea of fortresses uniformly distributed throughout the theater, as well as 24ff.
In fact, Vauban’s full formal attack was rarely necessary due to the weaknesses of many of the theater’s fortifications. When non-siege tactics failed (see Appendix D) and a fortress had to be formally besieged, few towns’ defensive works matched the perfect fortress Vauban assumed in his manual.\(^{613}\) Despite all of Vauban’s and Coehoorn’s fortification building, many of the theater’s strongholds were very weak indeed. Just as Spanish places meekly fell to Vauban’s immature methods (i.e. before the development of his three tactics) in the both the War of Devolution and the Dutch War, so too did many Spanish fortresses quickly fall to

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\(^{613}\) We should again emphasize that Vauban postulated a worst-case scenario for the besieger in order to show the variety of tactics available to a hard-pressed attacker – he did not assume that many real fortresses would ever meet this ideal.
the Allies in the Spanish Succession war. With poorly-designed and maintained
works, besiegers could safely ignore many of Vauban’s offensive tactics with few
negative consequences.

Close examination shows that every Low Countries fortress besieged
between 1702 and 1705 qualified as a bicoque, (literally, a hovel, but in this military
sense a very poorly-fortified place), Vauban’s useful term for small, weak places
that were never to be confused with serious fortresses like Lille, Turin or Landau.
Such towns might well require a siege dans les formes, but they could not be
expected to withstand one for very long, nor to require the full panoply of
techniques available to besiegers. The first campaign began on the Meuse/Maas,
where John Childs claimed “some of the strongest fortresses in Europe” could be
found.614 This opinion on the strength of its fortresses, while reflecting the
conventional wisdom, is misleading, for only two of the places he identifies (Namur
and Maastricht) were formidable. Not surprisingly, neither of these two were
besieged during the war despite several opportunities. The two previous sieges of
Namur in the Nine Years’ War had undoubtedly cooled Allied interest in yet
another expensive undertaking. The French left Maastricht isolated in the rear with
the intention of waiting for it to fall by blockade, a hope that was dashed with
Marlborough’s appointment as the theater’s Allied commander-in-chief and his

614 Warfare in the Seventeenth Century, 137. His slightly longer description in The Nine Years War
provides a list of fortresses in the theater that conjures up images of a region thoroughly blanketed by
strongholds (32-33).
offensive up the Meuse in mid-1702.\textsuperscript{615} The other three places specified by Childs (Venlo, Liège, and Huy) were in fact extremely weak and far from the strongest posts of the theater, much less of Europe as a whole.

Preemptively occupying the Spanish towns held by the Dutch (their “Barrier”) in the name of Louis’ grandson Philippe V, French generals quickly discovered in 1701 the poor condition of their new posts.\textsuperscript{616} The four Guelders towns of Gelders, Venlo, Roermond and Stevensweert alone were expected to cost the French and Spanish 100,000 francs to repair, in addition to what had already been spent.\textsuperscript{617} Venlo was the strongest of these bicoques, but even here, Wassenaer-Obdam was skeptical of Coehoorn’s dire predictions of failure, since the town “had never been considered one of the strongest places.”\textsuperscript{618} Discussions of defending the capital of the Bishopric of Liège revolved around building an entrenched camp for a field army, since the citadel and forts were inadequate by themselves to hold off an attacker for any extended period of time.\textsuperscript{619} Vauban, explaining why poorly-

\textsuperscript{615} After Ramillies, the Dutch proposed to besiege Namur, but Marlborough prevailed in his desire to open the Flanders coast to English shipping.

\textsuperscript{616} The desperate financial straits of the Spanish Netherlands is briefly summarized in Vault and Pelet, \textit{Mémoires militaires}, 1:16 .

\textsuperscript{617} Vault and Pelet, \textit{Mémoires militaires}, 1:74, Boufflers to Louis, Diest 5/12/1701. The small pays de Guelders was to provide the pioneers and wagons.

\textsuperscript{618} Veenendaal, Jr., ed., \textit{Briefwisseling Heinsius}, 1:415 #835, Wassenaar-Obdam to Heinsius, Venlo 9/6/1702. See also Puységur’s comments in Vault and Pelet, \textit{Mémoires militaires}, 1:30, to Chamillart, 2/21/1701. For an Allied view after the siege, see Veenendaal, Jr., ed., \textit{Briefwisseling Heinsius}, 1:448 #916, Wassenaar-Obdam to Heinsius, Venlo 9/27/1702.

\textsuperscript{619} William III had done so in the previous war. In the Spanish Succession, see Vault and Pelet, \textit{Mémoires militaires}, 2:593, Boufflers to Louis, Tongeren 10/1/1702. For Vauban’s opinions of Liège (which would require 400,000 livres for it to hold out just ten days), see Paul Harsin, “Vauban à Liège en 1702,” \textit{Bulletin de la Société royale du vieux Liège} 104-105 (1954), 308ff.
conducted attacks were so successful early in the war, declared Venlo, Roermond, Liège and Bonn bicoques, “all weak places worse than the others, and not one of which was in a state to hold out for eight days against well-ordered attacks [attaques réglées].” After the short-lived siege of Huy’s forts in 1703, Du Mée determined in 1705 that it was untenable in its current state, and that a whole series of additional works would need to be constructed in order to make it defensible. Although Limburg’s earthen fortifications were reported to be stronger than expected, the most difficult part of the 1703 siege was hauling the heavy siege guns to the site. Not surprisingly then, a series of Meuse fortresses fell quickly to the Allies in the first two years. Venlo, Stevensweert, Roermond and Liège in 1702, Huy and Limburg in 1703: all these put up little resistance when attacked.

After several unproductive months on the Moselle, Marlborough’s army returned to the Meuse in 1705 in order to reverse a short-lived French offensive. From then on, the Allies would not campaign again on the Meuse for the rest of the war, not only because they were discouraged from further advances upriver by the strength of French-held Namur, but also because they were enticed with tempting

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620 Vault and Pelet, Mémoires militaires, 5:653, Vauban to La Feuillade, 9/13/1705.

621 Veenendaal, Jr., ed., Briefwisseling Heinsius, 4:102 #277, Dutch Colonel of the infantry Isaac Cronstrom to Heinsius Huy 3/20/1705. Villeroi’s judgment (backed by Valory) was that only Huy’s château was defensible, due primarily to its situation on top of a ridge. AG A1 1835, #262, Villeroi to Chamillart, 6/12/1705. Harcourt also agreed with this assessment: AG A1 1835, #269, Harcourt to Chamillart 6/13/1705.

622 Allent, Histoire du Corps Imperial du Génie, 416; Snyder, ed., Marlborough-Godolphin Correspondence, 1:242 #239, Marlborough to Godolphin, Verviers 9/9/1703; Murray, ed., Letters and Dispatches, 1:177, Marlborough to Field Deputies, Robertmont 9/12/1703; and 1:184, Marlborough to Ouwerkerk, Verviers 9/21/1703.

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targets in Spanish Brabant. Its great towns had even weaker fortifications than those on the Meuse — their shortcomings stemmed as much from lack of maintenance as from outdated fortifications. In May 1701, Boufflers reported to the king that none of the Spanish places they had occupied had palisades or even covered ways: “I found the places of this country in the same disorder as all the others on the Spanish frontier... with the exception of Venlo and Guelders, which are in better shape due to the considerable work that the comte de Coigny had already undertaken to repair them.” Puységur identified the resulting critical disadvantage that the French would labor under over the next several years, advising Chamillart that far more troops would be needed to stay on the defensive than if they went on the offensive: “the Spanish Netherlands is full of places which are not able to withstand major sieges, and Brabant is entirely without defense.” On the defensive by late 1702, Boufflers repeated Puységur’s complaint about the need to cover all of the Spanish Netherlands with his armies. The French maréchal

623 The next several pages are taken in part from Ostwald, ‘The “Decisive” Battle of Ramillies, 1706,” 668-670.

624 Duffy, The Fortress in the Age of Vauban and Frederick the Great 1660-1789, 34-35, also emphasizes the differences between fortresses in the Spanish Netherlands and those in France proper.

625 Vault and Pelet, Mémoires militaires, 1:74, Boufflers to Louis, Diest 5/12/1701.

626 Vault and Pelet, Mémoires militaires, 1:31, Puységur to Chamillart, Brussels 2/21/1701. In a later mémoire he wrote that “All the places of the Spanish frontier from the sea to the Rhine are only made of earth and the majority repaired very hastily, and therefore cannot make a long resistance; thus we cannot move our armies far from them without giving the enemy the opportunity to profit from this by declaring war and surprising several of them.” Vault and Pelet, Mémoires militaires, 1:473, Puységur mémoire 8/22/1701.

627 Vault and Pelet, Mémoires militaires 2:572 Boufflers to Louis, Beringen 9/3/1702. He also warned the king that trying to relieve the siege of Liège would open up all of Brabant to the Allies. 2:595 Boufflers to Louis XIV, Tongeren 10/1/1702. See also 2:602-603, Puységur mémoire.
Villeroi repeated the warning of the theater’s pathetic defenses in 1704: “all of Brabant remains open to the enemies... [it] does not have a single fortress which could delay an army for twelve hours without the protection of our army.”

Conditions had not improved by 1705, as French commanders continued to bemoan the necessity of defending these “open” towns with their field army. Yet another French maréchal echoed his colleagues’ complaints: “This country is full of towns, of which hardly a single one is in a state of defense, yet which are nevertheless so important that we cannot lose even one without receiving a mortal blow, which forces us to spread our troops out across several posts.” Villeroi explained further how the Spanish alliance continued to stretch thin his manpower:

> our army is separated by indispensable necessity, because we must guarantee completely indefensible places, only covered by a river or retrenchment.... If Louvain, Lierre, Malines and Brussels were places that we could save by giving them large garrisons, I would recommend to the king to separate the army among these towns... but they can only be defended by an army.

Louis’ political and diplomatic considerations placed his armies in an onerous position.

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628 Vault and Pelet, Mémoires militaires, 4:12; also 13: without a French army present, he warned, “the enemies [would be able to] enter Brabant without opposition, run to the gates of Brussels and take whatever towns they wanted in that province, all of them being without defense.”

629 See Vault and Pelet, Mémoires militaires, 5:599, Maximilien II Emmanuel to Duisborg, 8/20/1705; as well as 5:37, 603. The French commander at Leuven reported in 1705 on the shortage of Spanish funds which were needed to put the town in a state of defense. AG A1 1838 #220. Louis acknowledged these complaints in Wolf, Louis XIV, 526; and Vault and Pelet, Mémoires militaires, 5:606, Louis to Maximilien II Emmanuel 8/24/1705.

630 Vault and Pelet, Mémoires militaires, 5:588, Marsin to Chamillart, Overijssche 8/16/1705.

631 Vault and Pelet, Mémoires militaires, 5:91-92, to Chamillart, 9/30/1705.
The Allied victory at Ramillies pushed the French covering force out of Brabant. Without the Bourbon army’s protection, all of Spanish Brabant fell within two weeks. While the loss of their field army and of all this territory was traumatic for the French, there was one bright spot. Now the Allies would be encumbered with these indefensible towns. The French commander of Namur did not expect the victorious Allies to backtrack eastward in order to besiege his fortress, as they would thereby abandon to the French all the indefensible Brabant towns they had captured in the battle’s wake.632 Jan van Brouchoven, graaf van Bergeyck, formerly chief minister of the Spanish Netherlands, planned the next year’s campaign with the assumption that the Allies would be hampered, as the French had been, by the need to protect all these towns.633 The French were consistent in their complaints: they had criticized these fortifications long before Ramillies ever took place, and after the Allies captured them, they believed that the Allies were now at a disadvantage.

The Allies quickly came to appreciate the challenges these towns presented. Dutch observers had already commented on the poor state of their own frontier fortresses at the beginning of the war, a concern that Marlborough was able to


633 Vault and Pelet, Mémoires militaires, 6:586-587. Bergeyck was particularly critical of the towns of Leuven, Mechelen and Brussels. The baron Karg de Bebenbourg, chancellor to the French ally the Elector of Cologne, added Bruges to the list of towns expected to fall without resistance. Louis Jadin, ed., Correspondance du Baron Karg de Bebenbourg, chancelier du Prince-Evêque de Liège Joseph-Clément de Bavière, Archevêque Electeur de Cologne, avec le Cardinal Paolucci, secrétaire d’état (1700-1719), 2 vols. (Brussels: Institut historique belge de Rome, 1968), 1:43. After the French had regained Bruges in 1708, they once again acknowledged the need for an army to defend the town against an Allied threat. AG A¹ 2083 #86, Charles comte de la Motte-Houdancourt, Ghent 9/19/1708.
neutralize early on as he forced the French back on their heels.\textsuperscript{634} After Ramillies these Dutch fortresses were shielded by the Allied occupation of Spanish Brabant, but now the Allies found themselves hindered by their new conquests. Later in 1706, Marlborough feared that there were not enough troops to protect the besiegers at Menin and at the same time defend the open towns of Brabant; Goslinga was initially opposed to this siege altogether because of the necessity of exposing their newly-conquered lands in the process.\textsuperscript{635} In 1707 Marlborough complained of the “plague of covering Bruxelles and the rest of the great towns” with his field army.\textsuperscript{636} The Dutch also mentioned the “embarrassment” of covering Brabant’s towns, Lt.-Gen. Francis Nicolaas Fagel echoing Villeroi’s 1704 judgment: “We don’t have in all of Brabant a single town or place of which we can be assured... when our army is far from these places they are in fear.”\textsuperscript{637} By 1708 Marlborough’s only solution was

\textsuperscript{634} For examples, see Veenendaal, Jr., ed., Briefwisseling Heinsius, 1:46 #63, Noyelles en Fallais to Heinsius, on Bergen op Zoom’s status circa 3/28/1702; 1:149 #241, Noyelles en Fallais to Heinsius, Bergen op Zoom 4/30/1702 referring to Dutch Brabant as a “pais ouvert”; and 4:212 #609. See also Duffy, The Fortress in the Age of Vauban and Frederick the Great, 34. The Dutch were still complaining about the “indifferent” state of these same fortresses in 1708, as cited in A.J. Veenendaal, Sr., “The Opening Phase of Marlborough’s Campaign of 1708 in the Netherlands: A Version from Dutch Sources,” History 1950, 38.

\textsuperscript{635} Snyder, ed., Marlborough-Godolphin Correspondence, 2:608 #617, 642 #648; Veenendaal, Jr., ed., Briefwisseling Heinsius, 5:387 #734, Goslinga to Heinsius, Oudenburgh 7/13/1706. Marlborough also wanted to evacuate the exposed garrison at Leuven, since it was too far away to be protected by the main field army, van ’t Hoff, ed., Marlborough-Heinsius Correspondence, 254 #420. Heinsius, the Dutch general Salisch and field deputy Goslinga also recognized that the Allies could not afford to garrison all of the great towns of Brabant. Veenendaal, Jr., ed., Briefwisseling Heinsius, 5:346 #652, 361 #678, 373 #698, 475 #915.

\textsuperscript{636} Snyder, ed., Marlborough-Godolphin Correspondence, 2:794 #802, Marlborough to Godolphin, Meldert 6/6/1707; also 2:780 #791, Marlborough to Godolphin, Soignies 5/15/1707. Writing from Brussels in 1708, Marlborough’s trusted subordinate William Cadogan described the town as “being in a manner an open town and subject to the fortune of a battel.” Add MSS 61160 f. 56b; see also Add MSS 61312 f. 182b l’Armentière to Marlborough, Brussels 12/3/1708.
to abandon all of Spanish Brabant – a politically dangerous move that became impossible when the French surprised Ghent and Bruges, threatening to cut off Allied communication with Dutch Brabant. The Duke was quickly forced to abandon his plan in order to maintain the links with Dutch territory. In other words, the Allies were just as limited by their need to protect the politically-vital but ill-defended centers of Brabant as the French had been before them.

Nonetheless, the Spanish Netherlands did include several places renovated by Vauban himself, extending his influence as far north as Oudenaarde, Menin, Ath, and the coastal towns of Flanders. Most of these, however, fell far short of his ideal, as fortresses renovated during the heyday of Louis’s construction program (the 1670s and 1680s) were already twenty or more years old by the time of the Spanish Succession, their earthen works slowly disintegrating as the rigors of expensive campaigning in the previous war made it difficult for the Spanish Crown and the towns to pay for their upkeep. As Marlborough judged Oudenaarde “a very strong place,” he was quite pleased with its peaceful surrender in the wake of Ramillies. The French commander, however, had learned the true state of affairs.

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637 Veenendaal, Jr., ed., Briefwisseling Heinsius, 6:309 #606; see also 299 #590, 312 #612; 7:90 #195, van den Bergh to Heinsius, Brussels 2/23/1708; 12:244 #407, Goslinga to Heinsius, Lillers 7/30/1711.

638 On this issue, see Veenendaal, Sr., “The Opening Phase of Marlborough's Campaign of 1708 in the Netherlands.”

639 See the map in Pujo, Vauban, 88-89.

640 Snyder, ed., Marlborough-Godolphin Correspondence, 1:558 #574. Marlborough was possibly misled by his recollection of the town’s successful defense against William III and 60,000 men — he placed the siege in the Nine Years’ War, but the town had actually been besieged in 1674. Snyder, ed., Marlborough-Godolphin Correspondence, 1:559 #575. Observers in London had expected
upon his arrival: the upkeep of the fortifications had been completely abandoned, the outworks had neither palisades nor a glacis, while goods were being smuggled into the town through several breaches in the curtain wall, un-repaired from the 1674 siege. To make things worse, the two French battalions in garrison only totaled a few hundred men, there was not enough money to pay for the necessary repairs, and an inundation would have required a week to form while an Allied detachment was only a few miles away. The governor of Ath wrote of its neglected works, including a counterguard that had not been repaired since Vauban’s siege nine years earlier. The combination of poor defense and strong offense led to the town’s capture in slightly less time than Vauban had conquered it in 1697. Only Menin seemed worthy of the name ‘fortress,’ Vauban describing it as one of the best fortresses in the theater.

As for the coastal towns, Spanish Flanders was more defensible given their recourse to inundations. However, the English received reports after Ramillies that their fortifications had also been “much neglected of late, and scarce any of them in

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641 AG A1 1936 #256, 5/30/1706.
642 AG A1 1936 #264, 5/31/1706.
good condition.”

Ouwerkerk had already expressed his pessimism towards early projects against the most important towns controlling river traffic in the region, arguing that “I doubt that we could conserve either of these two places [Bruges and Gent], not having an army to guard them.” Preparing for an upcoming siege, the French commander described Oostende’s earth works as “one of the worst places in the world” – the town’s main defense lay in its inundations.

As the Allies had been hamstrung by their Spanish ally in the Nine Years’ War, so too were the French in a precarious situation in the Spanish Succession, left to defend a province full of barely-defensible Spanish places. Nevertheless, their occupation of the Spanish Netherlands did force the Allies to conduct eleven sieges and delayed an advance into France proper until 1708 – six years into the war. The delays would have been far greater, were it not for the fact that resistance was too often cut short defending dilapidated Spanish bicoques or poorly-maintained French fortresses. Looking just at the besiegers’ effort over the course of the early modern period cannot give a full picture without controlling for the status of the works under attack.

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646 Snyder, ed., Marlborough-Godolphin Correspondence, 1:572 #586, Godolphin to Marlborough, Windsor 6/3/1706 O.S.


648 AG A 1937, #60, de la Motte-Houdancourt, Oostende 6/7/1706.

649 Duffy stresses this French disadvantage in The Fortress in the Age of Vauban and Frederick the Great, 35.
OVERWELMING FIREPOWER

Against weakened targets, an accelerated attack could be as effective and efficient as the Vaubanian ideal. Bicoques were not expected to hold out for long, yet a strong and well-stocked fortress could also fall surprisingly quickly without excessive reliance on Vauban’s techniques. The string of formidable fortresses the Allies captured between 1708 and 1712 – Lille, Tournai, Mons, Douai, Béthune and Aire in particular – indicate the potency of the revitalized attack. Besiegers overcome the numerous offensive weaknesses discussed in Chapter 4 surprisingly easily, particularly when compared with earlier 17th century sieges. Whereas Vauban encouraged his pupils to conduct their attacks with industrie, a popular alternative was to supplement or even replace finesse with the brute force provided by overwhelming firepower. Contemporaries widely recognized the predominance of besieging artillery, as a closer examination of the period’s writing indicates. A more concrete assessment of the artillery available to besiegers reinforces the anecdotal accounts of offensive firepower superiority. The ways in which these pieces were used, however, often deviated from Vauban’s techniques. The sieges of the Spanish Succession illustrate how besiegers could ignore many of Vauban’s specific recommendations and still conduct successful sieges against even the strongest of fortresses. Firepower played a critical role in making well-fortified towns untenable.

Artillery’s Dominance

Contemporaries in the Spanish Succession rarely acknowledged Vauban’s three tactics as the critical element of the early 18th century siege. Trench parallels,
his most widely-disseminated technique, were always mentioned matter-of-factly. Trenches protected soldiers, but it was artillery that suppressed the enemy’s fire and breached their works, allowing the trenches to be moved forward. Revolutionizing siegecraft in the 15th and 16th centuries, gunpowder weapons once again shifted the equilibrium between the attack and defense over the course of the 17th century. By 1700, the one factor receiving the most comment was not Vauban’s three tactics but the domination of the besieger’s artillery.\(^{650}\) Vauban had already acknowledged that “there is nothing more important in a siege than good use of the artillery,” for “it is with the good use of cannon and bombs that places are captured and sieges shortened.”\(^{651}\) Feuquières put the superiority of the artillery within a historical perspective. By 1709 no longer could governors rely upon un-revetted redoubts beyond the covered way to effectively defend medieval walls as they had only a few decades previously:

> As it was not usual at that time [c. 1654] to convey a great train of artillery before places that were besieged, M. de Schulemberg [governor of Arras] believed, with sufficient reason, that their works could not easily be destroyed by the enemy’s cannon, and that he should be in a condition to defend them, for a considerable time, by his strong garrison, whose fire would oblige the enemy to make their approaches to his works with circumspection and by opening trenches; by which means, he should greatly retard them in their advances to the body of the place, which was but indifferent. This was a judicious manner of thinking at that time, but such a conduct would now be subject to great inconveniences; because works of that

\(^{650}\) Earlier historians of the French engineering corps also recognized the importance of artillery, at the same time contrasting Vauban’s skillful attack with how little talent was needed to conduct the Coehornian attack, the reverse of what later historians argue when describing the purported dominance of the Vaubanian attack. See, for example, Allent, *Histoire du Corps Impérial du Génie*, 407, 416, and 589.

