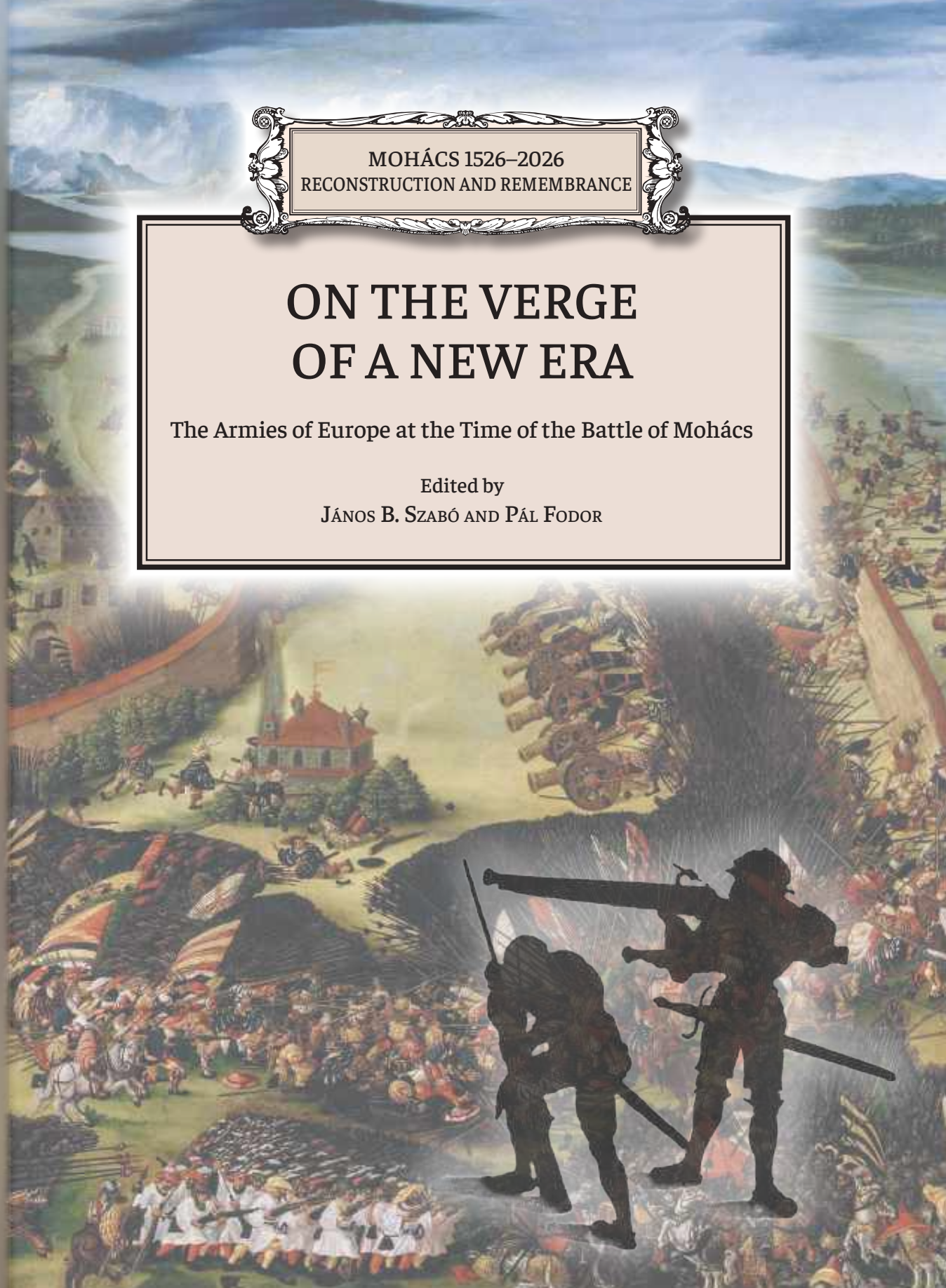




MOHÁCS 1526–2026
RECONSTRUCTION AND REMEMBRANCE

ON THE VERGE OF A NEW ERA

The Armies of Europe at the Time of the Battle of Mohács

Edited by

JÁNOS B. SZABÓ AND PÁL FODOR

ON THE VERGE OF A NEW ERA:
THE ARMIES OF EUROPE AT THE TIME OF THE BATTLE OF MOHÁCS

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Series editors:

Pál Fodor and Norbert Pap

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INTRODUCTION

On 29 August 1526, the feast of the beheading of John the Baptist, the 60–70,000-strong army of Sultan Süleyman dealt a decisive defeat on the 27,000-strong Central European army of King Louis II of Hungary, bringing a long period of Hungarian and Central European history to an end. Having been a medium-sized power (the Empire of Saint Stephen) of singular territorial and political stability for five hundred years, Hungary was divided into two parts, and then into three. For the century and a half between the middle of the sixteenth and the end of the seventeenth centuries, the central region was under Ottoman dominion and the whole area remained a zone of conflict between two great powers, the Habsburg and Ottoman Empires. That period brought constant war and unprecedented destruction to these lands. Not surprisingly, “Mohács” took on a special symbolic significance that has never waned, a *lieu de mémoire* that expresses for every Hungarian the end of the country’s “greatness” and the beginning of its “decline”. The modern Hungarian historiography that emerged in the nineteenth century gave a powerful boost to this popular conception, casting in the darkest possible terms the political and military failings of the pre-Mohács Hungarian elite.

