

6 Empires and warfare in east-central Europe, 1550–1750: the Ottoman–Habsburg rivalry and military transformation

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The period from the sixteenth to the mid eighteenth centuries in east-central and eastern Europe saw the emergence of three major land Empires: the Ottomans, the Austrian Habsburgs, and Romanov Russia. Military historians of east-central Europe have long been pre-occupied with the profound changes in warfare observed during this period in certain parts of western Europe, commonly referred to as the ‘European military revolution’, and have tried to measure military developments in east-central Europe against those in western Europe.¹ However, while comparing military developments in east-central and western Europe may reveal interesting parallels and differences, comparing and contrasting military developments in the three eastern Empires helps better to assess the changing military capabilities of the Ottomans, Habsburgs, and Romanovs, and thus to understand the shifts in the military fortunes of these Empires. Since Russia emerged as an important military power and as the Ottomans’ main rival only in the mid eighteenth century – that is, towards the end of the period covered in this volume – the chapter focuses on the Ottomans and their Austrian Habsburg rivals.²

The main thesis of this chapter is that Ottoman expansion and military superiority in the sixteenth century played an important role in Habsburg military, fiscal, and bureaucratic modernisation and in the creation of what came to be known as the Austrian Habsburg monarchy or ‘Habsburg central Europe’. In order to match Ottoman military might, from the mid sixteenth century on the Habsburgs established a new border defence system in Hungary and Croatia, strengthened and

¹ On military revolution debate, see above, Chapter 1 n. 4. On the Habsburg–Ottoman context see Kelenik, ‘Military Revolution’; Ágoston, ‘Habsburgs and Ottomans’ and ‘Disjointed Historiography’; and Börekçi, ‘Contribution’.

² I am preparing an article that assesses Ottoman military capabilities vis-à-vis that of the Romanovs in the eighteenth century. Virginia Aksan has tackled the problem in several of her studies, e.g., Aksan, ‘Locating the Ottomans’, and *Ottoman Wars*.

renovated their forts, and centralised and modernised their military, their finances, and their bureaucracies.

However, Habsburg centralisation and military reforms remained incomplete and slow to take root. This was due in part to the Habsburgs' multiple political and military commitments (rivalry with France, the Protestant challenge in the Holy Roman Empire and the Netherlands, and Ottoman–Habsburg rivalry in the Mediterranean), but also to the limits of Habsburg imperial authority caused by Vienna's dependence on the estates in military-resource mobilisation and war-financing. Limits to Habsburg imperial authority existed in the Holy Roman Empire and the Habsburg hereditary lands, but were most obvious in Hungary, the very frontier challenged by ongoing Ottoman expansion, and the one that most needed the resources for military reforms. Although Hungary relied on Vienna for its defence against the Ottomans, the Hungarian nobility was reluctant to give up its centuries-old rights and privileges in the administration and financing of warfare (discussed in Chapter 5). The Hungarian estates (*rendek*) could and did challenge Vienna's policy not only in the Hungarian kingdom now under Habsburg rule, but also from Ottoman-ruled Hungary and the principality of Transylvania, an Ottoman vassal state established in eastern Hungary under Süleyman the Magnificent (r. 1520–66). Ottoman Hungary and Transylvania offered refuge for those Hungarians who challenged Vienna's centralising policy in repeated armed insurrections. Moreover, Transylvania, especially under its Protestant princes, Gábor Bethlen (r. 1613–29) and György Rákóczy I (r. 1630–48), challenged the Habsburgs during the Thirty Years' War in several campaigns (in 1619, 1623, 1626, and 1644) and provided the Hungarian estates with much-needed military and diplomatic support in their endeavour to protect or, when circumstances made it possible, expand their privileges at Vienna's expense.

Yet despite its multiple military commitments, its limited authority, and its deficient military, bureaucratic, and financial reforms, Vienna still managed considerably to strengthen its military capabilities vis-à-vis the Ottomans. By the end of the sixteenth century, Habsburg forces fighting in Hungary in the Long War of 1593–1606 achieved temporary tactical superiority over the Ottomans. By the end of the seventeenth century, in another long war of 1684–99, between the Ottomans and the members of the Holy League, the Habsburgs were able to match Ottoman military capabilities in terms of numbers of mobilised troops and military hardware, though even then only in alliance with the other members of the Holy League (Venice, Poland, and Russia). In the peace treaty of Karlowitz (1699), which ended the war, the Ottomans lost most of Hungary to the Habsburgs, who thus became the most powerful

monarchy in central Europe. By re-conquering and integrating central Hungary, Transylvania, and by 1718 the Banat of Temes (the last Ottoman-controlled territory in southern Hungary) into the Habsburg Monarchy, Vienna considerably extended its pool of human and economic resources for mobilisation in future war efforts. These resources were now secured by a new military border or *Militärgränze* based on the Danube River, the natural border between the Balkans and Hungary. Equally importantly, by acquiring Hungary and Transylvania, Vienna also removed the support bases of the Hungarian nobility, who in the sixteenth and seventeenth centuries had repeatedly challenged Vienna's authority and legitimacy, limited its access to military and economic resources, and compromised its strategy.

The Ottomans for their part took notice of Habsburg military reorganisations as early as the late sixteenth century. Many of the adjustments the Ottomans introduced in their military in the seventeenth century (which are discussed in Chapter 7) were in part responses to improved Habsburg military capabilities. However, Ottoman readjustment strategies led to military decentralisation, and weakened Istanbul's control over its armed forces and resources while augmenting its dependence on provincial elites and provincial military forces in war-making.

In trying to understand the decline of Ottoman military capabilities vis-à-vis the Habsburgs this chapter considers changing Ottoman and Habsburg military capabilities and border defence, as well as the role of military technology and weaponry. It argues that, by the late seventeenth century, Habsburg military, bureaucratic, and financial reforms, despite their many limitations, resulted in an army that was not only comparable in size to that of the Ottomans, but was better trained, as well equipped, and had a more efficient command structure. While advances in war-related sciences and military technology brought only modest advantages for the Ottomans' European enemies before the standardisation of weaponry and industrialisation of warfare in the nineteenth century, the role of war academies and ministries had more profound results.

Ottoman conquests and military strengths

By the sixteenth century the Ottomans had emerged as one of the most important Empires in Europe and in the territories known today as the Middle East. Theirs was an Empire only to be compared to the better-known Mediterranean Empires of the Romans and Byzantines, the similarly multi-ethnic neighbouring Habsburg and Romanov Empires, and the other great Islamic Empires of the Abbasids, Timurids, Safavids, and

Indian Mughals. In the Ottomans' emergence the turning point was the 1453 conquest of Constantinople, the capital of the thousand-year-old Byzantine Empire, by Sultan Mehmed II (r. 1444–6, 1451–81).³ The Ottomans made Constantinople their capital and the logistical centre of their campaigns, and within fifty years had cemented their rule over the Balkans and turned the Black Sea into an 'Ottoman lake', although their control along its northern and north-western shores was never complete and was exposed to Cossack and Polish–Lithuanian attacks.⁴ In 1516–17, Sultan Selim I (r. 1512–20), who had turned his attention eastwards, defeated the Mamluk Empire of Egypt and Syria, and in so doing almost doubled the Empire's territories from 883,000 km² in 1512 to 1.5 million km² in 1517. With his conquests, Selim also became the ruler of Mecca and Medina, 'the cradle of Islam', as well as of Damascus and Cairo, former seats of the Caliphs, the successors of the Prophet Muhammad. Selim and his successors duly assumed the title of 'Servant of the Two Noble Sanctuaries' (Mecca and Medina). With this title came the duty of organising and protecting the annual pilgrimage to Mecca, which gave the Ottomans unparalleled prestige and legitimacy in the Muslim world. The protection of the maritime lanes of communication between Ottoman Constantinople and Cairo thus became vital for the Ottomans for both ideological and economic reasons. This in turn necessitated that they strengthen the Ottoman navy, thus giving the originally land-based Empire a maritime dimension. Selim's conquests also led to confrontation with the dominant Christian naval powers of the Mediterranean: Venice, Spain, and the Knights Hospitaller of Rhodes. Meanwhile, protecting the Red Sea littoral against Portuguese encroachment brought the Ottomans into conflict with the Portuguese. All of these conflicts were left to Selim's successor, Süleyman I (r. 1520–66) to resolve.