\(^{651}\) Vauban, *Traité*, 238; 239.
nature which are separated from the place would soon be destroyed by the artillery and the bombs to such a degree that the men within the place could not long be in any state of security, and these demolished works would be converted into sure lodgments for the enemy, and afford commodious situations for the batteries.\textsuperscript{652}

The veteran Santa Cruz de Marcenado gave four examples of why “nothing is more advantageous in a siege than to have a lot of artillery”: their counter-battery fire would quickly dismount the garrison’s guns, the quicker outcome facilitated by numerous cannon would limit the threat of relief efforts, assure the place’s capture before the campaign season ended, and would save powder and cannonballs as well, since many breaching cannon firing together formed a breach much more efficiently than a smaller number of guns.\textsuperscript{653} He later opined that “Today it is less with the large number of troops than the quantity of artillery that we force places to surrender,” going so far as to contend that even an outnumbered besieging force could capture a town, as long as they had superior firepower.\textsuperscript{654} Goulon similarly assumed the superiority of enemy fire, recommending that garrisons not attempt to duel head-on with the besieger’s artillery, but instead to frequently shift their batteries in a game of cat-and-mouse with the attacking batteries.\textsuperscript{655} The growth of

\textsuperscript{652} Feuquières, \textit{Memoirs Historical and Military}, 2:271.

\textsuperscript{653} Santa Cruz de Marcenado, \textit{Reflexions militaires}, 9:3-4.

\textsuperscript{654} Santa Cruz de Marcenado, \textit{Reflexions militaires}, 12:292-293.

\textsuperscript{655} Goulon, \textit{Memoirs of Monsieur Goulon}, 10.
artillery arsenals, on both sea and land, upset the established offensive-defensive balance.656

Artillery’s Impact in the Spanish Succession war

Contemporaries discussing the specifics of the various Low Countries sieges were also struck by the dominant role of siege artillery. The semi-official French monthly *Le Mercure galant* prepared its readers for the rapid fall of Venlo by reminding them that “today one attacks places with very large armies and with a great amount of artillery...”657 Against the weakest of fortresses, the combination of voluminous cannon and mortar fire might be enough to force a surrender soon after the besiegers began firing: this was particularly effective against small forts. Liège’s Fort Chartreuse fell quickly: “our mortars having started to fire on the Chartreuse this morning, the bombs had such an effect that at 2 o’clock in the afternoon the garrison asked to capitulate.”658 The *Mercure galant* expanded on this point by discerning a silver lining to the quick collapse of Liège in the same year:

The citadel of Liège [was] besieged by an army four times as large as would have been necessary for a similar siege.... the enemy also used an extraordinarily large siege train for such a small place. This shows how formidable the French troops are, and how much the enemy feared engaging them in close combat; when cannon and bombs capture places, there is little glory for the besiegers, and the method

656 For a discussion of the increasing armaments of naval vessels in the 16th century and their impact, see John Guilmartin, Jr., *Gunpowder and galleys: changing technology and Mediterranean warfare at sea in the sixteenth century*, (New York: Cambridge University Press, 1974), Conclusion.

657 *Le Mercure Galant*, octobre 1702, 332-333, Relation de ce qui s'est passé à la défense de Venloo, depuis le 29 aoust jusqu'au 24 septembre.

is so costly that a State cannot take many fortresses in this fashion without ruining itself in very little time.\textsuperscript{659}

The rest of the war would negate its early optimism. So too did Huy’s small forts swiftly collapse under such firepower, as described by an Allied account:

On Tuesday last at 8 o’clock at night our bombs began to play upon a fort called St. Joseph. On Wednesday about 3 o’clock in the morning our bombs and cannon played so briskly upon it that they were forced to hang out the white flag in order to capitulate.... Our batteries continued firing so vigorously upon the two other forts that they were obliged to capitulate upon the same terms and accordingly marched out this morning about 9 into the castle. We have nothing now but the castle. We are firing upon it from seven or eight batteries and it cannot hold out I believe above a day or two.\textsuperscript{660}

The town of Limburg also fell quickly, the besiegers’ cannon making quick work of the earthen fortifications that the commander had been too slow to abandon.\textsuperscript{661} At Huy in 1705, although the French garrison’s surrender was considered a day premature, the brevity of the siege came as little surprise: “we battered the château in quite an extraordinary manner and the artillery had a surprising effect in very little time...”\textsuperscript{662} Reflecting upon his wartime experience, Landsberg highlighted the effects of the constant shelling:

\begin{quote}
I had already participated in five or six sieges before that of Lille, including Venloo, Roermonde, the citadel and chartreuse of Liège, Bonn, Huy, Limbourg, but as these sieges were not difficult because the enemy found itself vigorously attacked with well-served artillery,
\end{quote}

\textsuperscript{659} \textit{Le Mercure Galant}, octobre 1702, 430.


\textsuperscript{662} Cited in Jean-Pierre Rorive, \textit{La guerre de siège sous Louis XIV en Europe et à Huy}, (Brussels: Editions Racine, 1997), 250.
these towns could not defend themselves as they do at present. We saw their garrisons terrorized by the artillery, they asked to capitulate before a breach had even been made or their covered ways captured, so that we never experienced any difficulties in our approaches and there was never any need to fill a ditch or make a gallery.663

For the first half of the war, the large Allied siege trains rapidly brought the Spanish bicoques’ walls crumbling down around their garrisons’ ears.

Nor were the mightiest strongholds immune from the massing of siege cannon. The stronger fortresses of Vauban’s pré carré would require far more effort, although an eventual collapse was just as inevitable. In 1706 the defenses of once-mighty fortresses were quickly reduced to rubble. At Oostende, thirty-two 24-pounders and thirty-six mortars and howitzers covered the creeping Allied trenches: “We continued to make a great fire all day.... The French were so shocked that they allowed our people to approach to the edge of the counterscarp without firing a shot.”664 A French account described the enemy’s firepower at Menin in similar terms:

The 9th, at three o’clock in the morning, the enemy’s guns began to fire from the parallel with forty cannon and forty mortars; and by ten o’clock, there was a breach eight-toises wide in the Capuchins bastion between the two demi-lunes, the place’s masonry being poor. They fired many bombs and an infinity of double grenades and several carcasses [incendiary bombs] which set fire to several houses in the town, and which blew up one of the mines that we had constructed under the glacis; this fire became so terrible from

663 Landsberg, Nouvelle manière de fortifier les places, 34. Landsberg is unfair here to most of the French garrisons, who beat the chamade only when Allied general storms were imminent (see later in the chapter for details).

664 Veenendaal, Jr., ed., “De Mémoires van Sicco van Goslinga,” 23. Discussing the 1706 campaign, one of Marlborough’s recent biographers argues that the Dutch engineers continued their “often lethargic and overcautious” approach. He further notes that Marlborough forced the Dutch to “ensure... a maximum bombardment” against their pecuniary wishes. Jones, Marlborough, 127.
afternoon until night that all our best officers and soldiers who had seen the sieges of Kaisersweert and Landau were amazed at the volume of fire. We could no longer distribute our food, our brasseries and butcher shops were burned, and our soldier carpenters who were laboring on works in our covered way could not continue due to the heavy bombardment and abandoned their work; our cannoniers and bombardiers could no longer fire, their platforms being absolutely ruined.665

Expending almost all their munitions, the Allies captured Vauban’s masterpiece of Lille in a relatively short period of time. Louis’ trusted military advisor Jules-Louis Bolé, the marquis de Chamlay had predicted the result back in 1706 when discussing potential relief operations in case Vauban’s crown jewel came under attack. He identified the challenges such firepower now presented: “Even a very considerable garrison would perhaps be unable to save Lille if the enemies were to attack it with an artillery train as large as what they usually employ in their sieges.”666 While it was the longest siege in the theater, its four-month defense is far less impressive when we recall that the well-provisioned garrison actually held the town for only two months, while the citadel resisted for another two months.667 The less-impressive fortress of Aire held out for just as long as each of these did, while the mediocre fortifications of Douai persevered a similar length of time with fewer troops manning a much more extensive circumference. Given the “impregnable”

666 Vault and Pelet, Mémoires militaires, 6:513 #315, Mémoire de M. de Chamlay 7/25/1706.
667 Most histories put the garrison at 12,000 men or more, but Maurice Sautai’s exhaustive study of the siege suggests that marshal Boufflers could only muster half that number. Le siège de la ville et de la citadelle de Lille en 1708, 59.
nature of Vauban’s masterpiece and the Allied mistakes made in its attacks, Lille’s relatively swift capture suggests that the siege attack had indeed come far since 1600.

Lille’s neighbors suffered a similar fate. At Tournai, one garrison witness described how they were “attacked by the most frightful artillery ever seen before a place.” With three separate attacks, the enemy intended to “throw many bombs in the works in order to fatigue the garrison which they believed undermanned and in a poor state.” Quickly silencing the garrison’s fire, the besiegers had to settle down to discovering the garrison’s countermines under the glacis with the sap. Recounting the Allied siege of Le Quesnoy in 1712, the chevalier de Quincy noted that “prince Eugene pushed the siege with all possible vigor. He had a numerous artillery, with which he pounded the place into dust: the defenses were thus soon ruined.” An Allied participant acknowledged their reliance on firepower: “we hope to oblige him to capitulate soon, for we propose to make a great and continual

668 AG A1 2159, #408, Doles (lieutenant du roy of Tournai), Tournai 7/29/1709. The field deputy in charge of the artillery confirmed that the besiegers had “all the artillery that anyone could ask for in a siege.” Veenendaal, Jr., ed., Briefwisseling Heinsius. 8:668 #1365, Vegelin van Claerbergen to Heinsius, Tournai 6/30/1709.
669 AG A1 2151, #144, d'Hermanville 7/4/1709.
670 Murray, ed., Letters and Dispatches, 4:547 Marlborough to Boyle, Tournai 7/15/1709. Also: Relation de la campagne de Tannières, contenant un journal exact et fidèl de ce qui s'est passé au siège de la ville et citadelle de Tournai, à la bataille de Blaugis, ou Malplacquet, & au siège de Mons, avec quelques autres particularités, & les plans. En l’an 1709, (La Haye: P. Husson, 1709), 36.
671 Léon Lecestre, ed., Mémoires du chevalier de Quincy, 3:127. The chevalier also noted that the garrison commander Labadie had been unjustly thrown into the Bastille for the town’s poor defense; his subordinate officers defended their commanding officer’s honor, swearing that “the numerous Allied artillery had made so many breaches in the place that he had been forced to submit to the Allies’ conditions.” 3:128.
fire from the opening of the trenches.”672 The same fate was expected of Eugene’s next target: “The town of Landrecies is also well fortified; but the works are very small: thus it is to be presumed that it would have quickly been reduced to dust by the numerous artillery which they would have battered [foudroyer] it with.”673 Such an assumption would not be tested, as the Prince lifted the siege after Villars overran the entrenched camp at Denain and captured his supply depot at Marchiennes.

Louis’ armies likewise made relatively short work of fortresses with their artillery arm. The French commander before Douai later in the year assured Voysin that “the siege will not be very long, Monseigneur, as long as we are careful to have all the necessary artillery and munitions.”674 At the next siege, Bouchain, Alègre noted that “after a full day of the cannon firing, I think, Monseigneur, it will be easy to capture it.”675 Contemporaries predicated speedy success on the availability of well-supplied siege trains, and even the strongest of fortresses succumbed far more rapidly than they had fifty years earlier.

Besieging Artillery by the Numbers

A more systematic measure of siege artillery reinforces contemporary commentary, for it was the number of siege guns that formed the basis of the new-found offensive supremacy. The general techniques of attacking a fortress with

672 The Daily Courant 6/14/1712 O.S., From the Camp before Haspre 6/16/1712.


674 AG A1 2382, #8, Alègre to Voysin, Douai 8/16/1712.

675 AG A4 Carton 8 2, Alègre to Maine, Bouchain 10/13/1712.
artillery – especially the division of labor between different caliber weapons – were already established back in the 15th century,\(^{676}\) while ballistic performance (range and rate of fire) was nearly static across the early modern period.\(^{677}\) Although the matter of numbers has received almost no exploration compared to the changes in gun construction and gunpowder manufacture, histories of 16th and early 17th sieges highlight both the very small proportion of large-caliber pieces as well as the small number of pieces used overall, measured usually in the dozens.\(^{678}\) In the 16th century the Spanish engineer Pedro Navarro wrote that: “A city can expect to have more guns than an army can carry with it; whenever you can present more guns to the enemy than he can range against you, it is impossible for him to defeat you.”\(^{679}\)

David Parrott described similar conditions right before Vauban’s service began:

The role of artillery in [sieges of Richelieu’s France] was relatively limited. Few of the French sieges of this period were brought to a conclusion because artillery bombardment had rendered the defences


\(^{677}\) See Guilmartin, *Gunpowder and galleys*, Conclusion; Bert Hall, *Weapons and Warfare in Renaissance Europe*, 153-156; Chandler, *The Art of Warfare in the Age of Marlborough*, 176-193; Lynn, *Giant of the Grand Siècle*, 500-509 (including a relatively constant ratio over the period of one or two field guns per thousand troops in France’s field battles). On the general performance of Dutch cannon c. 1700, consult Olaf van Nimwegen, “Kannonen en houwitsers. De Staatsh veldartillerie in de eerste helft van de achttiende eeuw,” *Armamentaria* 32 (1997), 50-66. The period’s advances in artillery tended to decrease the cost and increase the precision of manufacture, further standardize the arsenal’s variety of calibers, and increase the mobility of the guns by decreasing the powder charges needed (and thereby the weight of the gun) as well as improving the carriages.

\(^{678}\) The examples from this early period are extremely sketchy, but the numbers given range anywhere from one dozen to one hundred guns in the largest trains. See Eltis, *The Military Revolution in Sixteenth-Century Europe*, 81-85; Pepper and Adams, *Firearms and Fortifications*, 11-15, 166-168; Wood, *The King’s Army*, 153-162, 178-183, 272-273; Parrott, *Richelieu’s Army*, 65-71. In *The Army of Flanders*, 18-19, Parker mentioned an increase in siege trains over the course of the Dutch Revolt, but saw little corresponding improvement in the attack as a result.

untenable. The great majority of sieges were ended either by the threat of starvation or by the besieged garrison’s realization that they would not be relieved and that further resistance would simply harshen the terms of a final surrender.680

By the turn of the century, the situation had changed dramatically, with siege trains consistently numbering well over one hundred pieces (up to 300 pieces in the largest sieges), while a large percentage of those consisted of the heavy breaching guns, 24-pounders and occasionally even larger calibers.681 The recent work of Frédéric Naulet has tallied the steady rise and then slight decline of French artillery inventories over the course of Louis XIV’s reign – from 5,000 pieces of all calibers in 1688 to a peak of 7,444 in 1697, declining to 6,006 by 1711.682 A portion of these were dedicated to sieges, the size of these artillery trains increasing along with the pool from which they were drawn. At the beginning of the Dutch War (c. 1672) French besiegers usually employed no more than fifty pieces of cannon, by the siege of Cambrai in 1677 this number had jumped to 106 pieces (including the smaller pieces taken from the field train), and by the 1690’s French siege armies amassed 125 pieces against the strongest fortresses.683 Saint-Rémy’s treatise included several examples of French siege trains from the Nine Years’ War, ranging from 110 to 196

680 Parrott, Richelieu’s Army, 70.

681 This varied somewhat by theater; the Iberian peninsula was infamous for its difficult terrain which made transporting large numbers of heavy siege guns almost impossible in many cases.

682 Naulet, L’artillerie française (1665-1765), 320 Figure 7. Susane’s Histoire de l’artillerie, (Paris: Bibliothèque d’Education, 1874), 159 claims the French had 7,192 guns of all sizes at Louis XIV’s death.

683 Naulet, L’artillerie française (1665-1765), 220-225.
pieces of cannon.684 For William’s siege of Namur in 1695 he was able to gather together 300 cannon of all calibers.685 Projected siege trains for Allied sieges in the Spanish Succession fall within the same range, medium-sized trains including 56 cannon (a similar number as the French), but those for larger attacks ranged from 80 cannon up to 135 pieces.686 Unfortunately, consistent information of the total size of the thirty different siege trains involved is difficult to find. More relevant to the issue of bringing overwhelming firepower to bear against a fortress is the number of guns actually firing; data on the number of pieces in batteries at any one time is more common in the sources. As Appendix F’s data on siege artillery illustrate, besiegers in the Spanish Succession opened fire against the largest fortresses with more guns in multiple batteries than most earlier 17th century siege parks possessed in their entire train - 100, even 120, pieces in a few cases. Predictably, siege trains were smallest when facing the bicoques and weaker Spanish places.

Increasing train sizes gave besiegers fire superiority over their opponents. As long as the batteries waited to fire together, their numerical superiority against

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684 Saint-Rémy, Mémoires, 2:253 suggests 110 guns; a table on 2:269-270 includes three sieges with 130, 196 and 149 guns each. The number of heavy breaching cannon (24- and 33-pounders) in these examples ranged from 35% to 45% of the totals. Michel Decker, “Louvois, l'artillerie et les sieges,” Histoire, économie et société 15(1) 1996, 92 puts names to these numbers, identifying 130 cannon for the siege of Mons in 1691, 196 for Namur 1692, and 149 for Charleroi 1693.


686 See the various projects and lystes in ARA, Collectie van der Hoop 120. A project of 1701 called for 135 cannon (eighty 24-pdrs), a 1702 project totaled 80 pieces (fifty 24-pdrs), a 1705 project numbered 92 pieces (again eighty 24-pdrs), while a 1707 list counted 100 pieces (eighty 24-pdrs).
defenders was assured. The Sun King had only 350 pieces at the beginning of the War of the Spanish Succession to defend all of northern France; the dozen fortresses averaged only thirty guns per fortress, and some of these were undoubtedly unavailable for service due to shortages of carriages and cannonballs. Even when besiegers could amass only a relatively small number of cannon, these were still usually enough to outnumber the garrison’s pieces, as we see with Bouchain 1711’s data in Appendix F. In the rare case where a garrison was fortunate enough to have large numbers of guns, the advantage quickly shifted to the attackers all the same. The recently-installed Allied garrison of Le Quesnoy was well-armed, for Alègre and Villars both wrote that they had never seen a garrison with so many guns. They went so far as to make the almost unheard of admission that their trenches were being razed by the defender’s intense fire – “Never was a place so well supplied with cannon, mortars and all the necessities that go with it.” Yet even the most heavily-armed garrisons were quickly silenced once the besiegers were able to respond with their own batteries. Villars explained how they overcame Le Quesnoy’s many pieces:

[Our] batteries began the 25th at daybreak: there were sixty 24-pounders, thirty mortars and several smaller pieces that fired

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689 Léon Lecestre, ed., *Mémoires du chevalier de Quincy*, 3:187. See also AG A^4^ Carton 8 2, Alègre to duc du Maine 9/23/1712; AG A^4^ 2384, #81, the engineer Naudin to Voysin 9/23/1712; AG A^4^ Carton 8 2, Villars to Maine 9/27/1712. After the town had been captured, a French *état* enumerated 56 Allied cannon (22 still in working condition), 46 French guns captured after the earlier conquest and 47 mortars of various calibers. See Vault and Pelet, *Mémoires militaires*, 1:527 #160 Etat de l’artillerie et des munitions trouvées dans le Quesnoy 10/4/1712. See also the chevalier de Quincy’s comments in 3:196.

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ricochet. The enemies had more than one hundred 24- and 36-pounders on the ramparts; but as the besiegers had all the terrain that they could want on which to place their cannon, and the besieged on the contrary were forced to squeeze theirs together in a small space, from the first day of firing we gained the advantage, and the 26th at noon, two-thirds of the place’s batteries had been demolished.\textsuperscript{690}

Within a few days the majority of the garrison’s pieces were put out of service and by the 29\textsuperscript{th} almost all were dismounted.\textsuperscript{691} Despite an encouraging start, the well-endowed garrison held out for only sixteen days of open trenches and ten of cannon-fire.\textsuperscript{692} As with breaching batteries, suppressing fire depended as much on outflanking as outgunning the enemy. Cannon were most easily silenced by smashing their carriages or destroying their firing platforms; garrisons did not have the space or the reserves to make up for those they lost as a siege dragged on.\textsuperscript{693} As Saint-Rémy explained it:

[the besiegers] firing bombs into the places where they will have placed their cannon, the garrison will be forced to abandon them, having no other space where they can shield themselves because the most advantageous locations for batteries in a fortress are always known by the defenders when it is constructed before the attack, and when these are destroyed, it is impossible for the besieged to find others that are as well-positioned to damage the attackers; this diminishes the effectiveness of their fire.\textsuperscript{694}

\begin{itemize}
\item \textsuperscript{690} Anquetil, \textit{Suite des mémoires rédigée par Anquetil}, 387-388. Villars exaggerated slightly – the French état shows only 50 24-pounders, still a large number for a garrison.
\item \textsuperscript{691} AG Article 15 Section 2 §1 Douai folder, #19 Siège du Quesnoy en 1712, 17.
\item \textsuperscript{692} AG A\textsuperscript{4} Carton 8 2, Hautefort to duc du Maine 9/29/1712; Lecestre, ed., \textit{Mémoires du chevalier du Quincy}, 3:196. The French also attacked Bouchain later in the year under similar circumstances. AG A\textsuperscript{4} 2386, #32 to Villars 10/17/1712.
\item \textsuperscript{693} Naulet, \textit{L’artillerie française (1665-1765)}, 160.
\item \textsuperscript{694} Saint-Rémy, \textit{Mémoires}, 2:268.
\end{itemize}
Except at the most isolated of sites, there was usually more room to site the besiegers’ batteries than the garrisons could find on their ramparts. Besiegers relied on a large number of multi-gun batteries to provide them with the firepower necessary to silence their foe’s cannon and cover their approaches.

Artillery as the Final Arbiter

A final illustration of the prominence besieging artillery had acquired by 1700 is the inevitability of the siege’s final stage. In earlier attacks, the most difficult stage was blasting a wide enough breach in the main wall and suppressing the murderous crossfire of its retrenchment. By the time of the War of the Spanish Succession, such concerns were almost irrelevant in Flanders, for the besiegers’ guns quickly opened up the defensive works of even the strongest places. By the 18th century contemporaries declared that a fortress’s fate was sealed once its covered way was taken.

After supporting the capture of the covered way, the final tasks for siege cannon were to breach the outworks and enceinte. The process of punching gaping holes in masonry and brick-faced earth had progressed significantly since the 16th century; histories of the period give much attention to the lengthy process of mining underground.695 As the number of breaching pieces increased and their supply of ammunition became more assured over the course of the 17th century, besiegers could increasingly rely on breaching by cannon rather than mine. Vauban discussed in his early treatise the medieval task of attaching a miner along the face of a work,

695 For example, Israel, The Dutch Republic and the Hispanic World, 101; Parrott, Richelieu’s Army, 70-71.
although he recommended a “newer, faster and at the same time more certain”

method of using cannon to accelerate the task:

by means of the guns you will be able to work at opening the mouth
of the mine from the moment you start the passage of the ditch; the
miner will have nothing to fear from stones or bombs and even less
from the reserve [i.e. the garrison’s flanking] artillery since from the
very first he will be lodged five or six feet within the wall, from
which position he will also easily be able to push away with an iron
fork any fire bombs that the enemy may drop in front of his hole; if
there should be any countermines within the thickness of the wall,
the guns will serve to render them useless, which would otherwise be
very difficult to do; and, finally, besides the services which the guns
will have rendered already, they will again be valuable after the mine
has been exploded since you can use them to fire into the breach.696

This technique indicates the direction breaching tactics took over the course of the
17th century: by its end the miner had became only an adjunct to the breaching
power of the siege artillery. At the end of his career, Vauban reprised his method,
but in general he now advocated abandoning the use of miners and mines altogether
when attempting to breach most works:

I rarely use mines in normal attacks; not that I renounce them, far
from it, but I prefer cannon because their effect is nowhere near as
certain. With cannon you make a breach where you want, when
you want, and how you want; mines cannot do this with the same
certainty.697

Feuquières vouched for the widespread use of this technique in Louis’ reign:

The custom of waiting for the effect of mines in the body of the place
has not been observed by those governors who sustained a siege

696 Rothrock, A Manual, 86. Lazard contends that Vauban himself started the shift away from mines
and towards breaching batteries. Lazard, Vauban, 465.

697 Vauban, Traité, quote on 163; 186-188 for his comparison of the old and new methods, which
varies little from his earlier work. See also Allard, “Notice sur Vauban,” Le Spectateur militaire 18
(1835), 440; and more generally Jean-François Pernot, “Vauban et la guerre des mines” Histoire et
73-104.
since I engaged in the Service; because the besiegers did not find it necessary to set on the miners at the body of a place to compel it to surrender. The facing of bastions are always so demolished by the cannon and their inside is shattered to such a degree by the bombs that it is impossible for an attack to be sustained there when it has been carried on near enough to be made against the bastions, and especially since it is usual in the most obstinate sieges for the lodgments along the covert-way and before the breaches to be always so extensive and solid that it would be imprudent in a governour to expose his garrison to a destruction that might be completed in half an hour, and particularly when his bastion had not been previously intrenched in the gorge. 698

Once again, Spanish Succession sieges confirm the theory. As we have already seen, significant breaches were formed at several Allied sieges before the enemy even reached the covered way (not only bicoques, but also Menin and even Lille) – whether through the use of trench cavaliers or batteries planted on heights beyond the covered way. In most other cases, the base of the outworks and curtain walls were only visible by batteries on the covered way itself. In either case, by the time passages reached the other side of the ditch, the breaching guns would have created enough of a breach in the work to allow a storm. 699

As a last resort, a particularly defiant garrison could build a retrenchment behind the breach where they were expecting an assault. Piling up earth, wood, stone and anything else available at hand, the defenders thereby hoped to provide the besiegers with yet another obstacle between them and the town. Historians of the 16th and early 17th centuries point to many examples where these entrenched

698 Feuquières, Memoirs Historical and Military, 2:293. For Santa Cruz de Marcenado’s recommendations on how best to breach a wall, see Reflexions militaires, 9:4.

699 For one example where the Allies did attach a miner to the wall, see Veenendaal, Jr., ed., Briefwisseling Heinsius, 5:482 #931, Salisch to Heinsius, Menin 8/21/1706.
breaches were defended quite successfully. Duffy cites eleven famous fortress defenses of the 16th century whose garrisons were able to turn back assaults on the breach: assaulting troops were slaughtered as they scrambled up the slope of rubble and into the killing ground beyond it. By Louis’ later reign, however, garrisons were much less likely to hold out in such a “last-ditch” effort, and such construction was usually intended only to encourage the attackers to grant an honorable surrender. With a heavily-armed attacking force, retrenchments behind a breach would be difficult to construct under constant bombing and just as difficult to defend with the besiegers targeting the area behind the breach with indirect fire. Few garrison commanders had the manpower, the munitions, the time, the materials, the support of the townspeople, much less the inclination to undertake such an immense task with such significant risks. The marquis de Quincy summarized this tendency that had emerged during Louis XIV’s reign:

> When the bastions... are taken, it is impossible for a governor to resist asking for a surrender, since the retrenchments which can be made across the neck of a bastion could only serve to resist one or perhaps several assaults, and to gain the time necessary to make a capitulation.

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700 Duffy, *Siege Warfare*, 15. The eight bloody assaults at La Rochelle in 1573 described by James Wood indicate just how defensible such retrenchments could be in the Renaissance, although several of the initial assaults were repulsed due to casemates in the ditches. A more complete dataset would inform us how representative this example is.

701 This was true despite Louis’ 1706 order that garrison commanders should only surrender after an assault on the breach. Historians have assumed far too much about the period’s siege warfare from this ordinance, particularly regarding the stoutness of French defenders. Louis usually overruled his blanket ordinance by giving besieged commanders specific orders to save their garrison before it risked being slaughtered or captured in a general storm.

702 Charles Sevin marquis de Quincy, *Histoire militaire du règne de Louis le Grand, Roy de France, où on trouve un détail de toutes les Batailles, Sièges, Combats particuliers, et généralement de toutes les actions de Guerre qui se sont passées pendant le cours de son Règne, tant sur Terre que sur Mer,*
Vauban’s siege of Ath in 1697 illustrated the artillery’s newfound dominance – the retrenchment across the breach was quickly destroyed and the garrison forced to capitulate.\footnote{Goulon, A Journal of the Siege of Ath conducted by Monsieur de Vauban, 138.}

Turning to the few examples from the Low Countries theater in the Spanish Succession, Allies participating in the attack on Lille mentioned how the defenders had “dexterously underminded and fortified not only behind [the breach] but likewise have laid a vast pille of dry wood and other combustibles behind the breach to set fier to when they can defend it no longer.”\footnote{Royal Commission on Historical Manuscripts, \textit{Report on the Manuscripts of the Earl of Mar and Kellie}, 464, Lt. William Nodding, to the Earl of Mar, Lille 9/20/1708.} Less than a day of artillery fire destroyed this ad hoc defense, as Du Mée related: “This night we finished the new batteries, but began not to fire from them till Sunday morning, where they did such good execution all that day and the next, that at four of the clock in the afternoon the garrison beat the chamade.”\footnote{de May, \textit{An exact journal of the siege of Lille}, 16-17.} Vauban’s cousin Dupuy stacked logs and wooden beams across the breach in Béthune’s walls, but the approach commander Schulenburg assured Marlborough that they would easily overcome this obstacle, assuming the necessary munitions were provided.\footnote{BL Add MSS 61245, f. 133, Schulenburg to Marlborough, Béthune 8/21/1710.} At the 1711 siege of Bouchain,
Goslinga may have been uncertain of whether the garrison would attempt to defend the breach or not, but the end result was clear:

The siege has advanced to a point where the enemy, if they want to have an honorable capitulation, must beat the chamade today or tomorrow, but the presence of the [relief] army will animate them according to all appearances to hold out to the last. It appears that they are preparing for this because they have retrenched a part of the bastion where the breach is already fairly large. Perhaps they will hold out until an assault, which would be the first example during the course of this war, but in either case, they will be forced to surrender in the end, having no relief to hope for.707

The town capitulated a few days later, and even a retrenchment across the breach was not enough to save its defenders from becoming (treacherously, according to the commander) prisoners of war. As siege trains and their supply convoys grew larger and powerful enough to breach twenty-feet or more of brick- or masonry-faced earth in several days of continuous fire, there was little hope that a makeshift wall of rubble, earth and wood would last long enough to be worth the effort of its construction.

The result of this overwhelming offensive advantage was that sieges ended more rapidly as besiegers smashed through defensive works and quickly reached the final line of defense. Unlike the long sieges/blockades of the earlier 17th century, where fortresses may have capitulated due to starvation or mining, most garrisons in the Spanish Succession surrendered when their last layer of defense had been breached and a general storm was only a day or two away. Hardly any Flanders fortresses capitulated prematurely due to a lack of supplies, the one exception being

the citadel of Tournai, which might have held out for an additional month had it not run out of grain.\textsuperscript{708} Otherwise, the besiegers’ reinvigorated attack threatened garrisons with a general storm long before the defenders’ supplies ran out. In fact, only a handful of fortresses surrendered prematurely for any reason, i.e. before a general assault on the breach was imminent.\textsuperscript{709} In addition to Tournai’s citadel, Venlo also surrendered early, thinking a general storm was about to commence when the besiegers were only firing a \textit{feu de joie} for the capture of Landau in Germany.\textsuperscript{710} The commander of Ath committed the most heinous crime of all, surrendering early without even acquiring honorable terms; the 800 remaining troops (minus the Swiss soldiers who joined the Allies’ ranks) marched off as prisoners of war.\textsuperscript{711} Offensive firepower had come to dominate early 18\textsuperscript{th} century siegecraft in every phase, from the opening of the trenches to the beating of the chamade.

\textit{The Non-Vauban Use of Artillery}

While all participants relied heavily on gunpowder in the Low Countries, how besiegers actually used their artillery to achieve success is far more varied than

\textsuperscript{708} Defending commanders often included supply shortages (especially gunpowder and muskets) among their list of reasons for an early capitulation. A shortage of supplies could, of course, hamper the defense by forcing a garrison to ration its powder or weaken its troops by cutting food rations.

\textsuperscript{709} For Tournai’s town, see AG A\textsuperscript{1} 2159, #408, Doles, Tournai 7/29/1709.

\textsuperscript{710} Royal Commission on Historical Manuscripts, \textit{The Manuscripts of the Earl Cowper}, 3:16 Pope to Coke, Sutendaal 9/25/1702.

\textsuperscript{711} From the French side, see Ouverleaux, \textit{Mesgrigny}, 44, Vauban to Mesgrigny 10/16/1706; AG A\textsuperscript{1} 1940, #46 Chamillart to d’Antin 10/11/1706. For Allied comments and criticisms, see Veenendaal Sr., ed., \textit{Het Dagboek van Gisbert Cuper}, 159; and Veenendaal, Jr., ed., \textit{Briefwisseling Heinsius}, 5:575 #1117, Salisch to Heinsius, Leuze 10/4/1706.
a reading of the recent secondary literature, which stresses the supremacy of Vauban’s doctrine, would suggest. The artillery corps’ autonomy from the engineers almost guaranteed such an outcome, and the trend was further encouraged by generals looking to speed up the siege. Time pressures led both Allied and French armies to use artillery in ways that Vauban had explicitly rejected, while at the same time they refused to follow other of his other prescriptions. In this, they could invoke the name of the period’s other great engineer, Coehoorn. The Frisian’s method of attack relied heavily on bringing enormous numbers of guns to bear on the enemy, although this aspect does not receive as much attention in the wider historiography as his predilection for storms.\footnote{For recognition of his reliance on overwhelming firepower, consult Wijn, *Het Staatsche Leger*, 8 2:121; and Duffy, *The Fortress in the Age of Vauban and Frederick the Great*, 30. For works that focus solely on Coehoorn’s assaults, see: Chandler, *The Art of Warfare in the Age of Marlborough*, 280; Pujo, *Vauban*, 280; Lynn, “Vauban,” 58; and Blanchard, *Vauban*, 503, 510.} This straightforward use of artillery deviated from Vauban in many significant respects, loosely summarized by the replacement of Vauban’s finesse with Coehoorn’s brute force. Sheer weight of shot allowed less-skillful besiegers with large artillery parks to supplement or even replace the precision firing demanded by Vauban’s ricochet fire.

**Holding Your Fire**

Generals diverged from Vauban’s plans in insisting on the massive use of artillery at the earliest possible opportunity. Impatient for the trenches to be opened, they were similarly eager to hear the sound of their own cannon firing. Vauban had opposed constructing batteries early in the siege, concluding by the end of his career that batteries in the first parallel served only to expend shot and burn powder.
uselessly.\textsuperscript{713} Not only would fire against the works be ineffective at such extreme range, but early counter-battery guns dedicated to targeting the defenses’ cannon were unnecessary, as enemy fire only became dangerous at a distance of one thousand feet or so (i.e. the second parallel’s distance from the counterscarp).\textsuperscript{714} The gunner Saint-Rémy also warned against opening fire too early in a siege, admonishing his artillery officers to resist the inevitable pressure, for “the troops quickly become impatient if they do not hear the cannon of batteries firing from the very beginning of the siege.”\textsuperscript{715} Technicians were taught to pursue efficiency in their sieges as much as efficacy.

The pursuit of improved efficiency was quickly pushed aside by commanders keen to end the siege. In the case of Vauban’s attack on Breisach, the young pupil Burgundy dared to criticize the master of siegecraft, opining to his mentor Paul, duc de Beavillier that:

I do not see the maréchal Vauban preparing the cannon to fire as soon as possible after the trenches have been opened, which will cost us many men, because the garrison’s cavalier batteries will plunge [into our trenches]. I will attempt to bring the cannon into the batteries as soon as possible; or if he insists on not firing the cannon until they are all in battery, at least use mortars to attempt to dismount first the cavalier batteries which will cause us the most

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\textsuperscript{713} Vauban, \textit{Traité}, 107-108; and Deidier, \textit{L’ingénieur parfait français}, 220-221.

\textsuperscript{714} Vauban, \textit{Traité}, 89. Later in the 18th century, the French Revolutionary engineer Lazare Carnot argued that one cannonball fired at short range was as deadly as five hundred fired from long range. Duffy, \textit{Fire and Stone}, 124.

\textsuperscript{715} Saint-Rémy, \textit{Mémoires}, 2:264: “Depuis qu’on fait des siéges, les troupes marquent ordinairement de l’impatience de ne pas entendre tirer le canon des batteries...”.
With the trenches opened on the 23rd, Vauban shrugged off the royal recommendations and only on the 27th did the first battery on solid ground open fire, 100 toises from the covered way. It was only on the 31st that all of the batteries fired together, 32 cannon and 26 mortars, which quickly silenced the garrison’s guns. He saw no need to establish his batteries earlier, which would require delays while waiting for the poorly-sited battery platforms to be constructed and the guns hauled into position. With a tone of vindication he noted on 27 August that “Up till now our affairs are progressing so well and the trench breaks the rules [pèche] by advancing much faster than it should. I have never seen a place of Breisach’s merit and reputation approached so quickly in four days of trenches.” Such progress came cheaply and their cannon had played almost no role thus far, as he explained that “the enemies are well served by their cannon, at least they make lots of noise, but do very little work. We are not yet close enough for them to hurt us as they need to.” Burgundy’s concerns ultimately proved to be misplaced, for the first several days of the garrison’s firing caused fewer than a dozen casualties each day.

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717 Vault and Pelet, Mémoires militaires 3:428-431.
719 Rochas d'Aiglun, Vauban, 2:524 Vauban to Chamillart, Breisach 8/27/1703.
only as they approached nearer the town that they were forced to adopt the sap in order to shield themselves from the town’s fire. In spite of Burgundy’s early misgivings, after two weeks of trenches the town surrendered following Vauban’s plan at a cost of only 830 casualties.\textsuperscript{721} As the results indicated, his sensible maxim of waiting a few extra days in order to assure uncontested fire superiority took too much initial time for the impatient heir to the throne.\textsuperscript{722}

Allied commanders were similarly skeptical of withholding their fire for so long, a tactic which appeared, to them at least, to only lengthen the duration of the siege. Marlborough exhibited this opinion from the first campaign, explaining that he was “very impatient to hear of the canons being arrived at Venlo, which place was invested last Munday, but [we] can make noe great progress till thay have their artillery.”\textsuperscript{723} After the dispute at Venlo, Coehoorn promised to have the batteries ready to fire against Roermond within two days of the trenches being opened, and was happy to see the fortress capitulate after only a day of breaching fire.\textsuperscript{724} At Liège, they opened the trenches and opened fire on the same day.\textsuperscript{725} Marlborough

\textsuperscript{721} Casualty figures from Vault and Pelet, \textit{Mémoires militaires}, 3:459. The heir to the French throne also acknowledged the rapid fall: Baudrillart, ed., \textit{Lettres du duc de Bourgogne au roi d'Espagne Philippe V}, 2:167 #18, Burgundy to Maintenon, Breisach 9/8/1703.

\textsuperscript{722} Villars similarly pressed for the batteries to open fire at Freiburg in 1713. Vogüé, ed., \textit{Mémoires du Maréchal de Villars publié d'après le manuscrit original}, 3:224.

\textsuperscript{723} Snyder, ed., \textit{Marlborough-Godolphin Correspondence}, 1:104 #92, Marlborough to Godolphin, Asch 8/20/1702.


\textsuperscript{725} Murray, ed., \textit{Letters and Dispatches}, 1:49, bulletin from Liege 10/23/1702.
continued to exhibit concern for how soon the batteries would begin firing at other sieges as well, particularly against the weaker places whose defenses would quickly disintegrate under such fire.726

Allied Volume of Fire

Although besieging trains consistently outnumbered garrisons’ guns, often by a two-to-one ratio, the Allies provided their besieging armies with much more firepower than the French mustered when they were on the attack. With the riverine transportation network flowing along a north-south axis and the Dutch Republic (the “arsenal of Europe”) boasting one of the largest arms markets, seconded by its ability to call upon its fleet guns in an emergency, the Allies consistently fielded large siege trains in the Flanders theater.727 Although Vauban preached the importance of artillery in siegecraft, contemporaries expressed this reliance on overwhelming firepower in explicitly anti-Vaubanian terms. French officers at Breisach wished for “a battery à la Cohorn, that is to say sixty pieces of cannon, not wanting those of only eight or ten pieces according to Vauban’s old manner.”728 The marquis de Feuquières also contrasted Vauban’s preferred method of capturing covered ways with the Allied reliance on overwhelming firepower:

726 At Huy in 1703, Murray, ed., Letters and Dispatches, 1:162, Marlborough to Coehoorn, Val Notre Dame 8/20/1703 O.S. At Limburg 1703, see Snyder, ed., Marlborough-Godolphin Correspondence, 1:242 #239, Marlborough to Godolphin, Verviers 9/9/1703 O.S.


728 Archives affaires étrangères (AAE) CP Autriche 83, ff. 268-296v, Torcy’s agent Noblet to his patron, from Breisach 8/27/1703. My thanks to Dr. John Rule for this reference.
Our enemies pursued a different Conduct in the sieges of Namur in 1695; and of Menin in 1706. They drew before those places a prodigious quantity of heavy artillery, which they planted in batteries, that they might be enabled, at the same time, to destroy the whole front of the attack, under the protection of that fire. It was easy for them to advance their trenches, and ruin the out-works, and even the bodies of those two places, in a few days; which they accordingly did, in such a manner that the places would be assaulted by all the enemy's infantry, when they should attack the covert-way.729

Similarly, the duke de La Feuillade, commanding one of the French armies in Italy, wrote to the Secretary of War about his plan to besiege the town and citadel of Turin with the small number of men at his disposal:

After thinking day and night about the possibility of capturing Turin with the few troops that I have, I do not know of any option except to attack the citadel with eighty large cannon, twenty small ones in case they can be used effectively, and forty-five mortars that we have; when all this fires together in the manner of M de Coehoorn, I only see it requiring six days to ruin all the defenses...730

Uninterested in the finesse provided by ricochet batteries, these officers were convinced that numerical superiority offered the same chance of success.