In 1521, Süleyman marched against Hungary and conquered Belgrade. The next year, his navy captured the island of Rhodes, driving the Knights Hospitaller to Malta. These swift conquests in the early years of Süleyman's reign, especially in light of previous Ottoman failures (Belgrade, 1456; Rhodes, 1480) under Mehmed II, established Süleyman's image in Europe as a mighty adversary. The sultan led his armies on thirteen campaigns, threatened the Habsburg capital Vienna twice (1529, 1532), and conquered Hungary (1526–41). His victories

³ See DeVries, Chapter 2, above.

⁴ See the old view, proposed by Halil İnalcık, that the Ottomans had controlled the Black Sea littoral has recently been modified. See Ostapchuk, 'Human Landscape', and Kolodziejczyk, 'Inner lake or Frontier?'

at Rhodes (1522) and at Preveza in north-western Greece (1538) made the Ottomans masters of the eastern Mediterranean. In 1534–5, he conquered Iraq, including Baghdad, the former seat of the Abbasid caliphs. Iraq also served as a major frontier against the Safavid Empire of Persia (1501–1722), which followed Shia Islam and was the Ottomans' main rival in the east, both ideologically and militarily.

All these conquests would have been unthinkable without the Ottoman military machine and the efficient use of continuously expanding resources by the Ottoman central and provincial administration. Beyond sheer military might, however, we should not overlook the Ottomans' clever use of information gathering, ideology, propaganda, and political pragmatism, which were also of major significance. In their rivalry against the Habsburgs, Ottoman ideologues and strategists used religion, millenarianism, and universalist visions of Empire to strengthen the legitimacy of the sultan within the larger Muslim community. Similarly, Ottoman victories against Habsburg Catholicism and Safavid Shiism formed an integral part of Ottoman propaganda.⁵ In the early years of Süleyman's reign, grand vizier Ibrahim Pasha consciously propagated the sultan's image as the new world conqueror, the successor of Alexander the Great, whereas in his latter years the sultan viewed himself as 'lawgiver', or 'law abider' (*kanuni*), a just ruler in whose realm justice and order reigned.⁶ Yet as important as this kind of propaganda was, it was ultimately the Ottoman military machine through which the Ottomans conquered and ruled over the Balkans, Asia Minor, and the Arab lands.

The early-sixteenth-century Ottoman military was considered by European contemporaries to be the best and most efficient in the world. The bulk of the Ottoman army consisted of the fief-based provincial cavalry (*timar*-holding or timariot *sipahi*), whose remuneration was secured through military fiefs or prebends (*timar*). In return for the right to collect well-prescribed revenues from the assigned *timar* lands, the Ottoman provincial cavalryman was obliged to provide for his arms, armour, and horse, and to report for military service along with his armed retainer(s) when called upon by the sultan. The number of armed retainers whom the provincial cavalryman had to keep, arm, and bring with him on campaigns increased proportionately to his income from his fief. From perhaps as early as the reign of Bayezid I (r. 1389–1402), muster rolls were checked during campaigns against registers of *timar* lands in order to determine if all the cavalrymen from

⁵ See Ágoston, 'Limits of Imperial Policy'.

⁶ Fleischer, 'Lawgiver'.

a given region had reported for military duty and brought the required number of retainers and equipment. If the cavalryman did not report for service or failed to bring with him the required number of retainers, he lost his military fief, which then was assigned to someone else. The *timar* fiefs and the related bureaucratic surveillance system provided the Ottoman sultans through the late sixteenth century with a large standing cavalry army, while relieving the central Ottoman bureaucracy of the burden of revenue-raising and paying military salaries.⁷ In 1525 there were 10,668 *timar*-holding *sipahis* in the European side of the Empire, and 17,200 in Asia Minor, Aleppo, and Damascus. Based on their income, they were capable of providing at least 22,000 to 23,000 armed retainers, although some estimate the number of possible retainers at as high as 61,000. In sum, the total potential force of the standing provincial cavalry can be estimated at a minimum of 50,000 men (and perhaps as many as 90,000 men).⁸

The other component of the army was formed by the ‘slaves of the (Sublime) Porte’ (*kapıkulu*), that is, the sultan’s standing salaried army. It consisted of the sultan’s elite infantry or Janissaries, gunners (*topçus*), gun-carriage drivers (*top arabacıs*), armourers (*cebecis*), and the six divisions of salaried palace cavalymen (*sipahis*, *silahdars*, right- and left-wing *ulufecis* and *gurebas*). Of these, the most important were the elite Janissaries, (from the Turkish term *yeni çeri* or ‘new army’), established under Murad I (r. 1362–89). The corps was financed by the treasury and remained under the direct command of the sultan. The replacement of Janissaries was ensured by the *devşirme* (collection) system, introduced probably also during the reign of Murad I. Under this system Christian lads between eight and twenty years old – preferably between twelve and fourteen – were periodically collected and then Ottomanised. Subsequently, they became members of the salaried central corps or were trained for government service. Having their own standing army, the sultans thus could claim a monopoly over organised violence, and did not have to negotiate with local power-brokers when they wanted to deploy operationally effective armies. As can be seen from Table 6.1, the number of salaried troops was between 15,000 and 16,000 in the first half of the sixteenth century, but it increased by 75 per cent during the reign of Süleyman I.

⁷ The system is aptly described in Káldy-Nagy, ‘First Centuries’, and Imber, *Ottoman Empire*, 193–206.

⁸ Káldy-Nagy, ‘First Centuries’, 161–2. Murphey, *Ottoman Warfare*, 37–9, using the same source, estimated the number of potential retainers at 61,520, and that of the total potential *Timariot* cavalry force at 99,261, but his numbers seem too optimistic.

Table 6.1. *The number of salaried troops in the first half of the sixteenth century.*

	1514–15	1527–8	1567–8
Janissaries	10,156	7,886	12,798
Gunners	348	696	1,204
Gun-carriage drivers	372	943	678
Armourers	451	524	789
Palace cavalry	5,316	5,088	11,044
Total standing army	16,643	15,137	26,513

Data are from the Ottoman treasury balance sheets that give the number of troops paid from the treasury. See Özvar, 'Osmanlı Devletinin', 237; data for 1527–8 and 1567–8 were published by Káldy-Nagy, 'First Centuries', 167–9.