The data in Appendix F allows a more systematic comparison of the two sides reliance on firepower. Not only did Allied sieges generally include more guns than the French sieges, but places besieged by both sides highlight the Allies’ massing firepower. For the 1703 attack on Huy’s small forts, the Allies mustered seventy cannon and forty-six mortars. The French, planning their own attack on Huy in 1705, judged that the Allies had amassed far more guns than were needed to

capture the weak place. They contented themselves with less than half of the artillery their opponents had used and their capture required only one day more than the Allied capture two years earlier. When the Allies returned later that same year to retake the town and its outlying works, once again a large number of guns were transported to the site. In the most striking example, the Allies collected five times as many cannon for their siege of Douai in 1710 as the French did in 1712, and twice the number of mortars. Naulet identifies the siege of Turin in 1706 as the maximum effort for Louis XIV’s armies (assembling 104 24-pounders). This presaged future trends: in the War of the Polish Succession (1733-1735) French besiegers would consistently match the size of Allied siege trains from the War of the Spanish Succession. Remaining in the Spanish Succession, the Allies alone relied on weight of numbers rather than the ultra-efficient technique of ricochet fire in order to provide the necessary firepower.

The Weight of Indirect Fire

At the same time as attacking batteries were targeting fortress embrasures, other batteries set to work bombarding the fortifications obscured by intervening obstacles with high-trajectory cannonballs, bombs, stones and (for the French at least) ricochet fire. Bomb-launching mortars (from the massive 100-pounders down to the smaller 50-pounders), stone-hurling pierriers, grenade-throwing hand-mortars (16-pounders and 8-pounders), and shell-lobbing howitzers all combined to rain down destruction on the garrison and its works. For days or weeks these projectiles

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blasted the parapets, chipped away at the masonry revetments, smashed battery platforms and carriages, and pock-marked the infantry’s firing steps. National differences arose here as well. French besieging forces used a relatively small number of mortars. Although Vauban recognized the utility of these bomb-throwers, for his three sieges of Mons, Namur and Charleroi in the Nine Years’ War, Saint-Rémy listed only fifty or so mortars of all sizes (the smallest 8-pouce mortars firing a 35 pound bomb) and four to eight pierriers.\textsuperscript{733} French attacks in the Spanish Succession saw even fewer indirect-fire weapons in the theater most amenable to large siege trains – thirty mortars and twelve pierriers being the norm for their 1712 sieges.

The far greater reliance on indirect-fire weapons can be seen in both Allied projects and their siege trains. Projected Dutch siege trains included anywhere from twelve to thirty large mortars; at their various sieges, they usually collected similar numbers of 75-pound and 50-pound mortars. For comparison, Saint-Hilaire’s requirements for the siege of Huy in the Spanish Succession called for only fourteen mortars, half as many as the Allies used in their siege a few months later and a third of what the enemy had used in 1703.\textsuperscript{734} To those who were either ignorant of or unimpressed with Vauban’s ricochet fire, two other types of artillery enabled them to overcome obstructions between them and their target. In addition to the cannon

\textsuperscript{732} Naulet, \textit{L’artillerie française (1665-1765)}, 223-225.

\textsuperscript{733} Saint-Rémy, \textit{Mémoires}, 2:269 table. At the beginning of Louis’ reign the French siege trains included no more than a dozen mortars, though this number slowly increased to four dozen by the end of the Nine Years War. Naulet, \textit{L’artillerie française (1665-1765)}, 221-223.

and heavy mortars, a dozen or so howitzers fired explosive shells along a high-arching trajectory – the French had no howitzers. Instead of Vauban’s pierriers and ricochet fire, Allied besiegers also depended on an enormous number of smaller “hand mortars” developed by Coehoorn (and therefore often referred to as “Coehoorn mortars”), which fired double-grenades up to 2,000 feet away. Many Allied sieges saw eighty or more of these portable hand-mortars in operation. Even the bicoques attacked in 1702 were not spared the hail of shrapnel these pieces rained down: Coehoorn amassed an astounding 250 of these grenade-launchers against Liège’s citadel, Venlo had 108 targeted against it, and at the more formidable fortress of Béthune they gathered together 170 hand-mortars. With tens of thousands of rounds provided for each siege, these anti-personnel weapons made a fortress’s exposed works a very dangerous place — some garrisons even constructed wooden shelters in an attempt to cover themselves.\footnote{For the continued use of these medieval hoardings, see Koninklijke Bibliotheek, Knuttel Pamflet #15958 Journal du siège de Bouchain depuis qu’elle fût investie jusques à sa prise; avec la capitulation, 12.}

Vauban remained unimpressed with these Allied tools:

> The Dutch have recently utilized a number of small, short-barreled cannon that they call obus [howitzers], and small, portable grenade-launching mortars carried by two men, with which they produce a tremendous weight of fire. But I do not find much utility in either of them; they require too much effort and expense, and do not produce very much effect; it is better to stick with large cannon, our bombs and pierriers.\footnote{Vauban, Traité, 124.}
He preached a more efficient use of gunpowder and labor rather than rely on the brute force these pieces provided. The disagreement once again revolved around their differing objectives – finesse for efficiency, brute force to eliminate delays.

**Bombardment during a Siege**

Allied commanders also differed from Vauban in their belief that a general bombardment of the town would force an earlier surrender by pushing the townspeople to pressure the garrison into capitulating. A certain amount of damage to the town was inevitable in any siege of course, as stray shots would inevitably fly over the rampart walls and into the town itself. As a result, one writer even went so far as to warn the besieging commander not to attack a town on directly opposite sides, lest their batteries accidentally strike each others’ trenches!\(^{737}\) Vauban was opposed to intentionally targeting the town, however, not only because of the inhumanity but also because of pragmatic concerns with efficiency: “Never fire on the buildings in towns, because this wastes time and munitions, and does nothing to contribute to their fall, while the repairs required after their capture are always costly.”\(^{738}\)

The Allies were much more callous about the matter. If they were willing to sacrifice more of their own men in order to speed up a siege, they rarely agonized over the prospect of setting the town aflame if they could gain several more days of


\(^{738}\) Vauban, *Traité*, 263 maxim 16.
campaign time as a result.\textsuperscript{739} Town deputies received vague promises that the attackers would protect the property of individual persons or (usually religious) institutions, but ending the siege quickly was always the first priority. At Bonn, Marlborough expressed his interest in preserving the town’s churches and public edifices “as much as possible.”\textsuperscript{740} Burgundy assured his tutor Beauvillier that he would fire on the town as little as the siege would allow, although destroying the cavaliers on top of the town walls would inevitably lead to much collateral damage.\textsuperscript{741} More often, however, intentional targeting of civilians was embraced by impatient commanders in the hopes it would make life miserable for the inhabitants and generate an uprising. Ouwerkerk coolly rejected the Oostende representatives’ appeals for an end to the bombing (the siege army was assisted by the English fleet). Only when the garrison commander surrendered would the bombs cease falling, he declared – true to his word, most of the town was set ablaze by the time the French capitulated.\textsuperscript{742} At Menin the besieging batteries quickly consumed half of the

\textsuperscript{739} This demands we reconsider the frequently expressed view that general storms were no longer popular in the later 17\textsuperscript{th} century because they threatened the resources of the captured place, and that sieges were conducted primarily as a way of gaining these assets (e.g. Chandler, The Art of Warfare in the Age of Marlborough, 267). Allied military commanders considered the time saved worth both the financial damage the town would suffer and the hatred such a tactic might prompt among the inhabitants, their future subjects and tax-payers. As is often the case, military expediency outweighed longer-term political and fiscal interests, especially in the minds of time-conscious generals.

\textsuperscript{740} Murray, ed., Letters and Dispatches, 1:91, Marlborough to Alègre, Bonn 5/7/1703;

\textsuperscript{741} Vogüé, ed., Le duc de Bourgogne et le duc de Beauvillier, 198 #47, Burgundy to Beauvillier, Breisach 8/20/1703.

town. A garrison account from within Lille reported rumors that the besiegers were venting their frustration over the slow pace of the siege by firing all their balls and bombs into the town in the hopes of forcing a revolt – the resulting ammunition shortage left them with little to target the outworks, just the situation Vauban had warned about. At the end of 1708 the Allies used red-hot shot in their efforts to bring about the speedy reduction of Ghent. In the first siege of 1710, the besiegers “played very furiously upon the toun [of Douai] onely, & did great execution, setting fire to the toun wch. burned feircely for a great while & for a great space.”

One French officer of the bombardiers, who had participated in 35 sieges, described the three-day bombardment as a “firestorm [déluge de feu],” the like of which he had never witnessed. When the French returned on the offensive two years later, Villars’ cannoniers bragged that they were intentionally targeting the houses of well-known Allied sympathizers within the town. After it was returned to its rightful sovereign, the French intendant estimated the destruction from this siege at

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745 Murray, ed., Letters and Dispatches, 4:381, Marlborough to Lottum, Merelbeke 12/29/1708.

746 David Chandler, ed., A Journal of Marlborough’s campaigns during the War of the Spanish Succession 1704-1711 [John Marshall Deane], (London: Society for Army Historical Research, 1984), 104. A garrison source reports that “bombs flew into the town in such large numbers that it appears to have been expressly intended to ruin the town.” AG 1M 126-3 Mémoires historiques, #13 Journal de ce qui a été fait pour l’investiture et l’attaque de la ville, 5/31/1710.


748 AG A 1 2382, #28, Lefebvre d’Orval to Voysin 8/17/1712.
over 200,000 écus, twice the cost of the damage incurred during the Allied siege.\textsuperscript{749}

Time-pressed commanders frequently erased the distinction between combatant and non-combatant in their attempts to put a quick end to the war. Despite the persistent use of the tactic, there is little evidence that such massive destruction of civilian property and life forced many garrisons to surrender prematurely, as is evidenced by the frequency with which garrisons held out till a storm was imminent. It appears that Vauban was proven correct yet again.

**Breaching between the Outworks**

Even the method for breaching the fortifications was contested. The previously-onerous task of breaking up the thick walls could be abbreviated by once again ignoring Vauban’s instructions. With batteries established on the covered way (or with a height advantage from beyond it), a regular fortress front of two corner bastions and an intervening ravelin had no further obstacle to shield the bastions from breaching fire. In a few Flanders fortresses, however, the bastions were still hidden from the counterscarp batteries opposite them by demi-lunes or counterguards. A besieging commander strictly following Vauban’s theory would be forced to capture these outworks first before establishing breaching batteries on them to target the bastion salients and faces directly behind them. The other option, to attack the curtain wall between two bastions, would invite enfilading fire from both ravelins and bastions. Vauban’s safer method might require, however, a week or more of extra time and many men would certainly fall in the assault on the

\textsuperscript{749} AG A\textsuperscript{1} 2383, #193, Bernières to Voysin, Valenciennes 9/12/1712.
outworks. Instead, the Allies targeted the curtain wall between them with batteries sited in the angles of the covered way, firing through the gaps between the outworks. Vauban explicitly rejected this technique, arguing that it was rarely done and could not be very effective. Nevertheless, with this tactic Allied gunners were able to aim breaching fire against both the ravelins and the curtain wall at the same time. Utilizing the technique at Menin, Des Rocques refused the advice of the English gunner/engineer Blood, who had insisted on capturing an adjacent ravelin before breaching the enceinte. In the end, the Huguenot was proven correct, saving several days and undoubtedly a number of casualties as a result. The Allies used the same tactic at Lille – Du Mée recounted in his journal that 68 pieces fired against the town’s bastion faces between the Magdalene and Saint-André hornworks. So too at Douai in 1710 do we find Des Rocques using the same strategy.

Vauban feared such a technique would demand a much higher price when the besiegers crossed the ditch towards the breach – a price which many commanders were willing to pay in any case. The risk, though, was not as great as might be thought. The cumulative attritional effect of the massive firepower brought to bear against the garrison seriously degraded its ability to resist in the later stages


752 De May, *An exact journal of the siege of Lille*, 3.

753 For its success at Douai 1710, see Veenendaal, Jr., ed., *Briefwisseling Heinsius*, 10:430 #851, Des Rocques to Heinsius, Douai 6/12/1710. Des Rocques’ plan to storm both the breached ravelins
of the siege. When combined with the likelihood that a garrison would surrender before the last ditch had been fully traversed (by that point, there would be little reason for the attackers to grant honorable conditions as they had already expended much of the effort crossing the moat), embracing that which Vauban warned against was quite reasonable for the impatient siege commander. Popular when fortifications required it, this tactic was one of the more successful examples of how brute force was used to speed up the pace of siegecraft.

While Vauban, Coehoorn and besieging generals all relied on artillery to overcome the enemy’s defenses, they disagreed on how the arm was to be used. Vauban preferred ricochet fire and trench cavaliers in order to maximize the attack’s effectiveness at the same time as he saved powder, ammunition and lives. The Allies and several French commanders, on the other hand, focused their massive batteries on the general destruction of the place – the outworks, the town walls, even the buildings within the town. Both systems could capture towns, although the non-Vauban system generally required far greater resources to sustain such brute force tactics over the length of a long, attritional war. The Spanish Succession combatants had little choice without a Vauban to conduct the attacks, and even less patience when a belt of strong fortresses blocked the path forward.

Critically, even serious mistakes could be overcome by brute force, as massive firepower would eventually triumph. When the theater’s strongest fortress were attacked, overwhelming fire accelerated their fall. Vauban recognized this and the enceinte at the same time was forestalled by a last minute garrison retrenchment on one of the outworks.
reality but was still unable to fully accept it, for although he believed that the Allies had blundered by attacking Menin at its strongest point and were repeating the same mistake at Ath, he still predicted, correctly, that “with the fury of so many batteries and the hail of stones that are flying continually, they will quickly become masters of this place.”\textsuperscript{754} Both of these towns were considered quite strong; both fell faster than expected, victims of an long-term increase in the size of besieger siege trains.

CONCLUSION

Thanks to a combination of trenchworks, a large pool of manpower, weak fortifications, and a heavy use of firepower, sieges conducted both according to and in opposition to Vauban’s precepts were more often successful from the late 17\textsuperscript{th} century onward than in the earlier era. Time-conscious generals, rarely successful in their attempts to avoid a siege altogether, were usually forced to acknowledge the necessity of sieges by attacking fortresses \textit{dans les formes}. This did not mean they had to accept Vauban’s conception of what the siege should look like. Vauban’s method may have been more efficient, but efficiency required prerequisites that few armies of the day could meet, particularly a large number of well-trained engineers who had unquestioned authority over the conduct of the siege. Ignoring his tactics did not doom a siege to failure, even against the strongest fortresses of Europe; it only increased the costs of its capture, measured primarily in terms of the besieger’s casualties and siege artillery. Many generals were willing to pay this additional price if they believed it would expedite the siege. At Aire the \textit{Raad van State}’s field

\textsuperscript{754} Rochas d’Aiglun, \textit{Vauban}, 2:594, Vauban to Chamillart, 10/3/1706.
deputy neatly summarized the nature of Allied sieges and explicitly recognized the basis of their success in siegecraft:

> The siege continues as always like Douay and consequently badly. I hardly know how much we will have advanced in two or three nights and even less when we will capture the counterscarp. The harmony between the Prince of Anhalt [the commander of the attack] and our directors is very small and they squabble amongst themselves. However, the troops, the ammunition and the States’ purse will suffice.\(^{755}\)

Vauban argued that his method saved lives and time, but such counterfactuals were impossible to prove to impatient generals. As long as these commanders could point to examples where breaking his rules led to success, and as long as they received the necessary guns, munitions, manpower and funds, the attack \(à la\) Coehoorn survived and even prospered.

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CHAPTER 7

RECONSIDERING EARLY MODERN SIEGECRAFT

The nature of continuity and change in warfare has been debated for centuries, whether it concern the utility of Classical military history and theory in the medieval world or the relevance of Cold War weapon systems and tactics in an age of global terrorism and “asymmetrical warfare.” The role of fortified positions and siegecraft in these millennia of conflict – and by extension their costs – has varied in response to changing military tactics, technology and beliefs, but the long-standing dominance of fortifications has only recently disappeared. Before the Napoleonic period, defensive architecture played a pivotal position in the conduct of military campaigning. Along with the introduction of gunpowder siege artillery at the end of the Middle Ages and the development *trace italienne* style of fortifications in the Renaissance, historians present Vauban’s offensive legacy as another of these dramatic shifts in the balance between attack and defense. Vauban is given credit for producing an efficient response to the ascendancy of the *trace italienne*, an offensive advantage that would continue to grow in the 18th century and only be reversed with the onslaught of trench warfare in World War I. This study suggests instead that he has monopolized the attention of historians with
distorted results. In the larger history of siegecraft, Vauban needs to be reconsidered in an evolutionary context rather than being seen as a revolutionary innovator.\textsuperscript{756}

**Methodology Matters**

Attempting to elucidate Vauban’s role, the first necessary task is to clarify the debate by refining our use of sources. This study illustrates the importance of renewing our interest in historical methodology – a concern only indirectly-connected to the historiography beloved by historians.\textsuperscript{757} The preference for historiography over methodology means that the process of history remains hidden even to our peers, often as inaccessible to other scholars as the sources hidden away in the archives.\textsuperscript{758} Without an explicit discussion of research methods and presentation of the evidence being analyzed, historiographical debates are rarely resolved and instead end in exhaustion or loss of interest as the next new fashion pushes the old from the scene. At the very least, such discussions would allow us to avoid much repetition of effort – the time spent retracing a previous scholars’ steps.

\textsuperscript{756} The issue of how abruptly warfare in the early modern period changed has been one focus of the literature on Parker’s Military Revolution, illuminated by Cliff Rogers’ replacement of a revolutionary model with a “punctuated equilibrium” model of evolution. Rogers, “The Military Revolution of the Hundred Years War.”

\textsuperscript{757} Although a handful of books have been written on historical methods, most of them are targeted at undergraduates and do not include the detailed concerns required for historical research (including those encountered in note-taking, e.g. \url{http://www.ostwald.hispeed.com/Research/DatabaseNotesScreen.shtml}). On the rarity of institutionalized methodology courses in History departments, see Lawrence J. McCrank, *Historical information science: an emerging unidiscipline*, (Medford, N.J.: Information Today, 2001), 579-580. In contrast, the ubiquity of courses on historiography (even at the undergraduate level) can be proven by looking at almost any department catalog, while each generation of historians survey the recent historiographical changes within the field to cater to the large market of historiography courses.

\textsuperscript{758} Despite the use of footnotes and other scholarly apparatus, claims of historical “replicability” are usually theoretical, as most reviewers of historical works are unable to check the many primary sources used – accessibility, language skills and paleography all play a role.
through the same sources is often wasted effort in a poorly-funded field where research is an expensive, time-consuming process, and where the protracted publication cycle already makes it difficult to sustain debates over a decade or more. Greater methodological transparency and data disclosure would provide a more sound basis for moving historical debates forward.

Contextualizing Spanish Succession sieges within the larger trends of early modern siegecraft highlights how inadequate our current knowledge is. The details of the siege evolution narrative recounted in the introductory paragraph may eventually be proven true, but scholars have yet to establish a solid empirical foundation for its many parts. Our case points out the importance of sampling bias. Attempts to summarize the age’s warfare by alluding anecdotally to a few sieges (or a few battles, or commanders, or tactics...) in a period that witnessed hundreds spread across all of Europe are doomed to failure. Examples and counter-examples selected to support competing theories can be traded back and forth \textit{ad infinitum}; the reservoir of anecdotes will still be full long after scholars have lost interest in the debate. Researchers recognize the need and value of systematically studying this larger population, as is evidenced by their comments supporting the collection of

\footnote{For a brief recognition of the inefficiency of repetitious researching, see McCrank, \textit{Historical information science}, 576. Ideally, easily-accessible digitized primary sources would make verification of citations much easier and facilitate much broader synthetic work. On the time-lag in published historical debates (usually measured in years, except for the occasional, brief journal review), see 100-101. Email and Internet reviews (such as can be found at H-NET, \url{http://www2.h-net.msu.edu/reviews/}) offer the prospect of far faster and broader dissemination of such discussions, as well as the potential for extended debate online – it might even be hoped that vetting drafts on the Web would allow mistakes to be caught before publication by vetting concepts and arguments among specialists. This is one model for the EMWWeb I hope to develop. For a recent example, see Marshall Poe, ‘The ‘List’: On the Coming Reorganization of Historical Study,” in \textit{Perspectives}, May 2002 available online at \url{http://www.theaha.org/perspectives/issues/2002/0205/0205vie1.cfm}.}
data as well as the heavy reliance on Lynn’s datasets. Yet in spite of the frequent lip-service paid to the merits of quantifying this larger body of information, a decade later no one has updated Lynn’s initial survey of siege trends. Unfortunately, as we have seen, his data is incomplete, thus the pivot of early modern warfare remains poorly understood while its dynamics remain only a matter of speculation.

Once we return to the original sources in order to explore the issue more closely, our case study of the Spanish Succession illustrates the most critical of flaws in existing datasets, the strong reporting bias towards the most difficult sieges. This distortion reinforces stereotypes of Vauban’s formalized tactics and long, plodding attacks.\textsuperscript{760} The complex nature of the phenomenon quickly forces us to develop explicit data-collecting methods in order to make sense of the variety and volume of information available. To limit ourselves to the circumscribed topic of sieges, we must first define “siege” in order to distinguish it from other tactics used to capture towns. We must also scour the sources for mention of brief sieges, underrepresented in both secondary and even primary accounts. Proceeding from our definition, we need to develop ways to adequately measure these sieges. In the case of the important variable of siege length, we must pay particularly close attention to how we determine the length of a siege – what start and endpoints to use – since carelessness here can significantly skew our results. Only when we are confident that our sample is representative of the larger population of sieges and its relevant

\textsuperscript{760} Lynn of course explicitly acknowledged the Gallo-centric nature of his database. Putting aside Parker’s criticisms of the data’s validity, the dataset has been accepted by most others over the past decade without provoking any apparent interest in comparing the broad outlines of the French case with the Spanish, or the Dutch, or the English...
With consistently-measured data, we can begin to look for patterns and test hypotheses, being careful to account for the entire spectrum of siegecraft. Given the effort spent assuring a representative sample (or even recording the entire population), we should not throw away this data by reducing trends down into a single measure of central tendency (as in Figures 2.1 and 2.2), such as the mean. As the histogram of siege lengths in Chapter 2 indicates, the small number of lengthy sieges skew the average siege duration away from the more numerous shorter sieges, arguably more “representative” examples of siegecraft in the age of Vauban than the extended struggles emphasized in the secondary literature. We need to keep this plethora of brief attacks in mind in our analysis, and explain the existence of such wide variation. A clearer view of the “full house” of siegecraft will result.

Quantitative data does not, of course, preclude the use of unquantifiable textual evidence – as the saying goes, the singular of “data” is “anecdote.” Eschewing the polar stands assumed in the long-running and heated debate over quantification’s utility for history, the two are complimentary techniques. More than that, these two approaches share an important concern, for the issue of measurement bias is just as important to qualitative research as quantitative. Two particular biases

761 Furthermore, the direction of any remaining bias is known – missed sieges will almost exclusively consist of very short sieges that have found little discussion in the sources. We can keep
have led historians to present siege warfare and their practitioners in a stereotyped form. The extensive Marlborough literature’s blind acceptance of engineering incompetence suffers most heavily in this respect. Narrow, self-imposed national boundaries endanger their conclusions, for the Dutch perspective is almost entirely absent from their works. This is simply inexcusable. It was, after all, the Dutch who provided the vast majority of the troops, engineers, cannon and munitions necessary for sieges, yet their perspective is notably lacking in the battle-centered Marlborough scholarship. Further compounding the distortion, the British participants were among those least involved in the conduct of sieges, with the weakest tradition of engineering among the major Allied powers. The predicament of relying on one country’s sources to analyze a coalition war should be obvious.

Not only has our perspective been too narrow, but it has also been too shallow. We need to peer below the ranks of general officers and to look beyond the infantry and cavalry, to the other branches of military service. The widespread contemporary condemnation of the engineers taken at face-value comes almost exclusively from general officers – those leaving the bulk of extant military correspondence and those with interests often at odds with the values embraced by the engineering corps. With the technicians too busy to defend themselves in writing, it is premature to accept unsubstantiated, overly-broad criticisms at face value, especially when the few concrete condemnations are quite unconvincing when examined more closely. Thus, Anglo-centric criticisms of burdensome allies

such biases in mind when we draw our conclusions.
are hobbled by their obsessive focus on the great commanders. When we attempt to mitigate the reporters’ biases of rank and nationality, a different picture emerges.

A wider evidential base also brings the other favorite of early modern military historians, Vauban, into clearer focus. As we have seen when defining Vauban’s legacy, placing him back in his temporal context suggests that he was heavily dependent on previous engineers to develop the specific tactics he would later systematize along rational lines. Given our utter ignorance of such precursors, his dependence on earlier engineers can only increase as we delve deeper into the subject. If Marlburists accept British commanders’ views too readily, Vauban scholars do the same for their own subject, assuming his unquestioned skill in the attack and too often taking his word at face value. This interpretation – Vauban as systematizer of the paradigmatic siege – cannot be tested, however, when the focus remains strictly on French sieges conducted personally by Vauban; Duffy alone seeks to broaden understanding of siegecraft in a comparative perspective. So uniform is this focus on Vauban that even repeated references to his “systematizing” nature have failed to evoke interest in what exactly he was systematizing, nor has his discernable influence among his immediate contemporaries been measured – how close, for example, were his techniques followed by his subordinates in distant theaters during the Nine Years’ War?\textsuperscript{762} Can we identify a point at which Vauban’s doctrine gained supremacy among his peers? Did his influence over the French

\textsuperscript{762} Anne Blanchard’s dictionary of French engineers has illustrated the paucity of sources on the individual socio-economic origins of Vauban’s contemporaries, but the military correspondence from the period’s campaigns and sieges undoubtedly hold many clues to the extent of Vauban’s influence over his peers. Unfortunately, the only Louisquatorzian war to receive detailed treatment throughout the centuries is the Spanish Succession.
engineering corps rely more on the acceptance of his ideas or simply on his control over appointments and personnel? Do other armies of the period show similar siege trends, only lagging behind the French? Vauban’s universe remains pitifully small.

The Vauban literature similarly suffers from narrow national boundaries they place on their subject. Expanding beyond national boundaries includes considering Vauban’s competitor, Coehoorn, in much greater detail, as well as raising the question of how successfully Vauban’s Method was disseminated. Only a more broadly comparative approach can answer (or even ask) questions such as how Vauban’s well-established Method could be ignored with such success in the Spanish Succession – La Feuillade’s blundering at Turin eclipses the many instances where Vauban’s predictions of disaster were proven false. Nor is relying on Vauban’s theoretical manuals enough, for theory had to be implemented in the trenches by fallible humans working in chaotic conditions, and the disjuncture between the Vaubanian model as represented in his manuals and the reality of siegecraft was far wider than has been imagined. A richer understanding of the nature of siegecraft requires both qualitative and quantitative evidence carefully drawn from varied sources in a multi-national and multi-service context, one that tests rather than assumes a perfect correspondence between theory and reality. This study has begun the process by presenting an explicit methodology of data collection and analysis for the Flanders theater during the War of the Spanish Succession.

**Defining Vauban’s Offensive Legacy**
How does Vauban fit into this larger context? The 17th century siege data we have collected points to the halving of siege lengths during Vauban’s tenure as one of its most notable features. However, before definitively declaring the great engineer the source of this change, we must prove not only correlation but causation as well – how exactly did Vauban achieve this feat? Turning to the secondary literature for guidance, we find only the vaguest of discussions touting his three tactics of trench parallels, trench cavaliers and ricochet fire. Dispersed sources on the pre-Vauban era hint at the long tradition of siegecraft well-established before Vauban had arrived on the scene, practices that included his most-often cited techniques of parallels and cavaliers de tranchée. More generally we find all the stages of the Vaubanian siege quite familiar to besiegers of 1600, and even to those of 1500 as well. Where else shall we look to find Vauban’s true legacy?

From Vauban’s writings (both theoretical and quotidian) we glean a more fundamental change in the nature of the siege attack – the desire to conduct it along systematic, rationalized lines. Vauban portrayed himself as reacting against the bloody (and blood-thirsty), wasteful attacks he experienced in his youth – future study of earlier sieges (particularly beyond France’s borders) might resolve how accurate this view of pre-Vauban siegecraft is. His response to this carnage was less a matter of introducing new tactics than the more philosophical emphasis on efficiency, the pursuit of which minimized casualties, costs and delays. Each zig-zag of the trenches, each cannon salvo was to conform as closely as possible to the general principles derived from the immutable laws of geometry and trigonometry – angles and elevation joined with weapon technology to dictate a precisely-calibrated
course of action throughout the siege. This view can be taken too far, however.

Vauban aspired to make a siege follow exactly the theoretical attack, but as we note from his self-criticisms he was keenly aware of the vast gulf between theory and reality. The most experienced, competent practitioners could bridge this divide only through diligent preparation. Hard work, exhaustive planning and painstaking attention to the myriad details of a siege allowed attackers to capture a town in the most efficient manner possible, though there was always room for improvement. Beyond the more defensible borders he left behind, this perfectionistic ethos was the most important legacy Vauban sought to pass on to his disciples.

Falling Short of Vauban’s Offensive Legacy

Several factors limited the realization of his goal. The extent to which Vauban’s style of siege would spread without his personal supervision was limited, for even the French corps suffered from shallow foundations and overexertion. Due to constant fiscal crises, Louis and his ministers refused to dedicate the resources necessary to insure the institutional continuity that would form a cohesive corps of engineers. As a result, the engineers remained individual proto-professionals connected together more by bonds of patronage than by professional solidarity. Their numbers under Louis XIV never reached beyond several hundred members, and at the end of each war many were released or given only half-pay. Many others were encouraged to seek foreign service when Louis exiled believers of the “so-called Reformed religion,” the Huguenot Protestants. Various Allied states welcomed these refugees with open arms, for they had even fewer siege technicians than their enemy and also suffered from a similar lack of institutions. No matter
which country’s service we consider, the demands for siege engineers were always
greater than the supply, for their profession was a dangerous one that rarely received
the recognition and compensation given to the other arms. Without a formalized
curriculum and suffering from a high turnover rate, the engineering corps could
disseminate Vauban’s meticulous Method only haphazardly. This interfered with the
efficient conduct of sieges. Later in the 18th century the training of European
engineers would be put on a more sturdy foundation, with Vauban’s philosophy at
its center, but the master himself was unavailable to guide its implementation.

No matter how fully engineers imbibed Vauban’s philosophy of the efficient
siege, their ability to implement these ideals on the ground were contingent on
minimal interference from others. Even the two great engineers of the period
derived their immense authority at sieges largely from royal patronage rather than
widespread recognition of their merits. When the King was not present, their
influence declined as a result. Less eminent engineers had to constantly struggle to
convince suspicious generals, rival engineers, reluctant gunners and frightened
workmen to follow their instructions rather than pursue their own impulses. Neither
French nor Allied engineers had much success in the Flanders theater. Vauban’s
siege attack prevailed only in the theoretical treatises, for in reality the application
of his Method was seriously hampered by the engineering corps’ lack of
institutionalization and authority. Even after decades of effort, he could not provide
the corps of French engineers, a model for other European powers, with the
authority to consistently implement these ideas.

Rejecting Vauban’s Offensive Legacy
Difficulties implementing Vauban’s attack stemmed from more than just the “friction” of war, for the engineers were actively resisted by numerous commanders who explicitly rejected the underlying value judgments on which their tactics were predicated. Whereas Vauban constructed his general maxims to minimize delays, casualties and costs, many general officers focused obsessively on only the first of these variables. Vauban scholars miss this broader picture by looking solely at the difficulties their subject faced at the end of his life. Noting only a few examples (notably Nice and Turin) in isolation, Vauban scholars’ causal explanations attribute his eclipse to the general malaise afflicting the twilight of the Sun King’s reign. By ascribing his decline to generational strife, they miss the multi-national military context, an environment in which both French and Allied engineers came under severe attack for philosophical reasons unique to the military sphere. Looking beyond Louis’ borders, we find exactly the same resistance to the engineers’ plans that Vauban and his successors faced in France. The generals’ complaints are identical, whether French, Dutch, Saxon, English or Austrian: the sieges are taking far too long. So too are their conclusions: the engineers are either conducting the attacks incompetently or far too leisurely, so the sieges must be accelerated in every stage, from trench preparations, to their implementation, to the capture of the covered way. They even adopted the same array of methods condemned by Vauban: constantly prod the engineers to hasten their efforts (to open the trenches, and then to push them forward) and as soon as possible take direct control of the siege by abandoning the sap and capture the covered way by assault. So strong was this urge to abbreviate sieges that even Coehoorn, who epitomizes for historians the reaction
against Vauban’s patient method, was criticized for being far too lethargic. Wherever possible, the age’s most successful generals (Marlborough, Eugene, and Villars) sought to save time, and when they could not, they and their supporters unleashed a torrent of invective against the ostensible cause of their delays, their technicians.

Whether accelerating the pace of a siege actually saved either time or lives is an open question. The charges against the engineers are difficult to substantiate when examined in detail – either the criticisms are too vague to test or they demand perfection that even Vauban could not deliver. The harsher allegations against his followers certainly seem unfair when looked at in a larger context – we can find just as many specific instances of bloodthirsty officers needlessly slaughtering their own men in failed storms as we can of inept technicians sapping the vigor from a siege. The claim that a slower attack would necessarily result in even more casualties than if the place were stormed is particularly difficult to untangle. With such inconclusive evidence, perhaps it is best to trust the judgment of those guinea pigs who ended up paying the price for such “experiments”; these foot soldiers’ experience in the trenches should have provided them with a good sense of which style of attack gave them the greatest chances of survival. Notably, they preferred the engineers’ “excessive” caution to a callous evaluation that hundreds of their lives were worth a few extra days. As a result, the more Allied commanders in particular ignored this sentiment, the further their military effectiveness deteriorated. After a certain point, trading casualties for time seems to have limited the army’s freedom in one respect (by decreasing the army’s morale and numbers)
as much as it increased it in another (by allowing more time for free action),
particularly in a well-fortified theater. To the assertion that an aversion of bloodshed
would only increase the casualty lists, engineers could justifiably counter that while
this might be true, it was certain that ignoring them would achieve the same result.

The divide between the two groups reflects a wider gulf, highlighted by
other historians in the slightly different context of why decisive battles were so rare
in the early modern period.763 The gap separated, on one side, the politicians’ and
generals’ desire for decisive campaigns – in this case the rapid capture of territory
by a succession of quick sieges (rather than by a decisive, war-ending battle) – and
on the other, the reality that even this limited objective was too ambitious given the
organizational and technological constraints related to siegework. The frustration of
the generals, and the support their politicians gave them, is more evidence that the
military instrument of early modern states could not meet even the “limited” policy
objectives desired by the period’s leaders.

Succeeding Without Vauban’s Offensive Legacy

The rejection of Vauban’s attack was widespread, and although generals
criticized the plodding pace of their attacks, their victories were quite rapid when
viewed in a broader historical perspective. The weak status of many fortifications is
one part of the explanation. While decisive campaigns were rare, those few seasons

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763 Scholars have tended to highlight this disconnect along logistical lines, with limited reference to
the role of sieges. Perjé’s “Army Provisioning, Logistics and Strategy in the Second Half of the 17th
Century” may have been one of the earliest to do so, focusing primarily on the logistical
requirements of an army on the march. His argument has also been echoed by David Parrott,
“Strategy and Tactics in the Thirty Years War: The ‘Military Revolution’,” Militargeschichtliche
Mitteilungen, 18 (2) (1983), 7-25, who referred more to battles and mobility. Parker added
fortifications to the mix most forcefully in The Military Revolution.
that did see significant territorial conquests (1702 and 1706 in particular) occurred in the most weakly-fortified area of the theater – Spanish Brabant and Flanders. But given the lengthy discussion of Vauban’s *ceinture de fer*, the ease with which it was breached merits surprisingly little comment. In fact, the Allies required fewer than five years (1708-1712) to penetrate almost completely through the network of fortresses, a task Vauban had expected to take twenty years. Even more astonishing, the systematic application of Vauban’s method of attack appears to have had little to do with their victories. Against both *bicoques* and masterpieces of defensive engineering, besiegers relied on unprecedentedly large artillery trains to pound the enemy into submission. Just as besieging generals refused the surety of the sap for the vigor of an assault on the covered way, so too did these same commanders dispense with the precision of ricochet fire (among other of Vauban’s firing techniques) and instead rely on massive weight of fire, both direct and indirect, to obliterate the enemy’s fortifications and shellshock its defenders into surrender. The results, though wasting both powder and lives, was effective nonetheless at accelerating the fall of fortresses; in their minds at least, it justified the costs.

*Mentalité* and *Materiel*

By 1715 two distinct styles of attacking a fortress had been perfected. Vauban’s offensive legacy represents the better known approach, one based on a careful adherence to “scientific” principles that would result in an efficient siege

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764 This time period included several “detours” to attack fortresses perpendicular to their north-south axis of advance. This point is raised but then abandoned by Ziegler in *Villars*, 34.
that minimized the waste of lives, time and money. His many successes and his
instructive legacy did not, however, invalidate a much older and less elegant method
that relied on assaults of the covered way and firepower to overwhelm the defenders
by brute force. Vauban struggled to de-legitimize the opposition for five decades,
but pointing out the indefensibility of *bicoques* and the theoretical inefficiencies of
his opponents’ sieges could not hide the fact that the strongest fortresses in Europe
were falling like dominoes after only a few months of brute-force tactics. This
more-effective-than-efficient style of siegecraft gained widespread acceptance in the
War of the Spanish Succession with the convergence of two trends: a new decisive
mentality among those now in charge of sieges, combined with the ever-growing
siege trains at their disposal. As the great engineer’s personal influence faded, the
conduct of French sieges devolved to generals – such as Villars – who were hostile
to his goals and methods. Vauban’s influence further dwindled as France’s enemies
seized the initiative with a series of sustained offensives in the theater most
amenable to full-scale sieges. These enemies of Vauban adopted many of the same
tactics he promoted, but they ignored those that threatened to delay the advance.
This overwhelming desire to wage war in a decisive manner dictated their priorities,
and in turn their tactical doctrine. The Allies bought time with blood and were
willing to accept the higher casualties that resulted from their impatient style of
besieging. However, their decisive mentality captured strong towns quickly only
when combined with a massive commitment of materiel – particularly artillery and
munitions. Here then was the real change from the early 17th century. Louis’s foes
could conquer a dozen major fortresses using such resource-intensive methods
because the Dutch and British fiscal-military states found enough creditors willing
to give low-interest loans to pay for the men, guns and supplies needed to support
the war effort. Their extensive credit reserves (facilitated by a growing public debt)
enabled them to support such a costly way of warfare in an attritional conflict that
lasted a dozen years. Their successes proved that there was a valid, if expensive,
alternative to the efficient siege à la Vauban. Though Vauban’s attack would
become doctrine for engineers of the mid-18th century and the twin forces of
nationalism and industrialization would multiply the size of the military machine
several-fold by 1800, the use of overwhelming firepower in the Spanish Succession
war had already signaled the demise of the artillery fortress as the pivot of war.
APPENDIX A

ALLIED CAMPAIGN LENGTHS IN FLANDERS

<table>
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<tr>
<th>Year</th>
<th>Begin Campaign</th>
<th>To Winter Quarters</th>
<th>Campaign Length (days)</th>
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<td>May 15</td>
<td>November 3</td>
<td>172</td>
</tr>
<tr>
<td>1703</td>
<td>April 20</td>
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</tr>
<tr>
<td>1705</td>
<td>May 15</td>
<td>October 30</td>
<td>168</td>
</tr>
<tr>
<td>1706</td>
<td>May 16</td>
<td>November 8</td>
<td>176</td>
</tr>
<tr>
<td>1707</td>
<td>May 22</td>
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<td>-</td>
<td>179</td>
</tr>
<tr>
<td>Median</td>
<td>-</td>
<td>-</td>
<td>176</td>
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</tbody>
</table>

Figure A.1: Allied Campaign Lengths in Flanders

APPENDIX B

SIEGE LENGTHS, WAR OF THE SPANISH SUCCESSION

This database is obviously a work in progress, and individual data points may very well change with further research. Although I am quite certain that the data for Flanders includes almost every siege conducted in the war (with the exception perhaps of an isolated fort or two that quickly surrendered), the Iberian and German theaters in particular may very well have a large number (a dozen?) of very short sieges that have not been included here. Many of these sieges lasted only a day or two, and the secondary literature does not always give enough specificity to determine whether they were strict sieges or storms. They have therefore been excluded from this dataset. If a large number of short sieges are indeed missing, they would further bolster the argument that the “average” siege was more likely to be a brief affair than the epic struggles so prevalent in the literature.

Since many stages of a siege could begin at night, sources might also vary in their dating of nighttime (is 2 AM the night of the 23rd or the 24th?). These dates might be a day earlier or later than other accounts. Thus, there is a small margin of error for these dates (up to two days per siege).
I have not cited each primary source consulted for each date for every siege (an average of 5 sources × 3 dates per siege × 108 sieges = 1,620 citations!). For the non-Flanders theaters I rely heavily on secondary sources and cited them accordingly. For Flanders, rather than citing sources for each siege, I have included the most important collections of published correspondence. Three reasons have motivated me to provide what may at first appear as only the sparsest of citation apparatus for these sieges, a list of the main sources used and the date ranges for each volume, rather than the entire information for each letter for each siege for each date.

First, it is important to compare the various sources’ account for each of the dates, hence you should look at all of the relevant sources wherever possible. Even the simplest of measures – a date – can be surprisingly complicated, especially for sieges where the stages themselves are short, i.e. most sieges that are missing from existing secondary accounts. Sources that give the wrong date may provide clues that help you determine the correct date. For example, Englishman X gives the open trenches date as 14 October and you know he consistently uses the Old Style calendar. Englishman Y gives a date of 17 October with an unknown calendar (English participants tended to use New Style on the Continent, but sometimes an important individual like Marlborough will suddenly switch from one calendar to another). Dutch source A gives a New Style date of 20 October. If these are all somewhat reliable sources (something that you can only determine by comparing many of their dates to the actual dates derived from other, more reliable sources), which is most likely to be the correct date? Is the broad variation in accounts a sign
of “real” disagreement/differing information, or just due to the use of different calendars? The more sources you add, the greater the certainty. With the example of a unique source that refers to a date only as a day of the week (e.g. “last Tuesday we captured the covered way”) with an unknown calendar, you begin to see the necessity of comparing all possible sources to create a robust dataset. A perfect dataset would employ a similar methodology for every theater’s sieges.

Second, I am currently working to publish further research on this database.

Third, the individual documents can easily be looked up using a combination of the two lists. Use the information in the table to determine the month, date and year of the relevant letters, then determine which volume of correspondence to look in by consulting the date ranges listed below.