In addition to the provincial cavalry and the standing salaried army, two more groups, the *azabs* – a kind of peasant militia serving as foot-soldiers during campaigns, in fortresses and on ships – and the freelance light cavalry, the *akıncıs* or 'raiders', were also militarily significant, numbering several tens of thousands in the first decades of the sixteenth century.⁹ In sum, Süleyman probably could count on an army whose strength on paper was close to 90,000 or 100,000 men, of which he routinely mobilised between 50,000 and 60,000 troops for his campaigns.

The Ottomans also showed genuine interest and great flexibility in adopting weaponry and tactics that originated in Christendom. They not only adopted firearms at an early stage of the development of their armed forces (in the latter part of the fourteenth century), but were also successful in integrating gunpowder weaponry into their military by establishing a separate artillery corps as part of the sultans' standing army in the early fifteenth century. In much of western Europe, by comparison, artillerymen remained a transitory category somewhere between soldiers and craftsmen well into the seventeenth century. The Ottomans also established cannon foundries and gunpowder works in Istanbul and the major provincial capitals throughout the Empire. In this way they became self-sufficient in weapons and ammunition production, which also enabled them to establish long-lasting firepower superiority in eastern Europe, the Mediterranean, and the Middle East. At Çaldıran (1514) on the eastern frontier the Ottomans had some 500

⁹ During Süleyman's 1521 campaign against Belgrade the *akıncılar* numbered 20,000. See Káldy-Nagy, 'First Centuries', 170.

cannon, whereas the Safavids had none. At Mohács (1526) the Ottomans employed some 240 to 300 cannon, whereas the Hungarians used 85. By the mid fifteenth century, when Ottoman technological receptivity was coupled with mass-production capabilities, self-sufficiency in the manufacturing of weapons and ammunition, and top-quality Ottoman logistics, the sultans' armies gained superiority over their European opponents, which they were able to maintain until about the end of the seventeenth century.¹⁰

When Süleyman's forces captured Belgrade (1521) and the neighbouring forts, the Ottomans assumed control over the whole Danube region as far as Belgrade and effectively destroyed a major section of the medieval Hungarian defence system, established by King Sigismund of Luxembourg (r. 1387–1437) and his successors. The country now lay open for a major Ottoman invasion, which duly occurred in 1526. In the battle of Mohács (1526) Süleyman's army of between 60,000 and 70,000 men annihilated the much smaller Hungarian army (26,000 men) and killed King Louis Jagiellon (r. 1516–26).¹¹ Although the sultan marched to Hungary's capital Buda, he did not occupy the country, and did not annex it to his Empire. Instead it was the election of two kings, Ferdinand I of Habsburg (r. 1526–64) and the pro-Ottoman János Szapolyai (r. 1526–40), to the Hungarian throne by competing factions of the Hungarian nobility, and the ensuing civil war between them, that together with the presence of Ottoman armed forces in southern Hungary secured Ottoman control over Hungary for the time being.

With Szapolyai's death in 1540, Ferdinand launched a military campaign aimed at assuming control over Hungary. From the perspective of the Ottoman capital, this threatened to upset the balance of power in central Europe between the two Empires. It prompted Süleyman to conquer the strategically important central lands of Hungary together with its capital city Buda, which controlled the Danubian waterways into central Europe. The Ottoman-held parts of the country were soon transformed into two provinces, that of Buda (1541–1686) and Temeşvar (R. Timișoara, 1552–1716).¹² Hungary's strategically less important eastern territories were left by the sultan in the hands of

¹⁰ See Ágoston, *Guns*, and 'Turkish War Machine'; cf. Murphey, Chapter 7, below.

¹¹ Perjés, *Fall*; cf. Veszprémy, Chapter 5, above.

¹² Many of these places had several name forms. Unless the name has a widely accepted English form (such as Belgrade), I follow contemporary usage but also give present-day name forms for easier identification. Abbreviations used: Cr. = Croatian, G. = German, Gr. = Greek, Hu. = Hungarian, Ott. = Ottoman Turkish, Pol. = Polish, Serb. = Serbian, Sl. = Slovak, R. = Romanian.

Szapolyai's widow and infant son, and soon became the principality of Transylvania, an Ottoman vassal state.¹³ Ferdinand's attempt in 1542 to expel the Ottomans from Buda ended in humiliation, and lack of adequate commitments of Habsburg resources in the 1540s led to the tripartite division of Hungary and turned the country into the main continental battleground between the two major Empires of the age, that of the Habsburgs and that of the Ottomans.

The Ottomans soon occupied and fortified the main forts of Hungary, and in the 1540s and 1550s deployed in them some 15,000 garrison soldiers, whose number reached between 18,000 and 20,000 by the 1570s and 1580s. With approximately 7,000 *timar*-holding *sipahis*, who in Hungary also manned the border forts, the total number of Ottoman soldiers in Hungary probably reached 25,000 in the latter part of the sixteenth century.¹⁴ The Habsburgs, who from 1526 were kings of Hungary and thus inherited from their predecessors on the Hungarian throne the burden of halting further Ottoman advances in central Europe, now faced this formidable Ottoman military machine.

The Habsburgs and the new Military Border in Hungary

Retaining only the western and northern parts of the Hungarian kingdom, Ferdinand and his Hungarian supporters faced the challenge of establishing a new border defence system that could contain further Ottoman inroads into central Europe and protect Ferdinand's hereditary lands and kingdoms; as well as the city of Vienna, the Habsburg capital, which was situated only some 220 km to the west of Buda, the centre of the newly created Ottoman province in Hungary.

Facing imminent Ottoman conquest, members of the Hungarian nobility and their kings tried to use all possible structures to defend their frontier. A new line of fortifications was established in the middle of Hungary, following the hills, mountains, and river systems of Transdanubia and northern Hungary – the only possible natural defence line that the topography of the region offered. However, these hasty constructions were insufficient in the face of Ottoman mastery of the art of siege warfare. Between 1521 and 1566 only thirteen castles were able to resist Ottoman firepower for more than ten days, and only nine for more than twenty days. In this period only four forts managed

¹³ Fodor, 'Ottoman Policy towards Hungary'; Oborni, 'Die Herrschaft Ferdinands I. in Ungarn'.

¹⁴ Hegyi, *A török hódoltság*, I, 156–66.

to repel Ottoman sieges (Kőszeg in 1532, Temesvár in 1551, Eger in 1552, and Szigetvár in 1556) and the latter three were all to be captured by the Ottomans before the end of the century.¹⁵

In view of these Ottoman successes, Vienna assumed a central role in organising and financing the defence of Hungary, especially after the establishment of the Aulic or Court War Council (*Wiener Hofkriegsrat*), the central administrative office of Habsburg military affairs in 1556.¹⁶ The Habsburgs hired Italian military architects and engineers to direct and supervise the modernisation of the most important forts. In the case of the strategically most important forts, such as Győr, Komárom, (Sl. Komarno), Érsekújvár (Sl. Nové Zámky), Kassa (Sl. Košice), Nagyvárád (R. Oradea), and Szatmár (R. Satu Mare), the entire town was fortified, thus creating ‘fortified towns’ (*Festungstädte*) of the type well known in Italy, France, and the Netherlands.¹⁷

The new crescent-shaped defence line stretched some 1,000 km in length from the Adriatic Sea to northern and north-eastern Hungary (see Map 7), and comprised between 120 and 130 large and small forts and watchtowers in the late sixteenth century, and some 80 to 90 in the next century. The strategically more significant sections of the Hungarian border were heavily fortified. In 1607, the important section 400 km in length between the Muraköz region (between the rivers Drava and Mura in southern Hungary, now Međimurje in northern Croatia) and Murány (Muraň in modern Slovakia) was protected by 60 garrisons, which meant 15 forts per 100 km section, whereas the comparable ratio was 11.5 in the Spanish Netherlands and 8 in France and the Holy Roman Empire.¹⁸ In the 1570s and 1580s, some 22,000 soldiers guarded the entire border, which was comparable in size to the Ottoman garrison forces deployed by Istanbul in Hungary.