**Essential Primary Sources for Flanders sieges**

Murray, ed., *Letters and Dispatches*

Vol. 1: 17 April 1702 - 28 March 1705  
Vol. 2: 31 March 1705 – 16 July 1706  
Vol. 3: 16 July 1706 – 5 May 1708  
Vol. 4: 5 May 1708 – 22 April 1710  
Vol. 5: 23 April 1710 – 18 March 1712

Snyder, ed., *Marlborough-Godolphin Correspondence*

Vol. 1: 4 March 1701 – 25 June 1706  
Vol. 2: 17 June (O.S.) 1706 – 3 January 1709  
Vol. 3: 24 December 1708 (O.S.) – 10 November 1711

van ’t Hoff, ed., *Marlborough-Heinsius Correspondence* (1700-1712 in one volume)

Veenendaal, Jr., ed., *Briefwisseling Heinsius*

Vol. 1: 1702  
Vol. 2: 1703  
Vol. 3: 1704
Additionally, the standard collections of Vault and Pelet, *Mémoires militaires*, Wijn, *Het Staatsche Leger*, and the *Spanischer Successions-krieg: Feldzüge des Prinz Eugen von Savoyen* series provide good summaries of the events in the Flanders theater.

**Key:**

- **#mo**: ‘Standardized’ length of siege. Calculated as (I-C)÷30, or (OT-C)÷30 if I-C data is unavailable. Rounded to the tenth of a month, they are therefore grouped together in 3-day intervals.

- **Thtr**: Theater (SN=Spanish Netherlands, Fr=France, Sp=Spain, It=Italy, Ge=Germany)

- **sideB**: Side of besiegers (Fr=French, All=Allies)
<table>
<thead>
<tr>
<th>Place</th>
<th>Year</th>
<th>#mo</th>
<th>Thtr</th>
<th>sideB</th>
</tr>
</thead>
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<td>1702</td>
<td>1.9</td>
<td>Ge</td>
<td>All</td>
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<td>Fr</td>
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Figure B.1: Siege Lengths, War of the Spanish Succession (continued)

323
### Figure B.1 (continued)

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**Table Sources and Notes**


Breisach 1703: DuMoulin, *Campagne de Monsieur le maréchal de Villars en Allemagne l'an MDCCCLIII. Contenant les lettres de ce maréchal & celles de plusieurs autres officiers-généraux au roi & à Mr. de Chamillart, ministre au Département de la guerre, avec les réponses du roi, & de ce ministre. Recueill... formé sur les originaux qui se trouvent en dépôt au Bureau de la guerre de la Cour de France*, 2 vols. (Amsterdam: M.M. Rey, 1762), 2:142ff; Rochas d’Aiglun, *Vauban*, 2:527ff.


Susa 1704: Vault and Pelet, *Mémoires militaires*, 4:120, 126, 130-136; DuMoulin, *Campagne de Monsieur le maréchal de Tallard en Allemagne l’an MDCCIV contenant les lettres de ce maréchal & celles de plusieurs autres officiers-généraux au roi & à Mr. de Chamillart... avec les réponses... Recueil formé sur les originaux qui se trouvent en dépôt au Bureau de la guerre de la Cour de France*, (Amsterdam: M.H. Rey, 1763) 1:300.


APPENDIX C

SIEGE DATABASE METHODOLOGY

Sieges could be quite complicated, and this complexity needs to be replicated in any project that seeks to understand the nature of early modern siege warfare. The first task in any project is to keep track of all the data, preferably using a computerized database system that allows data entry validation to detect errors, as well as an ability to directly compare multiple accounts of the same event on a single screen, which will highlight discrepancies. Such a form (i.e. database screen) can also provide a place for the user to indicate the relative reliability of each source, and why a particular source was privileged over another when there are discrepancies between accounts. Especially useful is a database design that allows the user to abstract numeric data from textual information (either numbers mentioned in the text or coded values derived from the text) and still keep the link between the source and the quantified data. I discuss all of these issues and more in the description of my own database system, on my website:


The nature of the phenomenon under study requires additional design decisions tailored to the analysis. One significant source of confusion for the study
of siegecraft is a matter of definitions: what exactly is being besieged? Leaving the definition of “siege” to the next appendix (Appendix D), here we note the need to retain the same level of “granularity” as our sources. Each individual record in the database should measure the smallest possible siege “unit” – i.e. a siege of either a fort, a citadel, a town, or an entrenched camp (I refer to this as the “FCTE level.”)\textsuperscript{765} This level needs to be distinguished from collecting data at the town or “place level,” where all fortifications surrounding a place are aggregated together. The siege length data listed in Appendix B is aggregated on the place level, as if we were to record data for both the citadel and town of Lille in a single record on the siege of Lille 1708. The underlying data, however, is stored on the FCTE level: the siege of Lille lasted four months, but only two months of that time was spent besieging the town and the other two months targeting the citadel. Such a distinction must be made since several variables may vary depending on the specific fortification being besieged, e.g. the fort was captured with its garrison taken prisoner, but the town may hold out until a relief force arrives. We can simplify upwards if necessary, but we need to record our initial observations at the FCTE level.\textsuperscript{766} Without this design, we would not only lose information from our sources, but we would also miss any differences between sieges of forts, citadels and towns, in addition to missing the important fact that where a fortress was besieged by both sides in succession (what I term “multiply-besieged” places), both sides did not

\textsuperscript{765} An extremely-detailed database would further break down the siege of an FCTE by sector or even outwork.

\textsuperscript{766} We need to allow data entry on this place level as well, since some sources only give information on the aggregated level.
always attack the same fortifications.\textsuperscript{767} For example, the Allies besieged the town of Douai in 1710, while the French attacked the town of Douai \textit{and} its Fort Scarpe in 1712, thus complicating a simple comparison of the two sieges.\textsuperscript{768} Differentiating between the types of besieged fortifications also gives us an indication of the state of fortifications in a region – a region filled with small forts is less likely to impede a large field army contrasted with one replete with fortified towns and citadels.

The distinction between forts/citadels and towns was strictly observed by contemporaries.\textsuperscript{769} On the other hand, the distinction between “forts”, “citadels”, “castles”, and “châteaux” is not always clear, even in primary accounts. Generally, we distinguish forts from the other types of fortification by their location some distance (usually hundreds of meters) from the town and its fortifications, often on nearby ridges or on the other side of a riverbank.\textsuperscript{770} I have subsumed all “châteaux” and “castles” (as labeled in the sources) under the heading of “citadel,” which was an independently-fortified place (i.e. fortifications facing towards the town as well as towards the countryside) whose defenses were usually incorporated into the

\textsuperscript{767} This is in addition to the potential problem that Douai was attacked on different fronts in successive sieges – thus making direct comparison of the two attacks even more difficult.

\textsuperscript{768} For even greater detail, we could further discriminate between the data for \textit{each attack} on each FCTE. Often a besieger would open trenches against a fortification at two or more different places in order to over-extend the garrison’s forces. In order to compare the progress at each attack, the data must be recorded separately for each attack. To give a rather complicated example, at Tournai in 1709 there were initially two attacks made against the town and one against the citadel. After the town was taken, another attack was opened against the citadel while the earlier citadel attack was continued. In total, there were four attacks against two separate fortifications, and therefore four separate records in the database would be required.

\textsuperscript{769} For a brief discussion of citadels and forts, see Duffy, \textit{Fire and Stone}, 67.

\textsuperscript{770} Forts were also built independent of towns, often at strategic points which controlled rivers and mountain passes. Such isolated fortifications, however, rarely withstood a siege in the War of the Spanish Succession.
circuit of the town wall. Any type of fortress could also have a number of other types of fortified works, usually located in the ditch, shielding the main wall from direct attack. All such detached outworks (ravelins, hornworks, tenailles, redoubts, etc.) are subsumed in the larger fortification, whether fort, citadel or town.

One of the most important measures of a siege is its length. A large number of dates have been used to construct Appendix B. Surprisingly perhaps, even dates of discrete stages are not always precisely noted, and historians have not always reported them consistently. Figure C.1 provides a list of the dates of specific stages of a siege, listed in the most-frequently occurring chronological order.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Abbrev.</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Besieger’s Arrival</td>
<td>BA</td>
<td>When the first investing force appears</td>
</tr>
<tr>
<td>Investment</td>
<td>I</td>
<td>When the besiegers begin to cut off and isolate the town</td>
</tr>
<tr>
<td>Open Trenches</td>
<td>OT</td>
<td>The most commonly accepted stage for a siege’s start</td>
</tr>
<tr>
<td>Open Fire</td>
<td>OF</td>
<td>When the first batteries open fire</td>
</tr>
<tr>
<td>Covered Way</td>
<td>CW</td>
<td>When the covered way/counterscarp/glacis is first attacked (record each separately)</td>
</tr>
<tr>
<td>Chamade</td>
<td>Ch</td>
<td>When the garrison asks to negotiate surrender terms</td>
</tr>
<tr>
<td>Capitulation</td>
<td>C</td>
<td>When the capitulation is signed</td>
</tr>
<tr>
<td>Besiegers Leave</td>
<td>BL</td>
<td>When the main besieging force leaves</td>
</tr>
</tbody>
</table>

Figure C.1: Siege Stages
All of these dates were identified as discrete events by contemporaries, although the besieger’s arrival, the investment, opening the trenches and the capitulation stages are most frequently mentioned. All dates have been converted into New Style; most were reported in the New Style originally, as most Englishmen on the Continent tended to use the Gregorian calendar. In several of these stages we could further differentiate between when a stage began and when it was finished, particularly for the three stages of investment, when the artillery arrived, and when the covered way was attacked – each of these stages might require several days to complete. Most historians agree that OT-C is the best measure of the ‘official’ length of a siege, but other stages allow us to measure, for example, the impact of the siege on the operations in the theater. Medieval conventions held that a siege did not officially commence until the siege artillery had opened fire (OF), and we find the continuing importance of artillery at the siege of Limburg in 1703, where the garrison was warned it would not be given a capitulation if it forced the besiegers to haul their cannon to the site.

The length of a siege could be calculated from any of these stages, and while each is a valid measure, we must be careful to always identify which measure is being used, and justify its appropriateness for the argument at hand. A number of other variables relevant to siegecraft could also be analyzed: army sizes (besieger

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771 See, however, the confusion over dating Marlborough’s early correspondence in Snyder, ed., Marlborough-Godolphin Correspondence, 1:xxxvii.

772 Maurice H. Keen, The Laws of War in the late Middle Ages (London: 1968), 120.

773 See The Daily Courant, 9/9/1703 O.S. #436.
and garrison), casualties (besieger and garrison), who wins the siege (least-confusingly defined as whether the place was captured or not), fortification type (both by FCTE and by whether they were *trace italienne* or medieval), the seasonality of sieges, and a whole array of variables derived from these basic building blocks. Each variable requires reflection on its nature, how it is presented in the sources (representativeness, precision of terminology, multiple measures for the same concept...), and what purpose its analysis will ultimately serve.
APPENDIX D

SIEGE VERSUS NON-SIEGE TACTICS

The skirmish between Parker and Israel over the length of Dutch Revolt sieges highlights a fundamental issue that needs to be addressed before measuring any siege variables: what exactly constitutes a “siege”? Their disagreement is indicative of the widespread confusion over its precise definition:

Contrary to what has been claimed [i.e. Parker’s *Army of Flanders*], most of the sieges of the 1621-48 war were not, in fact, exercises in exhausting the defenders’ supplies. Except for Jülich and Breda, all the main sieges ended long before this point was reached. The fundamental military concept of the struggle was that no matter how well provisioned and fortified a town might be, it would inevitably fall if the besieger’s emplacements, trenches, and batteries could be brought up close enough for effective mining to commence. Once powder barrels were positioned under the walls, the town had no choice but to surrender or be stormed.774

Israel here and elsewhere is, in fact, arguing against Parker’s characterization of the Dutch Revolt as a war dominated by blockades, although Israel himself slightly confuses the issue by continuing to refer to them as sieges. Later he comes closest to explicitly distinguishing between the two: “Almost alone among the great sieges of the 1621-48

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war, Breda was simply an exercise in starving the defenders out. Hence its exceptional
duration.... There was scarcely any fighting, little bombardment, and few casualties.”
Length, then, is necessarily conflated with the method used to capture a town. The
resolution to historiographical confusion is to avoid the generic use of the term “siege”
and explicitly state what type of tactic was used according to concrete criteria.

Historians have begun to emphasize the distinction contemporaries made at the
time. Duffy has led the way, clearly delineating the “means of reducing a fortresses short
of a formal siege,” including storm, surprise, bombardment and starvation. Progress
among historians not focused solely on siegecraft can be seen best in the evolution of
Parker’s works, where his original emphasis on blockades branches out into the wider
variety of tactics used to attack a place as he has elaborated upon various aspects of the
argument. In his early The Army of Flanders, he does not clearly discriminate between
siege and blockade, using “siege” to refer generically to any attack on towns, but it is
clear his emphasis is on blockades. His showcase example of Amiens 1597 purports to
illustrate the “standard procedure” of “blockade and attrition,” yet the contemporary
engraving of the combat shows several batteries of cannon firing at the fortifications

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775 The Dutch Republic and the Hispanic World, 1601-1660, 107. See also his accounts of the sieges on
318-321.

776 Duffy, Fire and Stone, 94-101.

777 For acknowledgments of the different tactics mentioned in different periods, see: Chandler, The Art of
Warfare in the Age of Marlborough, 245; Simon Pepper and Nicholas Adams, Firearms and Fortifications:
Military Architecture and Siege Warfare in Sixteenth-Century Siena (Chicago: University of Chicago Press,
1986), 169; Bruce Allen Watson, Sieges: A Comparative Study (Praeger, 1993), 138-141; and Geoffrey
Parker’s entry “Sieges” in G. Parker and R. Cowley, eds., The Reader’s Companion to Military History,
(Houghton Mifflin, 1996).

778 Page 9, and plate 4.
themselves, something not usually associated with a blockade.\textsuperscript{779} In a later work he distinguishes more clearly between different methods used to capture a town – including surprise, storm, treachery, starvation, assault, and mines – and he suggests through several examples that the last three methods all shared longevity. His clearer focus is now indicated by the replacement of Amiens 1597 with Breda 1624-1625, which was a ‘pure’ blockade in the sense that “Not a shot seems to have been fired against the bastions and hornworks of Breda itself: the city surrendered... through simple starvation.”\textsuperscript{780} Further refinement of this taxonomy of tactics is a starting point for measuring the conditions of positional warfare throughout the ages.

Developing a viable definition of what is, and is not, a siege requires a very broad view, but by the War of the Spanish Succession the distinctions are rather clear. The most common tactics included siege, blockade, bombardment, storm, and stratagem or surprise. A siege in this narrower sense required that several specific criteria be met. The goal was usually, with a few exceptions, to capture the fortification under attack.\textsuperscript{781} The defenders had to start with a desire or intention to resist the would-be attacker, whether garrison, militia, or both. Otherwise, urban authorities would simply admit

\textsuperscript{779} It is possible that the engraving was meant to illustrate several different types of attack (siege, blockade...) in a single image.

\textsuperscript{780} The Military Revolution, 13. Whether blockades and sieges (starvation, assault and mine) were both inherently lengthy is a matter for empirical research to confirm or disprove, although Parker does not directly contest Lynn’s contention that siege lengths decreased throughout the 17\textsuperscript{th} century.

\textsuperscript{781} Occasionally a siege might be undertaken solely with the intention of diverting the enemy's attention from elsewhere, as the French did at Liège in 1705. Other ways of attacking a town, bombardment particularly, were often used purely for intimidation or retaliation, or to achieve some other objective (such as levying contributions, or destroying a forage magazine) without having to go to the expense of actually capturing the town. In the medieval period, sieges might also be conducted in order to extract tribute from a town. Richard Rogers, Latin Siege Warfare in the Twelfth Century (Oxford: Clarendon Press, 1997), 9.
representatives of the approaching army into the town, as might happen after a successful field battle, such as Ramillies in 1706. This seemingly self-evident requirement has significant repercussions, however, since a number of factors could influence the decision to defend a town or not, including:

- the overall operational context
- the state of the fortifications
- the availability of supplies
- the steadfastness of the garrison commander
- the presence of a relief army (i.e. the likelihood of external help)
- the morale of the garrison
- the inclination of the townspeople.

Any one of these factors might make a town indefensible. Sieges therefore, by definition, resulted only when the defenders thought that the town could resist for at least a short time. In other words, only the comparatively stronger towns were besieged, while weaker ones would submit without putting up a fight.\textsuperscript{782} A siege’s first prerequisite then was a willingness to defend the works and the belief that it was reasonable to do so.

More practically, I will confine my use of the term “siege” to an attack on fortifications that were attacked with artillery or underground mines for a day or more.\textsuperscript{783} This definition of a siege separates it from four other related tactics that could also be used to capture a town:

\textsuperscript{782} Having said this, it is important to further distinguish between the minimum threshold for defending a town (the garrison considered the fortifications strong enough to delay the besiegers) and the conditions which would allow a garrison to force the besiegers to abandon the siege. Just because a town decided to withstand a siege does not mean it could be expected to hold out very long.

\textsuperscript{783} Trenches were almost universally present in sieges, but it is not a primary criteria, as the surrounding terrain might offer a besieger’s troops natural cover, or the hardness of the ground might make digging
• a storm, where a fortified position was attacked by infantry assault (often by escalade) without artillery preparation or trenches\textsuperscript{784}

• a blockade, where a fortified position was surrounded and cut off from outside support – usually with fortified lines or small forts – in order to starve the defenders into submission\textsuperscript{785}

• a bombardment, where bombs were indiscriminately fired into the city in order to terrorize the inhabitants and garrison into surrendering (contrasted with attacking the town’s fortifications)\textsuperscript{786}

• a stratagem or surprise, which could include sneaking or bluffing one’s way into a town, with or without help from inside the town.

The following table (Figure D.1) summarizes the essential characteristics of each tactic.

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\textsuperscript{784} Storms usually were conducted against weakly-defended towns (either in terms of their fortifications or by an under-manned garrison) and more frequently against forts (where the small size of the works allowed little supporting fire by the garrison). A storm might shade into a siege when the town surrendered quickly after the artillery started to fire. This seems to have been common during the early years of gunpowder artillery in the 15\textsuperscript{th} century.

\textsuperscript{785} Blockades tended to be used in one of five cases: 1) against towns too strong to be taken by siege/assault; 2) when the attacker could afford to wait; 3) when the attacker was afraid of the casualties they might sustain in a siege or assault; 4) when enough resources could not be dedicated to a formal siege to assure its success; 5) when several towns were to be captured at the same time.

\textsuperscript{786} Bombardments were usually used against towns which were expected to need only a token show of force before they would surrender. They might also be used by attackers without proper siegecraft expertise or equipment (e.g. heavy siege artillery). Bombardments were also frequently conducted by naval vessels against coastal fortresses since they posed little risk to the attackers. Jean Peter, \textit{Les Artilleurs de la Marine sous Louis XIV} (Paris: Economica, 1995).
<table>
<thead>
<tr>
<th>Tactic</th>
<th>Method of Attack</th>
<th>Target of Attack</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Formal” Siege</td>
<td>Artillery, mines</td>
<td>Walls and fortifications</td>
<td>Long (&gt;1 day)</td>
</tr>
<tr>
<td>Storm (escalade, assault)</td>
<td>Infantry assault</td>
<td>Overrun walls</td>
<td>Brief (&lt; 1 day)</td>
</tr>
<tr>
<td>Blockade</td>
<td>Isolate from outside contact</td>
<td>Garrison’s supplies</td>
<td>Longer</td>
</tr>
<tr>
<td>Bombardment</td>
<td>Field artillery, including mortars and howitzers</td>
<td>Buildings or population (Morale)</td>
<td>Brief (several days)</td>
</tr>
<tr>
<td>Stratagem (treachery, surprise, ruse)</td>
<td>Stealth, Negotiation</td>
<td>Town’s security measures</td>
<td>Brief (&lt; 1 day)</td>
</tr>
</tbody>
</table>

Figure D.1: Tactics Used to Capture a Town

With this typology, a siege is distinguished from a storm by the use of siege artillery and/or mines, from a blockade by actively attacking the garrison and its fortifications, and from a bombardment by targeting the town’s walls and fortifications rather than (or in addition to) the buildings and morale within the town. The goal of a stratagem was to avoid fighting for the town altogether.

These categories are distinct but not mutually exclusive: the method the attacker intended to use to capture the place is the fundamental criteria. For example, a siege’s beginning could mimic a blockade if there was a lengthy period between when the besiegers cut the town off from the outside (the investment) and when they started to attack the town (opening of the trenches). Similarly, a siege might conclude with an assault (i.e. storm) of a breach made in the main wall, and might well include firing shells into the town itself (a bombardment) in order to encourage the townspeople to pressure the besieged garrison into surrendering. Non-siege tactics could also be used together,
such as a blockade-bombardment. These different tactics existed along a continuum rather than as hermetically discrete categories, but any attack that used heavy artillery and/or mines against the fortifications is classified as a siege, regardless of whatever other tactics were also used.\textsuperscript{787}

At the other extreme are scholars who define “siege” so strictly that they practically classify it out of existence. Several historians have argued, for example, that the Allied attack on Toulon in 1707 was not a proper siege at all, but rather a “pseudo-siege,” as the town was not fully invested.\textsuperscript{788} This view stems from an unnecessarily strict conception of what constituted a “siege” in the 17th and 18th centuries, one tied to a strict interpretation of Vauban’s theory instead of the messier reality – the stereotype of “scientific” Vaubanian sieges encourages scholars to confuse besieging with besieging well. To take Saint-Martin’s criteria of incomplete investment as an example, several other besiegers in the War of the Spanish Succession also failed to completely cut off the town, for example at Kaisersweert in 1702, Verrua in 1704-5, Turin in 1706, and at several coastal fortresses such as Gibraltar in 1705. Yet no contemporary would argue that these were not sieges, only that they may have been poorly-conducted ones. Whereas contemporaries made distinctions between sieges, blockades, bombardments, storms and surprisals, they made no distinction between a real siege and a pseudo-siege. There was

\textsuperscript{787} The classification of these earlier attacks as “sieges” may change when we attempt to resolve the issue of siege versus non-siege tactics and their applicability to pre-Vaubanian warfare. It is conceivable, for example, that the relatively distinct categories of positional tactics (siege, blockade, bombardment, storm, surprise) may have only slowly solidified over the course of the 17th century. Thus many of the longer “sieges” of the earlier 17th century might in fact be better categorized as blockades rather than sieges, or a hybrid of the two.

oftentimes a wide gap between theory and practice, and we should not use an idealized conception of a siege as the standard when constructing a siege database.

The distinction between the various tactics used to capture a town, and the elevation of sieges to a distinct plane in particular, is justified for a number of reasons. First, contemporaries themselves made this distinction. When a formal siege with heavy artillery and trenches was required, contemporaries usually spoke of besieging *dans les formes*, their language suggesting a more systematic and regulated attack than a simple storm, blockade or bombardment. Contemporary manuals also discussed each tactic separately. The distinction between these tactics is further reinforced by the many instances where an attacker progressed from one tactic to another in an attempt to capture a town; each tactic was used independently of the others. Vauban, to give an example,

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790 See, for example, Antoine de Pas, marquis de Feuquières, *Memoirs Historical and Military: Containing a Distinct View of all the considerable states of Europe... Written by the late marquis de Feuquières... for the instruction of his son. Translated from the French, with preliminary remarks and a military dictionary, explaining the difficult terms in the art of war, by the translator...*, 2 vols. (London: 1736), 1:311-318 on surprisals, 2:201-206 on blockades, and a much larger section on formal sieges. The abbé Deidier makes a similar distinction between attacking places by surprise, by force (bombardment, storm, siege *par forme*), or by famine (blockade). *Le parfait ingénieur françois, ou la fortification offensive et défensive, contenant la construction, l'attaque et la défense des places régulières et irrégulières, selon les méthodes de Monsieur de Vauban, et des plus habiles auteurs de l'Europe, qui ont écrit sur cette science*, nouvelle éd. (Paris: Jombert, 1757), 178ff. Papillon offers a similar categorization of “six different wayes, how strong holds may be reduced.” *Papillon, Practical Abstract of the Art*, 99.

791 This appears to have been particularly common in the medieval period, when many besiegers lacked the siege artillery necessary to breach thick stone walls: Bernard Bachrach (following Jim Bradbury) describes the “six S’s” of subverting, scaring, sapping, starving, storming and shelling in “Medieval Siege Warfare: A Reconnaissance,” 125. Period surveys, such as R.L.C. Jones, “Fortifications and Sieges in Western Europe c. 800 - 1450,” in M. Keen, ed., *Medieval Warfare: A History*, (Oxford: Oxford University Press, 1999), 183 and Michael Prestwich, *Armies and Warfare in the Middle Ages: The English Experience*, (New Haven: Yale University Press, 1996), 296 also mention a similar variety of tactics. Several of Bradbury’s
discusses blockades being converted into a “siége réglé.”

Correspondents frequently specified attackers switching from one unsuccessful tactic to another in hopes of accelerating a town’s capture, indicating a different beast altogether. In the Low Countries, Rheinberg (1702) was transformed from a siege into a blockade and Gelders (1703) from a bombardment into a blockade. The French commander of Dendermonde in 1706 reported that the Allied “continuation of the bombardment makes me think they do not yet want to besiege us.” After the bombardment failed, the town was blockaded until a formal siege eventually forced its surrender.

The most important reason for making this distinction, highlighted by Monck’s observation quoted in Chapter 1, is that a siege required a degree of commitment and resources that the other tactics did not. Although blockades were usually reserved for towns whose “advantageous situation” precluded a siege, most could be maintained with few men (several battalions and squadrons) once several small forts were built to

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792 Vauban, Traité, 225-226.


794 AG A¹ 1938 #66 7/2/1706. The trenches were only opened at Dendermonde on August 29, after the garrison had withstood an initial bombardment and then a month-long blockade.

795 Papillon recognized this: “The sixth and most certain and method-like way [of how strongholds may be reduced], is by an intrenched camp used in Caesar’s dayes, and at this time in Flanders by the French and Hollanders [c. 1640’s]; because if all the five former ways having been attempted and faile, this will assuredly carry away the garrison, either by storme or famine.” Papillon, Practical Abstract of the Art, 99. His failure to clearly distinguish between a siege and blockade may suggest that the distinction only evolved later in the 17th century – possibly explaining Parker’s early conflation of the two tactics.
fence in the place, allowing the main field force to operate elsewhere. After several
Flanders towns were taken during the war, there was talk of simply leaving a small
blockading force to isolate their citadels rather than going to the effort of besieging them.
Such was the speculation, for example, during the siege of Tournai in 1709, while the
French commander at Rheinberg noted that “the enemies expect to capture us by famine
since they were unable to take us by force.”797 A blockade also required few troops, as is
indicated in Marlborough’s 1703 complaint over the Prince of Baden’s plans for Bonn:
“[its position] will make it necessary to have almost as many troupe for the bloquad as
might serve for the siege.”798 Bombardments promised the benefit of requiring only the
more mobile field pieces (e.g. 8-pounders) and mortars to lob bombs and red-hot shot
into a town, rather than the much heavier breaching cannon needed for a proper siege.799
The French bombardment of Liège in 1691, for example, required only 24 cannon and 12
mortars and two days of fire.800 The English envoy to Savoy Richard Hill explicitly
contrasted the uniquely resource-intensive nature of sieges with bombardment in a report
from Savoy:

796 As assumed by the Spanish military writer Santa Cruz de Marcenado in Réflexions militaires, 10:159.
797 AG A1 2151 #236 7/21/1709 and AG A1 2151 #276 7/26/1709. A similar choice was needed at Lérida in
Spain in 1707: Veenendaal, Jr., ed., Briefwisseling Heinsius, 6:615 #1220, La Sarraz to Heinsius, The
798 van ’t Hoff, ed., Marlborough-Heinsius Correspondence, 61 #101, Marlborough to Heinsius, Köln
4/21/1703.
799 As Goslinga wrote of one enemy party of 20 battalions and as many squadrons in 1711: “As they have
no heavy artillery, it will only be by treachery or un coup de main that they claim to be able to succeed.”
Veenendaal, Jr., ed., Briefwisseling Heinsius, 12:244 #407, Goslinga to Heinsius, Lillers 7/30/1711.
800 Naulet, L’artillerie française (1665-1765), 245-246.
Ever since the Duke de la Feuillade has been very busy, as if he were resolved to besiege, or to bombard us. We cannot think that he is strong enough to execute the first of those designs; but his Royal Highness [Vittorio Amadeo, the Duke of Savoy] is not strong enough to prevent the latter. The enemies have employed the last ten days in fortifying their camp, and filling it with artillery, and ammunition, which they bring from Chivas [Chivasso]. They have enough for a bombardment. They have not enough, by any means, for a siege.801

Another method, assault, might result in more attacking casualties than either a bombardment or a blockade, but if successful it would be over within a day or so, thus avoiding the days, weeks or even months that a formal siege or blockade might demand.802 The tactic of surprise was the best of all, offering the chance of gaining a town with minimal losses of both time and casualties, while requiring only a small number of troops that could be quickly assembled by concentrating detachments from several garrisons together, perhaps even lead by a partisan. The Dutch governor of Bergen-op-Zoom, the count de Noyelles, explained to Heinsius how the constraints he operated under limited his choice of tactics: “If I can attempt something with the few troops that have been left to me I will, that is, if I see an opportunity to surprise Zandvliet and capture it by coup de main, because I do not have the troops necessary to attack it dans les formes.”803 In fact, the success of these three non-siege tactics usually depended

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801 W. Blackley, ed., *The diplomatic correspondance of the Right Hon. Richard Hill... envoy extraordinary from the court of St. James to the duke of Savoy in the reign of Queen Anne: from July 1703 to May 1706*, (London: J. Murray, 1845), 621, Hill to Hedges, Turin 9/16/1705. Two years previously, Louis had decided to blockade the citadel of Nice since siege artillery was lacking. Vault and Pelet, *Mémoires militaires*, 5:124.

802 Villeroi preferred Zandvliet be captured by storm after a few hours of breaching fire, rather than by siege, which would give the enemy time to come and attempt relief. AG A1 1838, #331, Villeroi to Chamillart, 10/26/1705.

on there being little opposition from an enemy relief force, i.e. they had to take place away from the main concentration of field forces.

A siege, in contrast, was not to be undertaken lightly since it required significant planning and preparations. Among other things it demanded:

- competent engineers to direct the attacks
- thousands of men for the besieging army and many more for an observation force
- the resources and time to gather and transport the numerous artillery and tons of supplies to the site
- time to approach and breach the walls
- while along with all this effort in time and money a significant amount of blood would likely be spilled as well.

Given these requirements, attempting to convert a blockade, bombardment or surprise into a formal siege required additional time, resources and planning, as the French learned to their loss at Brussels in September 1708. Less-proficient armies, unable to muster the necessary resources and expertise, tended to replace formal sieges with bombardments, blockades, or storms. Figure D.2 illustrates the theoretical demands of each tactic.

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804 The Elector of Bavaria led 14 battalions and 18 squadrons to surprise the town with the assistance of the inhabitants. The promised fifth column never materialized, and the French attempted a brief siege that was lifted upon the approach of Marlborough’s relief army. The Spanish minister Jan van Brouchoven, graaf van Bergeyck commented that a proper siege of Brussels required far more men and artillery than they had at the site (AG A¹ 2083 #96 9/20/1708). For his part, Voysin questioned the Elector’s decision to conduct a siege “dans les formes” when the garrison had as many troops as the attackers (AG A¹ 2084 #136 11/28/1708; AG A¹ 2084, #136 11/28/1708). See also Burgundy’s comments in Baudrillart, ed., *Lettres du duc de Bourgogne au roi d'Espagne Philippe V*, 1:335 #103, Burgundy to Chamillart, Saussois 9/21/1708.

805 For an earlier example from Britain, see James Burke, “The New Model Army and the problems of siege warfare, 1648-51,” *Irish Historical Studies* 27(105) (May 1990), 7-29.
Figure D.2: Theoretical Results of Tactics

Sieges multiplied many-fold the artillery and munition requirements of a bombardment, the stamina and supply infrastructure of a blockade, as well as the manpower of a storm. For the offensive-minded commander, a siege was a unique challenge to be avoided whenever possible.

A preponderance of sieges (and, to a lesser extent, blockades), then might indicate a far more static tempo of warfare than one of bombardments, surprisals and storms. For the Military Revolution debate and siege lengths, the offensive-defensive balance remains a mystery without a comparison of the type of tactics: perhaps siege tactics *per se* did not improve much over time, because one period’s siegecraft was dominated by non-siege techniques (e.g. Parker’s long blockades) while in a later period sieges became dominant (Israel’s shorter sieges), perhaps due to improved logistics. Considering the costs of positional warfare to early modern society, it would be critical to identify each of
the tactics independently: later 17th century sieges might be shorter but still more costly than the longer blockades of previous eras (measured in absolute terms rather than relative to the State’s ability to pay, another issue worth investigating).

NON-SIEGE TACTICS

Options that promised faster results than sieges were attractive to many commanders. One reason why Vauban’s offensive legacy was limited was because his writing on siegecraft could often be ignored with few negative consequences. In reality, only a small number of fortresses required such a formalized attack, even in a “heavily-fortified” theater like the Low Countries. Describing the situation in the previous war, John Childs wrote of the Flanders theater: “Territory could only be gained by the systematic reduction of fortified towns and cities. .... Every fort, however large or small, had to be besieged and captured.” 806 This reflects the majority view among historians, but is wrong nevertheless. Time-conscious commanders tried to avoid sieges altogether, hoping to make an inexpensive gain with non-siege tactics. With this goal in mind they called on a whole range of techniques to supplement or even replace the formal siege with a much smaller investment in time and effort.

Even a far from complete sampling of such attempts in the Low Countries, found in Figure D.3 (at the end of this Appendix), shows that both sides looked to non-siege tactics with great frequency. 807 Supporting the theory that time was of prime importance and casualty-avoidance only secondary, surprise attempts were the most frequent non-

806 Childs, *Nine Years War*, 42.

807 As with the siege database, ephemeral surprises (especially failed ones) are the most difficult to discover in the sources, since they required the least resources, lasted the shortest period of time, and usually occurred away from the main concentration of field forces.
siege tactic used in Flanders during the war, at least sixteen attempts. Not only were such stratagems a low-risk option given the limited resources involved, but centuries of campaign histories and war manuals (including Classical works) gave the enterprising commander a multitude of ruses to attempt. In addition to those actually attempted, there were just as many proposals for surprisals that were never carried out, submitted by everyone from partisans to discontented townspeople to generals.808 Unlike sieges and the other non-siege tactics, they did not require significant military or engineering expertise in either planning or implementation, beyond knowledge of a secret entrance or of a fifth column or bribable gate guard. Such projects were more likely to be approved as well, since they required far fewer resources than the larger manpower requirements of a blockade or the artillery a bombardment might require.809

Surprise parties were also difficult to counter, for their slight logistical requirements made them more mobile than a siege army, more difficult for an intelligence network to detect on the march, and their intent and target more difficult to ascertain even when spotted. Sieges, on the other hand, could be prevented much more easily because of their vast logistical requirements. Villars, for example, was able to prevent a siege of Arras by simply consuming all the fodder surrounding the place while the Allies were stuck before Douai in early 1710. Coupled with a surprise’s flexibility

808 To cite just a few examples from 1710, we could mention proposals to turn over Brussels to the French as well as Condé, Calais and Boulogne to the Allies. On Brussels, see Veenendaal, Jr., ed., Briefwisseling Heinsius, 10:589 #1179, van den Bergh to Heinsius, Brussels 7/31/1710; for Calais and Boulogne, see Snyder, ed., Marlborough-Godolphin Correspondence, 3:1436 #1471, Godolphin to Marlborough, 3/16/1710 and Snyder, ed., Marlborough-Godolphin Correspondence, 3:1446 #1482, Godolphin to Marlborough, 3/25/1710. For Condé, AG A¹ 2225, #5, Bernières to Voysin 1/5/1710.

809 Such as we find, for example, in a design on Aire in Article 15 Section 2 Paragraph 1 carton 1 #13. Correspondence to all capitals mentioned frequent offers from petitioners seeking an audience.
was its efficiency when successful. A successful attempt could capture even the strongest town in a day or less, would leave the fortifications ready for immediate defense, the economic town infrastructure intact, and would cost very little in terms of manpower, gunpowder and transportation costs.\footnote{If a surprise was attempted near a concentration of the enemy, additional troops would be sent to reinforce the initial infiltration force, waiting for the infiltrators to open a predetermined gate.}

Surprisals were an ever-present threat to even the strongest fortress – constant vigilance was required to defend against a bribed gate guard or a disaffected inhabitant with knowledge of the works. However much it promised in theory, the surprise’s potential was rarely achieved in the real world. Despite many promising leads and a few notable successes, most surprise attempts were unsuccessful. Their low success rate indicates that garrisons, often tipped off by their own intelligence networks, were able to implement adequate security measures in concert with the urban militias.\footnote{See, for example, the warning sent from the Council of State of the Spanish Netherlands to its towns to keep a strong guard on watch against any surprise attempts. BL Add MSS 61193, f. 13ff, Brussels 5/20/1710.} Thus attackers turned to other methods. Related to surprise attempts, storms also offered the possibility of a quick victory. They were somewhat less popular due to the higher casualties that might result. We find several examples in the Flanders theater, but they were only successful against the small garrisons found in isolated forts and entrenched posts.

Despite a relatively low success rate, both surprisals and storms remained popular because their rapid conclusion limited logistical requirements and made them low-risk and high-gain. Even the French, on the defensive in Flanders during almost the entire
course of the war, were still able to conduct numerous attempts against enemy towns, with greatest success in 1708. A conventional judgment of the operational situation during these years showed the French consistently outnumbered and outmaneuvered, yet these tactics gave Louis the opportunity to go on the offensive. As long as the entire length of the Low Countries frontier was contested (from coastal Spanish Flanders to the Meuse river in the east), neither side was able to provide enough troops to garrison adequately the many places spread along its breadth, therefore there would always be towns vulnerable to such non-siege techniques. Dividing an army up into several smaller corps might provide more security for these towns, but they in turn would be exposed to a battle by a concentrated enemy field army. Lt.-Col. Blackadder highlighted the difference between the two sides in terms of Gallic perfidy: “...we had a design upon Ypres lately, but it has mislucked. We must leave it to the French to take towns by trick and treachery; we never get any that way. We get all we win very honourably, with our blood and the sweat of our brow.”

Less frequent, because of their greater demands, were bombardments and blockades. Attackers could bombard a town with mortars and red-hot shot from field pieces (often 8-pounders or smaller), setting fire to buildings. Louis XIV was fond of the technique, using it not only against declared enemies (setting Brussels on fire in 1695, for example), but also as a way to apply diplomatic pressure against allies of enemy states (as against Genoa in 1684). In the Nine Years’ War the Allies also resorted to such

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812 Crichton, ed., The Life and Diary of Lieut.-Col. J. Blackadder, 391 letter to his wife 6/1/1710 O.S.

measures as well, the English being particularly enthusiastic about naval bombardments of coastal French towns (e.g. Brest). They were most useful as a means to extort contributions from walled towns or as a form of economic attrition rather than as a way to capture a town; Louis’ infamous bombardment of Brussels in 1695 caused significant economic damage to the already-impoverished Spanish enemy, but did little to distract William III from his siege of Namur. In the Spanish Succession, none of the five bombardments attempted resulted in surrender.

The blockade was the least desirable of the non-siege methods for capturing a town. In most cases, even a siege was preferable to time-conscious commanders since it promised faster resolution than the much slower process of starving out a garrison. Blockades were quite rare in the Low Countries, the theater witnessing only three during the entire war. Significantly, the tactic was only used after a shorter technique failed – either an unsuccessful bombardment (Dendermonde 1706) or a late-season siege that was showing little progress and therefore little prospect of success before the end of the campaign season would force the besiegers into their winter quarters (both Gelders and Rheinberg 1702-1703). All three were also subsidiary operations, conducted by small detachments of troops operating away from the main army. The Elector of Brandenburg, commanding eighteen battalions, eight horse and two dragoon regiments, quickly abandoned his nine-day siege of Rheinberg and satisfied himself with establishing winter quarters in posts about the town – it eventually surrendered in early February.\textsuperscript{814} Nor did a two-week Prussian bombardment of Gelders with 29 mortars and 40 cannon have the

\textsuperscript{814} Vault and Pelet, \textit{Mémoires militaires}, 2:615 Détail du siège de Rhinberg.
desired effect, and the town only surrendered to blockade in late December.\textsuperscript{815} After an unsuccessful bombardment, an English detachment settled down to blockade Dendermonde while the main Allied force went on to besiege Oostende and then Menin – Marlborough informed Godolphin that “I have sent Brigadier Cadogan to see if it be possible to shute it so up, that thay can put no more succors into itt. If it can be done without weakening the army to[o] much, I am desirous to do itt.”\textsuperscript{816} The Spanish governor refused to surrender, “whereupon my Lord Duke has orderd that the place be block'd up very close, till the troops of the Allies are more at leisure to attack it with greater vigour.”\textsuperscript{817} As the summer months passed, the fortress’s expansive inundations evaporated in a drought, exposing the town’s weak fortifications in the process.\textsuperscript{818} With the waters at their lowest level in fifty years and the Allies now masters of Menin, the Duke’s brother immediately besieged the town with a detachment from the field army, taking it by force after only a week of open trenches.\textsuperscript{819} Unwilling to tie down a large number of troops for a long period of time for a relatively minor objective, contemporaries turned to blockades only when more rapid techniques had failed and when a siege was deemed impractical because of commitments elsewhere.


\textsuperscript{816} Snyder, ed., \textit{Marlborough-Godolphin Correspondence}, 1:585 #597, Marlborough to Godolphin, Rosselare 6/24/1706.

\textsuperscript{817} \textit{Daily Courant}, 7/8/1706 O.S. From the Army under the Duke of Marlborough at Harlebeck 7/10/1706.

\textsuperscript{818} The seven weeks prior to the siege (trenches were opened 20 August) saw no rain. Snyder, ed., \textit{Marlborough-Godolphin Correspondence}, 2:658 #667, Marlborough to Godolphin, Velaines 9/9/1706.