The Habsburgs and the Hungarian estates: interdependence and compromise

The main office of Habsburg military administration was the Court War Council. Although responsible for the recruitment, armament, and supply of troops, as well as for the maintenance of arsenals, warehouses, and border forts, the Court War Council had limited financial authority. More importantly, in the sixteenth century the Habsburg

¹⁵ Marosi, *XVI. századi váraink*, 32.

¹⁶ On the development of the defence system see Pálffy, ‘Origins’.

¹⁷ Gecsényi, ‘Ungarische Städte’.

¹⁸ Cigány, *Reform*, 67–8.

monarchy was still in transition from a 'domain-state' to a 'tax-state'. Revenues came from two main sources: *camerale* and *contributionale*. The monarch's *camerale* or 'ordinary revenues' came from his shrinking domain lands, mines, and customs duties, and were supposed to cover the expenditures of the court. *Contributionale*, on the other hand, were considered 'extraordinary' subsidies to meet emergency military expenses, and had to be voted by the estates. While the Court War Council administered 'extraordinary' taxes, ordinary cameral revenues were administered by the Court Chamber (*Hofkammer*) or Treasury, set up by Ferdinand I in 1527.¹⁹

The Court Chamber in Vienna was the main administrative body of financial affairs in the Austrian Habsburgs' lands. However, its subordinate provincial chambers in Prague for Bohemia (from 1527), Breslau (Wrocław) for Silesia (from 1557), Pozsony (Sl. Bratislava) for Hungary (from 1528), and Kassa for Upper Hungary (from 1567) also administered cameral revenues in their respective parts of the monarchy. Two of the above-mentioned chambers, the Hungarian Chamber (*Camera hungarica*) in Pozsony and the Zipser Chamber (*Camera scepusiensis*) in Kassa, along with the Lower Austrian Chamber (*Niederösterreichische Kammer*) in Vienna, played a crucial role in administering revenues from Hungary and paying the garrisons in Hungary and Croatia.²⁰

The tax base of the Habsburgs in Hungary was limited: Ferdinand usually managed to collect revenues only from about thirty-two or thirty-three of the seventy-two counties of pre-Mohács Hungary. He collected some 400,000 to 640,000 *forints* from Hungary, which amounted to 25 to 30 percent of his total revenues from his kingdoms. Of his successors, Maximilian I's (r. 1564–76) revenues from Hungary totalled 642,000 *forints* and those of his successor, Rudolf I (r. 1576–1608), about 550,000 *forints*.²¹ These revenues were insufficient to cover the salaries of the garrisons stationed in the Hungarian–Croatian border forts, which by the last years of Ferdinand's reign amounted to approximately 800,000 *forints* (1 million Rhenish florins). Moreover, soldiers' pay was only one, albeit the most substantial, defence-related expense. The costs of rebuilding forts, maintaining the Danubian river flotillas in Komárom and Győr, and of military administration, intelligence, and communication have been estimated at about 400,000 to 500,000 *forints* per year. Thus the total annual cost of the Hungarian–Croatian

¹⁹ Schulze, 'Emergence and Consolidation'; Bonney, 'Revenue.' On the Austrian Habsburgs see Winkelbauer, 'Finanzgeschichte', 184–7.

²⁰ Kenyeres, 'Finanzen', and 'Einkünfte'.

²¹ Kenyeres, 'Einkünfte', 145–6.

Military Border amounted to between 1.7 and 2.1 million *forints*, which equalled Ferdinand's total annual revenues from his kingdoms and provinces.²²

The Habsburgs' non-Hungarian lands and the Holy Roman Empire were also required to contribute to the defence of Ferdinand's Hungarian kingdom. The imperial aid, however, was somewhat contingent because Hungary, unlike Bohemia, was not part of the Reich, and thus the imperial estates were obliged to finance the defences of this neighbouring country only if the Ottomans threatened the territory of the Empire or the city of Vienna, which after Charles V's abdication (1556) and Ferdinand's election as Emperor (1558) assumed the position of imperial capital (*Reichshauptstadt*). Although the Hungarian frontier was far from Speyer, Regensburg, or Augsburg, where the imperial Diet held its meetings, the 'Turkish Question' (*Türkenfrage*) and 'Turkish aid' (*Türkenhilfe*) were recurrent issues at the Diet's meetings. Between 1576 and 1606 the income from the *Türkenhilfe* amounted to 18.7 million Rhenish florins. When the Court War Council in 1613 stated that 'every province had to upkeep its respective confines in Hungary', it formulated a time-honoured practice.²³ The Croatian section of the border was maintained by the estates of Carniola and Carinthia, and the Slavonian section by the Styrian estates; the Inner Austrian lands spent more than 18 million Rhenish florins for the forts in Croatia and Slavonia in the sixteenth century. The Kanizsa border area (and, after Kanizsa's conquest by the Ottomans in 1600, the forts facing Kanizsa) was financed by the Styrian, Hungarian, and imperial estates; the Győr section by the estates of Lower Austria and the Reich; the mining-town or Lower Hungarian border area by the Bohemian and Moravian estates; and the Upper Hungarian section by the Hungarian, Silesian, and imperial estates.²⁴

Owing to their dependence on the Emperor-king's other kingdoms, the Hungarian estates eventually lost control over military and financial affairs. However, since they continued to administer substantial revenues through the two Hungarian Chambers, the Hungarian estates managed to retain some influence over defence policy. Equally importantly, it was the Hungarian nobility who provided a much-needed workforce for the strengthening and modernising of the border forts. The *gratuitus labor*, a new extraordinary tax introduced by Ferdinand, was in fact the uncompensated labour of the peasants, which was approved and administered by the estates. Similarly, without the *allodia*, or

²² Pálffy, 'Preis für die Verteidigung', 32–3.

²³ *Ibid.*, p. 000.

²⁴ *Ibid.*, 34–9, 43; Czigiány, *Reform*, 63

freeholds of the Hungarian aristocracy, the provisioning of the garrison soldiers would have been unthinkable. The *allodia*'s contribution to the soldiers' pay was crucial, especially when the soldiers might go unpaid for months, which became increasingly the case in the seventeenth century, especially during the Thirty Years' War.