\textsuperscript{819} Veenendaal, Jr., ed., \textit{Briefwisseling Heinsius}, 5:451 #859, Albemarle to Heinsius, Helchin 8/6/1706.
Such non-siege techniques were beyond the scope of Vauban’s siege manuals, which assumed a garrison impervious to lesser efforts. That the frequency of non-siege tactics follows their duration (surprisals being the most popular, then storms and bombardments, and only then the longer blockades) illustrates the widespread interest contemporaries had in avoiding delays. Commanders were willing to suffer the higher casualties of a siege rather than a blockade if it meant shortening the length of the garrison’s resistance and thereby freeing up the main force for further projects. Numerous alternatives existed to obviate the need for a potentially-lengthy Vaubanian siege or blockade.
<table>
<thead>
<tr>
<th>Place</th>
<th>Year</th>
<th>Side</th>
<th>Tactic</th>
<th>Win</th>
</tr>
</thead>
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<td>Fr</td>
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</tr>
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<td>1702</td>
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<td>Surprise</td>
<td>No</td>
</tr>
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<td>Yes</td>
</tr>
<tr>
<td>Middelburg château</td>
<td>1702</td>
<td>Fr</td>
<td>Surprise</td>
<td>Yes</td>
</tr>
<tr>
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<td>Blockade</td>
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</tr>
<tr>
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<td>1703</td>
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<td>Yes</td>
</tr>
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<td>Bombard</td>
<td>No</td>
</tr>
<tr>
<td>Gelders (Guelders)</td>
<td>1703</td>
<td>All</td>
<td>Blockade</td>
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<td>Julich</td>
<td>1703</td>
<td>All</td>
<td>Storm</td>
<td>No</td>
</tr>
<tr>
<td>Namur</td>
<td>1704</td>
<td>All</td>
<td>Bombard</td>
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<td>Bombard</td>
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<td>Fr</td>
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<td>Bombard</td>
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</tr>
<tr>
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<td>Fr</td>
<td>Surprise</td>
<td>Yes</td>
</tr>
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<td>Ath</td>
<td>1708</td>
<td>Fr</td>
<td>Surprise</td>
<td>No</td>
</tr>
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<td>Bruges</td>
<td>1708</td>
<td>Fr</td>
<td>Surprise</td>
<td>Yes</td>
</tr>
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<td>Storm</td>
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<td>Surprise</td>
<td>Yes</td>
</tr>
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<td>Marchiennes</td>
<td>1709</td>
<td>All</td>
<td>Surprise</td>
<td>No</td>
</tr>
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<td>Leuven</td>
<td>1710</td>
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<td>Storm</td>
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<td>1710</td>
<td>Fr</td>
<td>Surprise</td>
<td>No</td>
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<td>Fr</td>
<td>Surprise</td>
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<td>Ypres</td>
<td>1710</td>
<td>All</td>
<td>Surprise</td>
<td>No</td>
</tr>
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<td>Fort Scarpe</td>
<td>1710</td>
<td>Fr</td>
<td>Surprise</td>
<td>No</td>
</tr>
<tr>
<td>Menin</td>
<td>1711</td>
<td>Fr</td>
<td>Surprise</td>
<td>No</td>
</tr>
<tr>
<td>Douai</td>
<td>1711</td>
<td>Fr</td>
<td>Surprise</td>
<td>No</td>
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Figure D.3: Non-Siege Tactics in the Flanders Theater, Spanish Succession war  
(continued)
Figure D.3 (continued)

<table>
<thead>
<tr>
<th>Place</th>
<th>Year</th>
<th>Side</th>
<th>Tactic</th>
<th>Win?</th>
</tr>
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<td>1712</td>
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<td>Surprise</td>
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<td>Fort Kenoque</td>
<td>1712</td>
<td>All</td>
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<td>Yes</td>
</tr>
<tr>
<td>Marchiennes</td>
<td>1712</td>
<td>Fr</td>
<td>Storm (twice)</td>
<td>No</td>
</tr>
</tbody>
</table>

Table Sources and Notes


Tongeren 1703: *Europische Mercurius*, May 1703, 287. Villeroi’s army arrived in early May and opened fire with several 12-pounders, whereupon the Allied garrison immediately surrendered.

Gelders 1703 bombardment: *Europische Mercurius*, January 1703, 95.


Namur 1704: *Europische Mercurius*, October 1704, 208.

Bruges 1704: *Europische Mercurius*, July 1704, 78.

Liège 1705: *Europische Mercurius*, May 1705, 312.

Dendermonde 1706 bombardment: BL Add MSS 61163, f. 223, Meredith to Marlborough 6/24/1706.

Dendermonde 1706 blockade: AG A¹ 1937, #149, from Dendermonde 6/14/1706.


Menin 1710: AG Article 15 Section 3 Menin folder, Caligny letter, 8/22/1710.

Liège 1710: *Europische mercurius*, July 1710, 128.


Arras 1712: Lecestre, ed., *Mémoires du chevalier de Quincy*, 3:107. The bombardment was successful in its objective, which was to burn the fodder stores in the town.


Marchiennes 1712: Marchiennes was stormed unsuccessfully twice on the same day. It was then besieged *dans les formes*, *Daily Courant*, #3364 7/24/1712 O.S. from Tournai 7/27/1712.
APPENDIX E

ESTIMATES OF SIEGE DURATIONS, SELECTED ALLIED SIEGES

Key

Date of Est: Date on which the estimate is mentioned by source (probably, but not necessarily, the date of the estimate).

Est Days: shows the estimated number of days remaining from the date of the estimate. In some cases, the number of days is estimated at a future point of the siege, e.g. 3 days after the artillery has started firing (listed as OA). Values in brackets indicate that these figures are calculated from the figures not in brackets. For example, in the second estimate for the siege of Menin, 15 days from the opening of the artillery (the figure cited by Marlborough) would be [8/24], since the artillery opened on 8/9.

Est Date: Estimated date the fortress would fall, when no specific number of days is given. Values in brackets indicate that these figures are calculated from the figures not in brackets. For example, in the second estimate for the siege of Menin, 15 days from the opening of the artillery (the figure cited by Marlborough) would be [8/24], since the artillery opened on 8/9.
**Actual Days:** Number of days the siege took as OT-C (I-C).

**Actual Date:** Date fortress capitulated.

**Diff from Est:** Difference between actual and estimate (negative numbers mean the length was underestimated, positive numbers that its length was overestimated).

Calculated as **Actual Date - Est Date**.

**%Diff:** Difference (how far the estimate was off) as a percent of the overall length of each siege (OT-C, since most of the estimates were made after the trenches had been opened). When a range of days was given, both %Diff are displayed. For example, an error of 2 days is not by itself large, but in a siege of only 4 days the %Diff was 50%: they under-estimated the length of the siege by half. I do not want to take this argument too far, but I would suggest that with shorter sieges, we would expect there to be fewer chances for things to go wrong (supplies interdicted, relief armies forcing the besiegers to lift the siege, etc.), so we should be surprised at high %Diff rates even for the shorter sieges.

All these estimates should be considered approximate, since they for the most part come from various non-engineer officers.
<table>
<thead>
<tr>
<th>Siege</th>
<th>Year</th>
<th>Date of Est</th>
<th>Est’d Days</th>
<th>Est’d Date</th>
<th>Actual Days</th>
<th>Actual Date</th>
<th>Diff from Est</th>
<th>Diff % Len</th>
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<tr>
<td>Venlo</td>
<td>1702</td>
<td>8/30</td>
<td>4 OT</td>
<td>[9/14]</td>
<td>13 (26)</td>
<td>9/23</td>
<td>-9</td>
<td>-69%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9/14</td>
<td>[9/28]</td>
<td>13 (26)</td>
<td>9/23</td>
<td>+5</td>
<td>+38%</td>
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<tr>
<td></td>
<td></td>
<td>9/18</td>
<td>5-6</td>
<td>[9/23-9/24]</td>
<td>13 (26)</td>
<td>9/23</td>
<td>0 to -1</td>
<td>0% or -7%</td>
</tr>
<tr>
<td>Liège</td>
<td>1702</td>
<td>10/16</td>
<td>14</td>
<td>[10/30]</td>
<td>(10)</td>
<td>10/29</td>
<td>+1</td>
<td>+10%</td>
</tr>
<tr>
<td>Huy</td>
<td>1703</td>
<td>8/16</td>
<td>14</td>
<td>[8/30]</td>
<td>9 (11)</td>
<td>8/26</td>
<td>+4</td>
<td>+44%</td>
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<td></td>
<td></td>
<td>8/20</td>
<td>10 OF</td>
<td>[8/31]</td>
<td>9 (11)</td>
<td>8/26</td>
<td>+5</td>
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<td></td>
<td></td>
<td>8/23</td>
<td>2-3</td>
<td>8/26</td>
<td>9 (11)</td>
<td>8/26</td>
<td>-1 to 0</td>
<td>-11% or 0%</td>
</tr>
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<td></td>
<td></td>
<td>8/23</td>
<td>1-2</td>
<td>8/24-8/25</td>
<td>9 (11)</td>
<td>8/26</td>
<td>-2 to -1</td>
<td>-22% or -11%</td>
</tr>
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<td>Limburg</td>
<td>1703</td>
<td>?</td>
<td>3-4 OA</td>
<td>[9/29-9/30]</td>
<td>4 (19)</td>
<td>9/27</td>
<td>+2 to +3</td>
<td>+50% or +75%</td>
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<td></td>
<td></td>
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<td>14</td>
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<td>6</td>
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<td>3 OF</td>
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<td>9/18</td>
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<td>14</td>
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<td>12 (16)</td>
<td>10/2</td>
<td>+2</td>
<td>+16%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9/22</td>
<td>8-10</td>
<td>[9/30-10/2]</td>
<td>12 (16)</td>
<td>10/2</td>
<td>-2 to 0</td>
<td>-16% or 0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10/2</td>
<td>3</td>
<td>[10/5]</td>
<td>12 (16)</td>
<td>10/2</td>
<td>+3</td>
<td>+25%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9/30</td>
<td>[6]</td>
<td>10/6</td>
<td>12 (16)</td>
<td>10/2</td>
<td>+4</td>
<td>+33%</td>
</tr>
<tr>
<td>Tournai town</td>
<td>1709</td>
<td>7/18</td>
<td>6-7</td>
<td>[7/24-7/25]</td>
<td>22 (32)</td>
<td>7/29</td>
<td>-5 to -4</td>
<td>-22% or -18%</td>
</tr>
<tr>
<td>Tournai (citadel)</td>
<td>1709</td>
<td>8/1</td>
<td>30</td>
<td>[8/31]</td>
<td>34 (NA)</td>
<td>9/3</td>
<td>-3</td>
<td>-9%</td>
</tr>
<tr>
<td>Douai</td>
<td>1710</td>
<td>4/25</td>
<td>10-14</td>
<td>[5/14-5/18]</td>
<td>53 (64)</td>
<td>6/26</td>
<td>-43 to -39</td>
<td>-81% or -73%</td>
</tr>
<tr>
<td>Béthune</td>
<td>1710</td>
<td>8/7</td>
<td>[13]</td>
<td>8/20</td>
<td>37 (45)</td>
<td>8/29</td>
<td>-9</td>
<td>-24%</td>
</tr>
<tr>
<td>Bouchain</td>
<td>1711</td>
<td>9/7</td>
<td>8</td>
<td>[9/15]</td>
<td>21 (27)</td>
<td>9/13</td>
<td>+2</td>
<td>+22%</td>
</tr>
<tr>
<td>Le Quesnoy</td>
<td>1712</td>
<td>6/19</td>
<td>8</td>
<td>[6/27]</td>
<td>15 (26)</td>
<td>7/4</td>
<td>-7</td>
<td>-46%</td>
</tr>
</tbody>
</table>

Figure E.1: Estimates of Siege Durations, Selected Allied Sieges
Sources and Notes

Venlo 9/14/1702: Snyder, ed., Marlborough-Godolphin Correspondence, 1:111 #97 Marlborough to Godolphin 9/3/1702 O.S.


Venlo 9/21/1702: Snyder, ed., Marlborough-Godolphin Correspondence, 1:112 #99 Marlborough to Godolphin, Zutendaal 9/10/1702 O.S.

Huy 8/16/1703: Snyder, ed., Marlborough-Godolphin Correspondence, 1:231 #225 Marlborough to Sarah Churchill 8/5/1703 O.S.


Limburg ? 1703: The Daily Courant, 9/20/1703 O.S.

Limburg 9/16/1703: Snyder, ed., Marlborough-Godolphin Correspondence, 1:241 #238 Marlborough to Godolphin 9/5/1703 O.S.

Limburg 9/20/1703: Snyder, ed., Marlborough-Godolphin Correspondence, 1:242 #240 Marlborough to Sarah Churchill, Verviers 9/9/1703 O.S.


Oostende 7/1/1706: Snyder, ed., Marlborough-Godolphin Correspondence, 2:594 #606 Marlborough to Godolphin, Rosselare 7/1/1706.

Menin 8/2/1706: Marlborough complained of the delays: “I should be happy if we might be sure of being masters of it by the end of this month.” Snyder, ed., Marlborough-Godolphin Correspondence, 2:631 #638 Marlborough to Godolphin, Helchin 8/2/1706.


Menin 8/16/1706: Snyder, ed., Marlborough-Godolphin Correspondence, 2:644 #651 Marlborough to Godolphin, Helchin 8/16/1706.


Ath 9/18/1706: Snyder, ed., Marlborough-Godolphin Correspondence, 2:672 #679 Marlborough to Godolphin, Grandmetz 9/18/1706.

Ath 9/20/1706: Snyder, ed., Marlborough-Godolphin Correspondence, 2:673 #681 Marlborough to Godolphin, Grandmetz 9/20/1706.


Ath 9/30/1706: Snyder, ed., Marlborough-Godolphin Correspondence, 2:690 #697 Marlborough to Sarah Churchill, Grandmetz 9/30/1706.

Tournai town 7/18/1709: Murray, ed., Letters and Dispatches, 4:549 Marlborough to Boyle, Tournai 7/18/1709.


Béthune 8/7/1710: van ’t Hoff, ed., Marlborough-Heinsius Correspondence, 512 #882 Marlborough to Heinsius, Villers Brulin 8/7/1710.

Bouchain 9/7/1711: van ’t Hoff, ed., Marlborough-Heinsius Correspondence, 563 #985 Marlborough to Heinsius, Bouchain 9/7/1711.

APPENDIX F

SIEGE ARTILLERY

I have only included in this table sieges for which I have data on at least one of the two side’s guns – 26 of the 32 sieges in the theater, including a representative sample of both short and long sieges. Most of the figures are the number of pieces firing together at one time. When this is unavailable, the total number of guns in the siege train is cited. See footnotes for details.

Generally speaking, collecting data on siege trains is extremely difficult for several reasons: not only are sources often lacking, but those accounts that do mention numbers of cannon are usually limited to when specific batteries opened fire (whether these guns came from old, abandoned batteries or added their firepower to the older batteries remains unspecified); they rarely give calibers; and they rarely report the several different measures of besieging artillery: the number of cannon in a single battery (and the number of batteries firing at one time), the number of cannon opening fire on a particular day, and, rarest of all, the total number of guns in the siege train (including how many of these were used in the siege). Therefore, this data can do no more than give a general sense of the magnitude of train sizes.
The number of garrison pieces does not necessarily indicate whether these
were all used in the siege – a lack of carriages, ammunition, battery locations, etc.
could quickly put a majority of a garrison’s guns out of service.

Key

- c/m/h/hm: cannons/mortars/howitzers/hand-mortars.
- c/m/p: cannons/mortars/pierriers.

<table>
<thead>
<tr>
<th>Siege</th>
<th>Besieger guns (c/m/h/hm)</th>
<th>Garrison guns (c/m/p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaisersweert 1702</td>
<td>80/59/6/70</td>
<td>30</td>
</tr>
<tr>
<td>Venlo town 1702</td>
<td>70/40/108</td>
<td>47/10</td>
</tr>
<tr>
<td>Stevensweert 1702</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Roermond 1702</td>
<td>54/44</td>
<td>30/2</td>
</tr>
<tr>
<td>Liège citadel 1702</td>
<td>72/48/0/200</td>
<td>42/5</td>
</tr>
<tr>
<td>Huy 1703</td>
<td>70/46</td>
<td></td>
</tr>
<tr>
<td>Limburg 1703</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Huy 1705 French</td>
<td>32/16</td>
<td></td>
</tr>
<tr>
<td>Huy 1705 Allies</td>
<td>74/34</td>
<td></td>
</tr>
<tr>
<td>Zoutleeuw 1705</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Oostende 1706</td>
<td>37/18/20</td>
<td></td>
</tr>
<tr>
<td>Menin 1706</td>
<td>60/44</td>
<td>65/6</td>
</tr>
<tr>
<td>Dendermonde 1706</td>
<td>32/15/10/80</td>
<td>22</td>
</tr>
<tr>
<td>Ath 1706</td>
<td>76/16</td>
<td></td>
</tr>
<tr>
<td>Lille town 1708</td>
<td>120/40/40/?</td>
<td></td>
</tr>
<tr>
<td>Tournai town 1709</td>
<td>130/40</td>
<td></td>
</tr>
<tr>
<td>Mons 1709</td>
<td>105/29</td>
<td></td>
</tr>
<tr>
<td>Douai 1710</td>
<td>288/80</td>
<td></td>
</tr>
<tr>
<td>Béthune 1710</td>
<td>43/26/?/170</td>
<td>27/11</td>
</tr>
<tr>
<td>Saint-Venant 1710</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Aire 1710</td>
<td>73</td>
<td>32</td>
</tr>
<tr>
<td>Bouchain 1711</td>
<td>38/8</td>
<td></td>
</tr>
<tr>
<td>Le Quesnoy 1712</td>
<td>30/24</td>
<td>46/4/3</td>
</tr>
<tr>
<td>Douai town 1712</td>
<td>50/30/0/6</td>
<td></td>
</tr>
<tr>
<td>Le Quesnoy 1712</td>
<td>72/30/12p</td>
<td>102/47</td>
</tr>
<tr>
<td>Bouchain 1712</td>
<td>40</td>
<td>23/2/2</td>
</tr>
</tbody>
</table>

Figure F.1: Siege Artillery in Selected Flanders Sieges

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Sources and Notes


Venlo town 1702: According to a French journal of the siege printed in *Le Mercure Galant*, octobre 1702, Relation de ce qui s'est passé à la defense de Venloo, depuis le 29 aoust jusqu'au 24 septembre, 327-328. For the garrison, The *Europische Mercurius* claims an enormous 160 cannon and 30 mortars, but Geldermalsen’s account indicates only 47 pieces and 10 mortars, a more likely figure given his status as field deputy in charge of supplying the artillery. Wijn, *Het Staatsche Leger*, 1:151.


Huy 1703: Rorive’s exhaustive study of the sieges of Huy indicate anywhere from 45 to 70 cannon and 30 to 46 mortars. Rorive, *La guerre de siège*, 217 and 254. According to the Relation de ce qui s'est passé à l'attaque de la ville et château de Huy written by the commander, 38 cannon and 40 mortars opened fire against Ft. St. Joseph; Huy’s château was fired on by 46 (later 56) cannon (Raoul de Linière, “M. de Millon et Marlborough aux Sièges de Liege et de Huy, 1702-3,” Revue historique et archéologique du Maine, 54 (1903), 255-256. Vault and Pelet mention 70 cannon and 46 mortars.


Huy 1705 French: Rorive, *La guerre de siège*, 217-218 and 254. Valory mentions 22 cannon and 10 mortars planning to open fire. AG A1 1835, #193, Valory to Chamillart, Huy 5/30/1705. The siege commander claims 24 24-pdr's and 6 mortars were to be used against the château. AG A1 1835, #235 Villeroi to Chamillart, Vignamont 6/6/1705.


Zoutleeuw 1705: ARA collectie Wassenaer 5, Mémoire touchant le siège de Leewe fait 8/27/1705.

Oostende 1706: This the artillery available when the siege first began. BL Add MSS 61179, ff. 151-151b, Ouwerkerk to Marlborough, Oostende 6/22/1706. See also A.J. Veenendaal Jr., “De Mémoires van Sisco van Goslinga,” 22. To the Allied siege train we must include the naval fleet that helped bombard the town (Wijn, *Het Staatsche Leger*, 2:86 note 1). Before the town was invested Goslinga’s memoirs claimed the garrison had 80 cannon. When the besieger’s guns opened fire, he


Dendermonde 1706: BL Add MSS 61335, f. 104, Mémoire de ce qui sera nécessaire pour le siège de Termonde. Marlborough indicated that they were to open fire with 36 cannon and 15 mortars. Murray, ed., Letters and Dispatches. 3:115 Marlborough to Hedges, Dendermonde, 9/3/1706. For the garrison’s guns, see Wijn, Het Staatsche Leger, 2:47.


Lille town 1708: Wijn, Het Staatsche Leger, 4:342, firing from the first parallel around 7 September.

Tournai town 1709: PRO SP 77/58, f. 127b, John Laws’ newsletter from Brussels 7/4/1709. AG A1 2159, #413, Nebermont, Tournai 7/30/1709 reports the town being battered by 109 cannon and 40 mortars on 30 July.


Béthune 1710: Wijn, Het Staatsche Leger, 2:605. CvdH 20 mentions 170 hand-mortars. The 7/1/1710 (O.S.) Postman reports the arrival of an 80-piece convoy on 6 July. From the camp near Doway 7/7/1710. For the defenders, see Wijn, Het Staatsche Leger, 2:651.


Le Quesnoy 1712: Firing 26 June. Wijn, Het Staatsche Leger, 3:160-161. Millner gives 100 cannon, 40 mortars and howitzers, with a garrison artillery of 40 guns and 8 mortars. For the garrison, see Wijn, Het Staatsche Leger, 3:165.

Douai town 1712: The total. AG A1 2382, #33, Destouches 8/18/1712. Initially the French opened fire with only 26 cannon and 20 mortars due to a shortage of horses. AG A1 2382, #18, Bernières to Voysin 8/17/1712.

Le Quesnoy 1712: Vault and Pelet, Mémoires militaires, 11:110-116. A French account lists 56 cannon, 30 mortars and 12 pierriers. AG A1 2384, #78, Vallière 9/22/1712 and AG A1 2384, #94,
Hermand to Voysin, Quesnoy 9/24/1712, f. 2. AG Article 15 Section 2 §1 Douai folder, #19 Siège du Quesnoy en 1712, f. 17 says they opened fire with 50 cannon and 18 mortars. For the garrison, see Vault and Pelet, Mémoires militaires, 11:527 Etat de l'artillerie et des munitions trouvées dans le Quesnoy 10/4/1712. The marquis de Quincy gives 50 heavy cannon and 20 mortars. Marquis de Quincy, Histoire militaire du règne de Louis le Grand, 3:184-197.

Bouchain 1712: For both the besieger's and garrison's pieces, consult AG Article 15 Section 2 §1 Douai folder, #19 Siège de Bouchain, 20.
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