The interdependency of Vienna and the estates resulted in the dual nature of the administration of the border defence system. Two types of captain-generalcy were created, controlled respectively by the Viennese War Council and the Hungarian estates. The border defence was primarily the responsibility of the captain-generals of the borders (*Grensobrist/Grensoberst* or *supremus capitaneus confiniorum*). The country was divided into smaller border areas (*Grenzgebiete*) in which these captain-generals controlled the main forts, built, modernised and maintained by the central power. At the same time and in the same territories, so-called district captain-generals (*Kreisobrist/Kresoberst* or *supremus capitaneus partium regni Hungariae*) were in charge of smaller forts of secondary importance, as well as of the obsolete forces at their disposal, made up of noble, county, and town troops and a small force of several hundred cavalry and infantry paid by the Habsburg rulers. While the captain-generals of *Grenzgebiete* could be from neighbouring Habsburg lands or Hungarian lords acceptable to the Aulic War Council, the less important district captain-generals were almost exclusively native Hungarians.²⁵

Growing Habsburg military power in Hungary: winning over the estates

The establishment and manning of the military border led to increased militarisation of Hungarian society. By the 1570s, a quasi-permanent military force made up of the Hungarian soldiers of the border forts had emerged; their number in the four captain-generalcies in Hungary proper was about 11,000 in the 1580s and about 14,000 to 15,000 in the mid seventeenth century. Although most of them were of peasant origin, in return for their military service they gained privileges similar to that of the nobility.²⁶ By the seventeenth century all the captain-generals, save those of the strategically most important, Győr, came from Hungary's most influential landowning aristocrats. Thus the estates gained crucial control over the Hungarian soldiery deployed in royal forts.

²⁵ Pálffy, 'Origins', 39–49.

²⁶ Czigány, *Reform*, 102–3.

In addition to these garrison soldiers paid at least partly by Vienna, the Hungarian landowning aristocrats also had their own private armies. Estimates regarding the combined strength of the private armies of the Hungarian landowning magnates vary between 10,000 and 20,000 men in the seventeenth century. To this one should add at least 8,000 to 15,000 (or perhaps as many as 20,000 to 25,000) *hajdú* soldiers. Most of these were regular soldiers serving in royal forts or imperial regiments, while others were considered semi-regular reserve forces, often employed by the magnates or the princes of Transylvania.²⁷

The ultimate dependence of the soldiers of the border forts, the *hajdús*, and the members of the serving lesser nobility (*servitor*) on their aristocrat employers (*dominus*) provided the large landowners with an effective military force and military-administrative personnel that could be used against the centralising policy of the Habsburgs. The Hungarian soldiers of the border forts along with the *hajdús* formed the bulk of the army of István Bocskai during his anti-Habsburg uprising of 1604–6. In 1605, in return for their military service, Bocskai, who by then was elected prince of Hungary and Transylvania, collectively ennobled some 10,000 *hajdú* soldiers, liberated them from their *corvée*, and settled them in his lands in eastern Hungary.²⁸

The estates' position was further strengthened by the existence of Ottoman-held Hungary and the principality of Transylvania. Having strong personal, economic, and cultural ties with territories under Habsburg rule, these parts of the country not only offered refuge for the Hungarian rebels, but also effectively backed the estates' political demands both on the battlefields and in international diplomacy. Unlike in Bohemia, where the anti-Habsburg rebellion of the estates in 1618–20 was crushed ruthlessly, Vienna had to be more cautious in Hungary to avoid losing further territories to her arch-enemy, the Ottomans. Harsh absolutism provoked anti-Habsburg rebellions with the military backing of the Hungarian soldiers of the border forts, Transylvania, and even the Ottoman-held territories, and led to repeated loss of territories, either to the Ottoman vassal princes of Transylvania, or to the Ottomans. This is what happened when the princes of Transylvania, Gábor Bethlen and György Rákóczy I, led several successful campaigns against the Habsburgs during the Thirty Years' War, often with the agreement and backing of the Ottomans. In 1619 Bethlen, in support of his Bohemian fellow-Protestants, launched a campaign against Emperor Ferdinand II that conquered Kassa and Érsekújvár, two key forts of the

²⁷ Nagy, "Megint fölzánt magyar", 81–96.

²⁸ Rácz, *Hajdúk*; Nagy, *Hajdúvitézek*.

Habsburg Military Border and seats of two general-captaincies; then, in 1620, the Hungarian nobles assembled at the Diet of Besztercebánya (Ger. Neusohl; Sl. Banská Bystrica), dethroned Ferdinand, and elected Bethlen as their king (1620). By the treaty of Nikolsberg (1622) Bethlen conceded his claim to St Steven's crown to Ferdinand, while Ferdinand ceded seven counties in Upper Hungary to Bethlen and guaranteed to continue financing their garrisons. The terms were renewed in 1624 and 1626 after subsequent campaigns by Bethlen in 1623 and 1626, and in 1645 after György Rákóczy I's campaign, though following Rákóczy's death in 1648 the Habsburgs regained five of these counties. Bethlen could have commanded 8,000 troops in 1619–20, 10,000 in 1623, and perhaps 20,000 in 1626, whereas Rákóczy's army is estimated at 15,000 men in 1644–5. The overwhelming majority of them (80 to 90 per cent) were *hajdús*.²⁹

Nevertheless, despite persistent financial constraints and frictions between the ruler and his Hungarian estates, the interdependence of Vienna and the Hungarian estates in the face of constant Ottoman threat made the uneasy compromise work. Although individual fortresses, including the most up-to-date, fell to Ottoman artillery assaults despite costly modernisation, the Military Border as a defence system was able to defend the Habsburg hereditary lands and the remaining territories of the Hungarian kingdom.

More crucially, with the Habsburg takeover of Hungary and Transylvania after the re-conquest of Hungary from the Ottomans in the wars of 1684–99, the Hungarian estates lost the military and diplomatic support that they had previously enjoyed during their anti-Habsburg insurrections. In 1688, as a token of their gratitude for the dynasty that expelled the Ottomans from their country, the Hungarian estates gave up their centuries-old right to resist the dynasty (*ius resistendi et contradicendi*) along with their right freely to elect their kings, thus accepting the Habsburgs as their hereditary sovereigns. While on the surface the insurrection and anti-Habsburg war of Ferenc Rákóczy (1703–11) seemed yet another anti-Habsburg rebellion of the type of Bocskai, Bethlen, and György Rákóczy, in fact it took place in radically changed circumstances and with higher stakes. By 1703, both the principality of Transylvania and Ottoman-held Hungary, from where the insurgents had received military support and found refuge in the seventeenth century, were in Habsburg hands. What was at stake in the 1703–11 insurrection was the new administration of the country and the estates' role in it. The defeat of the estates'

²⁹ Nagy, "Megint fölszánt magyar", 91, though he gives larger figures.

rebellion and the ensuing compromise further strengthened the sovereign's power vis-à-vis the Hungarian estates and his hold over the newly acquired country and its resources.

Habsburg military strength vis-à-vis the Ottomans

On the battlefield against the Ottomans, the Habsburgs employed troops that were at the cutting edge of European military technology and tactics as early as the late sixteenth century. As with the modernisation of defences, some of the changes the Habsburgs introduced in their field armies were also, at least partly, prompted by Ottoman firepower superiority. Lazarus Freiherr von Schwendi, the captain-general in Upper Hungary (1565–8), emphasised the importance of firearms as a counter to the arquebus-armed Janissaries. He advised his Emperor to enrol Spanish and Italian arquebusiers as well as horsemen equipped with this weapon.³⁰ Others seconded his views. At the 1577 military conference in Vienna, most experts were of the opinion that 'for the time being, hand firearms are the main advantage of Your Majesty's military over this enemy [i.e. the Ottomans]'.³¹ From the 1570s onwards, the Austrian Habsburgs modernised the divisions of their military deployed in Hungary against the Ottomans. In so doing they made use of the experience gained by the Spanish armies fighting in Flanders, troops considered by historians to be at the cutting edge of contemporary military art. The proportion of Habsburg infantry soldiers carrying firearms fighting in the Long Hungarian War of 1593–1606 against the Ottomans is said to have been as high as in the army of Flanders.³² Even though the sources – the *Bestellungen* or recruitment contracts – upon which such observations are based should be treated with greater scepticism, they signalled a significant change in the way Habsburg firepower was deployed. The Ottomans were quick to notice the Habsburgs' improved military capabilities. However, their responses not only failed to maintain their previous advantage, but also, in the long run – especially when exacerbated by a series of social and economic crises – were ruinous.

More importantly, after the Thirty Years' War, the Habsburgs managed to keep some of their regiments, and thus to establish their standing army. Again, estimates regarding the size of the Habsburg standing army in various years vary greatly, but Figure 6.1 should give the reader some sense as to its strength.

³⁰ Parry, 'Manière de combattre', 225.

³¹ Geőcze, 'Hadi tanácskozások', 658.

³² Kelenik, 'Military Revolution', 154.

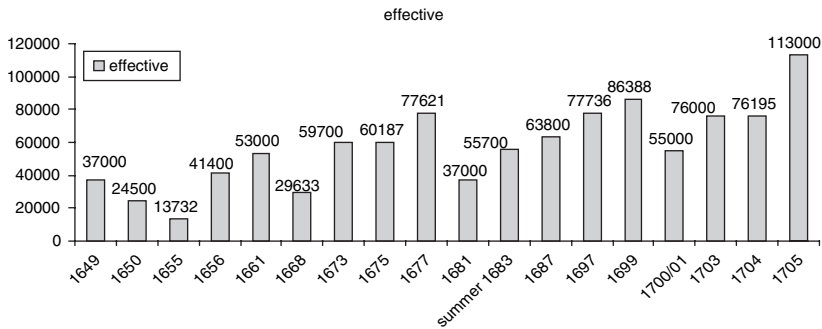


Figure 6.1 Effective strength of the Habsburg standing army.

However modest these figures might be in comparison with French army strength, they marked a major change in Habsburg military and bureaucratic capabilities. For the first time in their long confrontation with the Ottomans, the Habsburgs were able to enlist, pay, and deploy armies that were comparable in size with that of the Ottomans, even if reductions usually followed the cessation of hostilities, for state finances and bureaucracies were still unable to upkeep such large numbers in the long run. But as we shall see, this was also the case in the Ottoman Empire. Moreover, these Habsburg troops were perceived by both parties as better trained and equipped.

The permanent army also required new forms of recruitment. The *Landrekrutenstellung* or ‘provincial recruitment’ system, which by the 1680s was the main method of raising substantial numbers of soldiers in wartime, still depended on the estates; however, reforms made the system more efficient and less expensive. From the mid seventeenth century on, and especially during and after the long war of 1684–99, the central government gradually assumed greater control over recruitment, financing, and supply. This was true even when we consider that Vienna did not achieve a measure of centralisation comparable to its European rivals over the administration of warfare until about 1740. Still, compared to the Ottomans, the control of the relevant Viennese central governmental bodies (Court War Council, Court Chamber, War Commissariat), gave substantially more oversight over war-making to the Emperor, his generals, and administrators than the sultans (or their grand viziers) of the late seventeenth and early eighteenth centuries enjoyed.

Ottoman military transformations

From the late sixteenth century on, the traditional Ottoman military, fiscal, and administrative systems went through major crises and

transformations, owing partly to the changing nature of warfare and tactics in Europe, which the Ottomans faced for the first time during the Long Hungarian War of 1593–1606 while fighting the Habsburgs.³³ In a treatise composed soon after the battle of Mezőkeresztes in 1596, the single major field battle of the war, Hasan Kafi al-Akhisari complained that the imperialists used the most modern types of arquebus and cannon and showed a distinct advantage over the Ottomans.³⁴ Other contemporaneous Ottoman observers made similar remarks. The Ottoman chronicler Selaniki Mustafa Efendi contended that the Ottomans ‘could not withstand the musketeers from Transylvania’. In 1602, the grand vizier reported from the Hungarian front to the sultan that ‘in the field or during a siege we are in a distressed position, because the greater part of the enemy forces are infantry armed with muskets, while the majority of our forces are horsemen and we have very few specialists skilled in the musket’.³⁵ However, the temporary tactical superiority of the Habsburg forces did not materialise in strategic advantages. On the contrary, the peace treaty of Zsitva-torok (1606) that ended the war confirmed the Ottoman conquest of two key border provinces.

However, the Ottomans introduced military reforms in order to counterbalance increased Habsburg firepower and military efficiency, and their long-standing effects proved to be disastrous. First, the Ottoman government increased the numbers of Janissaries; second, it introduced newly established formations of arms-bearing infantry, hired from amongst the vagrants of the subject population, usually designated in the sources as *sekbans* and *levends*. As a result of complex and not yet fully understood economic and social changes of the latter part of the sixteenth century, thousands of peasants became deprived of home and country, and many of these became outlaws possessing firearms – despite all efforts by Istanbul to ban the use of firearms amongst the subject population. During the long Iranian and Hungarian wars (1578–90 and 1593–1606) the government welcomed with open arms soldiers who knew how to use firearms and who could be recruited for a campaign or two and then discharged. However, these *sekbans* did not return to their villages after the campaigns. Instead, they joined the bandits or supported uprisings in Anatolia. The government used the Janissaries to put down the rebellions and,

³³ İnalçık, ‘Military and Fiscal Transformation’.

³⁴ İpşirli, ‘Hasan Kâfi el-Akhisari’, 268; also quoted from an older German translation by Parry, ‘Manière de combattre’, 228.

³⁵ Orhonlu, *Osmanlı tarihine*, 70–1; quoted in English by İnalçık, ‘Socio-Political Effects’, 199.

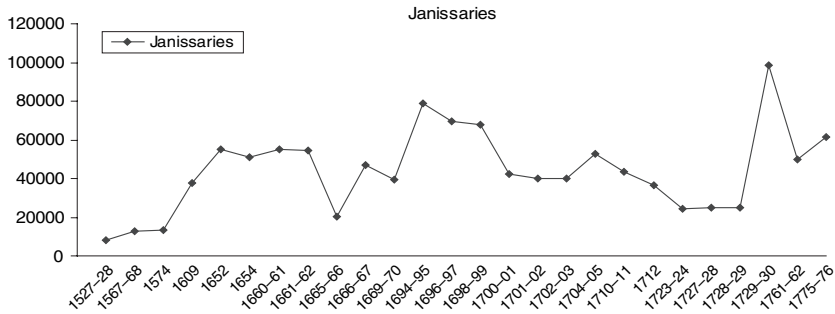


Figure 6.2 The number of Janissary troops, 1514–1776.

with this action, set the two main elements of the Empire's armed forces against one another.³⁶

The increase in the number of Janissaries also had several unwelcome consequences. Whereas the treasury had paid 12,800 Janissaries in the late 1560s, 37,600 Janissaries were on the payroll by 1609. Their number fluctuated between 51,000 and 55,000 in the 1650s and decreased considerably in the 1660s, only to reach its peak of almost 79,000 in 1694–5 during the 1684–99 war against the Holy League. It remained high (67,700 and 69,600) in the rest of the century, only to decrease again after the war. It was about 36,000 to 40,000 in the first decade of the eighteenth century, dropped even more in the 1720s, and rose again sharply in 1729–30 during the war against Iran. The number was still more than 61,000 after the Küçük Kaynarca peace treaty (1774) that ended the exhausting Russo-Ottoman war of 1768–74 (see Figure 6.2).

Although the number of Janissaries increased substantially, only a fraction of them were ever mobilised for campaigns. Many were deployed in frontier garrisons, with strategically important forts having Janissary garrisons of 1,000, 2,000, or 3,000 men.³⁷ In general, some 30 to 60 per cent of the Janissaries were on frontier duty in the 1650s and the 1710s. Even in 1691–2, during the war against the Holy League, the proportion of Janissaries in frontier garrisons was no less than 42 per cent. While those serving in forts close to the front could be, and sometimes were, mobilised for campaigns, the majority were charged with the defence of the Empire's borders (see Figure 6.3).

Not all Janissaries who stayed in Istanbul were mobilised for campaigns either. Many were pensioners or guards. In 1660–1, only

³⁶ İnalçık, 'Military and Fiscal Transformation', 283–337; Finkel, *Administration of Warfare*, 37–48; Griswold, *Rebellion*; Barkey, *Bandits and Bureaucrats*.

³⁷ Ágoston, *Guns*, 27.

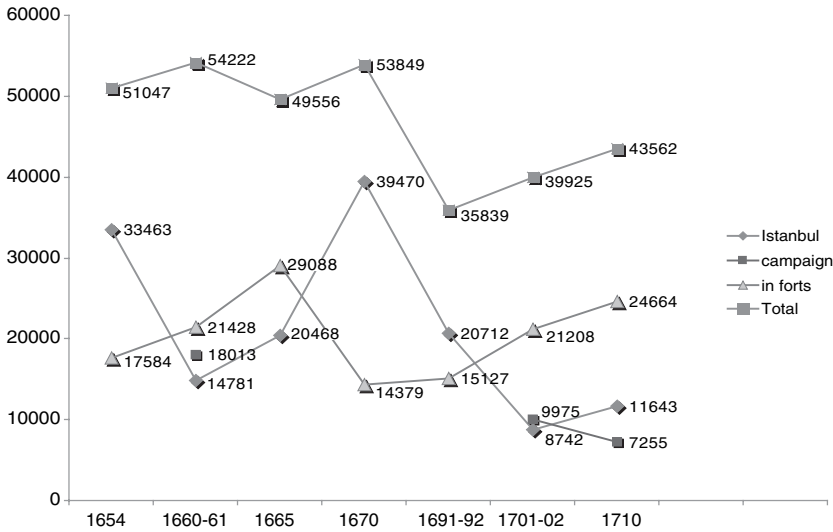


Figure 6.3 Janissaries in Istanbul and on frontier duty.

33 per cent (18,013 men); in 1697 about 30 per cent (21,000 men); in 1701–2, 25 per cent (9,975 men); and in 1710, 17 per cent (7,255 men) of the totals participated in military campaigns.

The ratios of mobilised to total troops are similar if one looks at the sultans' standing army as a whole. In 1710, during the Russo-Ottoman war of 1710–11 for instance, out of the total number of 52,337 infantry in the standing army (Janissaries, gunners, gun-carriage drivers, armourers, and their pensioners), only 10,378 men – that is, less than 20 per cent – took part in the campaign.³⁸ While narrative sources give inflated figures regarding the strength of the Ottoman armed forces, in light of the above data it is clear that the troops mobilised by the sultans from their standing army no longer outmatched that of Habsburg Austria by the early eighteenth century.

What is more, even those who participated in the campaigns performed poorly. The increased demand for troops required widening the pool of recruitment, and also led to a decline in military skills and put an additional burden on the treasury, which faced recurring deficits from the early 1590s onwards. To ease the burden on the treasury, beginning in the seventeenth century the Janissaries were increasingly paid from *timar* revenues and allowed to engage in trade and craftsmanship. By the late seventeenth century, Janissary service had been radically transformed and many Janissaries had become craftsmen

³⁸ Genç and Özvar, *Osmanlı Maliyesi*, 289.

and shop-owners, though still privileged with tax-exempt status as a reward for their supposed military service, for which they continued to draw pay.

The increase in the number of Janissaries was also related to the deterioration of the *timar* system and the provincial cavalry. New research dates the end of the 'classical' provincial administration and revenue management system to the 1610s. Revenues became administered by a gradually expanding body of beneficiaries and provincial elites, and most never made their way to the central government treasury. While in the sixteenth century the treasury administered some 58 per cent of revenues, this share shrank to 25 per cent in the next century. This in turn led to the financial and military independence of the provincial elites, whose attempts to appropriate ever larger shares of resources increased the burden on taxpayers, and thus added to the economic and social strains that led to revolts and rebellions amongst the peasant population. Since a good proportion of the emerging new elite came from the ranks of the Janissaries, their growing control over the local resources once distributed as *timars* to the provincial *sipahi* cavalry led to competition and friction on the local level between Janissaries and *sipahis*.³⁹ The latter were on the losing side, for the military value of the *sipahi* cavalry diminished greatly with increased use of firepower by the infantry. Although paper figures for the provincial cavalry rose spectacularly in the seventeenth century, only a small portion of the *timar*-holders could actually be mobilised at any given time. Their place was taken by the provincial forces maintained by provincial governors and local strongmen. The majority of such forces were recruited from the above-mentioned vagrant *levends*, and the total mobilised strength of these provincial forces could reach 50,000 to 70,000 men in the early eighteenth century.⁴⁰

Conclusion

The threat posed by Ottoman military superiority in the early sixteenth century was a crucial factor in Habsburg military, bureaucratic, and financial reforms. Owing in part to this Ottoman challenge, the Habsburgs assumed the burden of defending their newly acquired Hungarian kingdom. They established a new line of defence against the Ottomans that they modernised according to the latest standards of the age. However, until the latter part of the seventeenth century, Vienna remained dependent on the estates of the Austrian Hereditary Lands,

³⁹ Fodor, *Válallkozásra kényszerítve*.

⁴⁰ E.g. about 65,000 to 70,000 during the Prut campaign; Yıldız, *Haydi Osmanlı*, 133.

Bohemia and Hungary, for financing, manning, and supplying its forts. Beginning with the establishment of its standing field army in 1649 and through continuous military, financial, and bureaucratic reforms, Vienna gradually managed to assert ever greater control over its military capabilities, and by 1740 achieved considerable state centralisation of warfare.

The Ottomans, on the other hand, followed a reverse path. At the beginning of the period under investigation, the Ottoman sultans had substantially more control over their resources and armed forces than their Habsburg rivals. This is true even if we acknowledge that the Ottoman central administration also had to compromise and negotiate with its provincial elites and that Ottoman authority was never as omnipresent as former historiography has led us to believe.⁴¹ However, by the early eighteenth century, provincial elites appropriated a good share of the Empire's resources, with which they established and maintained their own armies. Owing to the deterioration of the *timar* system and the provincial administration, the sultans became increasingly dependent on local elites and their troops in administering their Empire, maintaining law and order in the provinces, and, more importantly, raising armies for campaigns.⁴²

Similar decentralisation can be observed with regard to the production of weapons and ammunition in the Ottoman Empire, which resulted in diminished production capabilities. While in the seventeenth century the Ottoman powder mills could annually manufacture some 761 to 1,037 tonnes of powder, this amount had fallen to 169 tonnes by the second half of the eighteenth century. Self-sufficiency in powder manufacturing ended around the mid eighteenth century. The history of weapons manufacturing is more complicated. The main producer of Ottoman cannon was the Istanbul Imperial Cannon Foundry, although the Ottoman government operated local foundries in many provincial capitals and mining centres. Ottoman stockpiles of weapons and ammunition greatly outnumbered the weapons and ammunition supplies of their Hungarian and Habsburg adversaries as late as the 1680s. During the Russo-Ottoman war of 1768–74 the Istanbul foundry, unlike the Empire's powder mills, was still operating at full steam, producing cannon in significant numbers, though contemporaries noted their poor quality.⁴³

Throughout the fifteenth, sixteenth, and seventeenth centuries, the Ottomans were successful in copying, and even improving on, European

⁴¹ See, for example, Ágoston, 'Flexible Empire'.

⁴² Aksan, *Ottoman Wars*, 54–9.

⁴³ Ágoston, *Guns*, 128–89.

weapons, by using models or the knowledge of skilled gun-founders or blacksmiths. However, they missed the scientific and bureaucratic innovations that took place in Europe during the Renaissance with its associated scientific revolution. While the overall effects of these movements on warfare became crucial by the end of the eighteenth century, they were less obvious before that. Galileo's firing tables had little practical value in an age when cannon lacked standardisation (before the mid eighteenth century); even fortress design and the building of fortifications, a field where the usefulness of mathematics for the military engineer seems most obvious, required only 'a minimum of geometry and a maximum of sound engineering common sense'.⁴⁴ The most successful engineers, such as the French master of siege warfare, Sébastien le Prestre de Vauban (1633–1707), combined these skills. However, the aggregate effect of new knowledge and intellectual techniques, accumulated through experiments with new weapons and fortifications, and through the systematic study of the enemy's military strengths and weaknesses, was crucial in the long run.

The works written by Lazarus Freiherr von Schwendi (Emperor Maximilian II's captain-general in Hungary from 1565 to 1568), Giorgio Basta (Emperor Rudolf II's commander in Hungary and Transylvania from 1596 to 1606), Raimondo Montecucoli (field marshal and commander-in-chief of the Habsburg armies from 1664 to 1680), and Miklós Zrínyi (Nikola Zrinski, a Hungarian/Croatian statesman and military leader, 1620–64) contained astute observations on the strengths and weaknesses of the Ottoman military and on how to defeat it. Luigi Ferdinando Marsigli, a Bolognese military engineer and polymath, who fought against the Ottomans in Habsburg service in the 1680s and 1690s, compiled the best concise description of the contemporary Ottoman army (*Stato militare dell'Imperio ottomano*, 1732).⁴⁵ Most of this knowledge was systematised and taught to the ever-growing number of military engineers and officers in newly established military academies.⁴⁶

Military treatises such as those that Schwendi, Montecucoli, or Marsigli wrote about the Ottoman army were wanting in the Ottoman Empire. That is to say, the Ottomans lacked works that would systematically describe the available resources, and military strengths and weaknesses of their opponents. Even more important was the lack of Ottoman war and naval academies and ministries. Starting under

⁴⁴ Wolf, 'Commentary', 33.

⁴⁵ The best analysis of these works remains Parry, 'Manière de combattre'

⁴⁶ See, for example, Hale, *Renaissance War Studies*, Chapters 8, 10.

Richelieu (1585–1642), the French ministries of war and the marine had, by the mid seventeenth century, emerged as central bureaucratic organisations responsible for the planning and conduct of war. Other European states followed suit. The Engineering Academy was opened in Vienna in 1718 in order to train Habsburg subjects in military architecture, a field that had traditionally been dominated by foreign engineers from Italy, the Holy Roman Empire, and France. The Military Academy in Wiener Neustadt was opened in 1752, and the institution had 400 places by 1769.⁴⁷

Staffed by administrators, clerks, soldiers, engineers, and map-makers (whose importance is discussed in Chapter 9), European war ministries were responsible for a wide array of tasks – from weapons improvement to clothing, and from training to the supply of weapons, food, and fodder. Improvements in weapons technology, organisation, and logistics owed much to the experiments of such ministries. They were instrumental in improving the effectiveness of European resource mobilisation, recruitment practices, and weapons and munitions industries. The new types of knowledge accumulated, taught, and systematised in the new European bureaucratic centres of war-making could not be transmitted easily. These academies also trained the new cadres of officers who were familiar with the latest improvements in military-related sciences and skills that Ottoman officers usually lacked. Moreover, as contemporary Ottoman observers recognised, the number of officers (including non-commissioned officers) and the ratio of officers to rank-and-file was substantially higher in the Habsburg armies than in their Ottoman counterparts. As a result, Habsburg commanders were better able to control their armies, which were organised into smaller and more agile units than the officers in the Ottoman army.⁴⁸

Equally importantly, by the end of the seventeenth century the Ottomans seemed less capable of adjusting their military personnel and tactics to the changed nature of eighteenth-century warfare, which in east-central Europe was dominated by open battles rather than sieges. This failure to adjust was due partly to Ottoman military culture, but also partly to Ottoman successes in siege warfare – the dominant type of warfare throughout the 150-year period of Ottoman confrontation with the Habsburgs in Hungary. The Habsburg military, fiscal, and bureaucratic reforms of the sixteenth and seventeenth centuries, including the establishment of a standing army with related bureaucratic and fiscal

⁴⁷ Hochedlinger, *Austria's Wars*, 124, 306.

⁴⁸ Part of a process examined by Rogers, Chapter 10, below.

institutions responsible for manning and supplying it, as well as actual experience in pitched battles, ultimately brought about a shift in the balance of military power towards the Habsburgs.

The strength of the European armies and the weaknesses of the Ottoman military were also noticed by Ottoman observers. Ibrahim Müteferrika (1674–1754), the Hungarian renegade and founder of arabic letter printing in the Ottoman Empire, identified as early as 1732 those characteristics that, in his opinion, ensured the strength of the European armies, and argued that it was precisely the absence of these elements that weakened Ottoman military capabilities. He praised the structure of the Christian armies; the balanced proportions of infantry, cavalry, and dragoons; and the excellent cooperation between these groups. Other laudable qualities included: superior methods of training and drilling soldiers, discipline, the high proportion of officers (at least 25 per cent), the competency of the high command, the order and defence of the camps, military intelligence and counter-intelligence, ‘geometric’ troop formations, *la manière de combattre*, and the volley technique to maintain continuous fire.⁴⁹ His evaluation repeated many of the conclusions of contemporary European observers, including Luigi Ferdinando Marsigli or Maréchal de Saxe. In 1732, the latter had claimed that ‘it is not valour, numbers or wealth that they [the Ottomans] lack; it is order, discipline and technique’.⁵⁰

⁴⁹ Müteferrika, *Milletlerin Düzeninde*, 73–112.

⁵⁰ Quoted in Parker, *Military Revolution* (1999 edn), 128.