Over the last thirty years, extensive work by Hungarian historians to revise the “dark legend” of Mohács has resulted in a much more balanced account of the ruling Jagiellonian dynasty (1490–1526) and the thirty-five years that preceded the battle. There have also been highly productive investigations of the battle itself: having been previously dismissed by military historians as an “insignificant” encounter (where the “obsolete medieval Hungarian military organization” met its end), Mohács has been revealed as one of the largest battles of the early modern period, fought between two armies that were equally “modern”.

To properly assess the wider significance of the Battle of Mohács, we need to survey the political and military developments of the time at the international scale. It took place at an epochal boundary in the course of European history, a time when warfare took new directions and there was a fundamental rearrangement of political dominance on the continent. The Kingdom of Hungary was one of the principal casualties of these changes.

The traditional “world history” approach sees the new face of Europe as being shaped by the great geographical discoveries of the late fifteenth century. In reality, even after the turn of the century, the continental powers were still much more concerned with Europe’s internal affairs. France again became a potent great power, prevailing over the English in the Hundred Years’ War in the 1450s and overcoming its main rival, the Duchy of Burgundy, in the 1470s. The opportunity thus arose for France to revive its medieval ambitions in Italy, provoking a reaction from nearly every political force in Europe.

Charles VIII of France (1483–1498), citing his Angevin kinship, renewed his claim to the throne of Naples and in 1494 embarked on an Italian campaign that became a turning point in European history. The French advance in Italy was rapid and spectacular. In their efforts to seize control of Naples and Milan, Charles VIII and – subsequently – Louis XII provoked two other powers to intervene in the peninsula: the imperial Habsburg dynasty, which held formal supreme power over most of North Italy, and the Kingdom of Aragon, which had long before put down roots in South Italy.

The Mediterranean was still the main source of wealth in Europe, because the traditional east-west trade routes that terminated in the Mediterranean region had suffered only a temporary – if spectacular – interruption from the Portuguese gains in Asia. The opportunity to seize control of the region clearly lay in the politically divided Italian Peninsula. The mosaic of small states in the Mediterranean system that had formed in the Middle Ages proved incapable of defending itself against great powers threatening from either east, north or west.

The potential for Jagiellonian-ruled Hungary and Bohemia to get involved in the struggle for Italy was naturally limited, although the strongest Italian “players”, the Holy See and Venice, were keen to bring the still-powerful Kingdom of Hungary – and indeed distant England – into the constantly-changing power games of the European continent. The Habsburgs and the French House of Valois harboured similar ideas. Hungary’s foreign affairs, however, were dominated by a single life-and-death question: the gradual shift in the balance of power with its mighty and threatening southern neighbour, the Ottoman Empire.

Neither the Jagiellonians’ neighbours nor Venice, which had been the great power of the eastern Mediterranean, could compete with the Ottomans’ enormous concentration of resources. The Polish-Lithuanian Commonwealth suffered a severe defeat in Moldavia in 1497, after which its attention and strength were tied down by the contest with the Teutonic Order in the Baltic region and the threat to its Lithuanian territories from the Grand Principality of Moscow. Poland-Lithuania thus renounced its Black Sea coastal region and attempted to establish peaceful relations with the Ottomans. Venice, having come out the loser in a maritime war, signed a peace treaty with the sultan in 1503 and subsequently became embroiled in the affairs of the Italian mainland, for a long time refraining from any military action against the Ottomans. By the beginning of the sixteenth century, the Kingdom of Hungary was therefore facing the

Ottoman threat deprived of its natural allies, and its strengthening orientation towards the Habsburgs in the 1520s did not (yet) make up for the loss.

In the meantime, warfare was going through radical changes throughout Europe, in which the Italian Wars at the turn of the fifteenth and sixteenth centuries constituted a “laboratory of warfare” for the great powers.

This book sets out to outline the general trends (Part I) and regional diversity (Part II) during a period of extreme importance for Europe, through the work of fourteen expert authors. Each chapter examines the military organization and armies of states that featured prominently in the political and military events of the time, drawing on modern national historiographies and viewpoints and showing up many points of similarity among the varied individual characteristics. Overall, the book provides a basis for comparison that may open up opportunities for further study.

The essays in the volume discuss the military affairs of each state in an approximately uniform structure. All start with the principal indicators of military capabilities: territory, population and state revenues, to make for easier comparison and to provide data by which we can gauge the standing and potential of each state, including the Kingdom of Hungary. We find that Hungary was clearly surpassed by the Ottoman Empire in terms of every indicator, but the same is true for almost every European state of the time (except perhaps France), and the real question is not why the Ottomans won at Mohács in 1526, but why thereafter they were unable to overcome the whole of Christian Europe.

This book is an enlarged and revised English version of our volume entitled *Új korszak határán: Az európai államok hadügye és hadseregei a mohácsi csata korában*. (Mohács 1526–2026: Rekonstrukció és Emlékezet) Ed. by János B. Szabó and Pál Fodor. Budapest: Research Centre for the Humanities, 2019, 295 p.

János B. Szabó

Pál Fodor

PART I
NEW TRENDS IN THE ART
OF WAR IN EUROPE
(LATE FIFTEENTH–EARLY SIXTEENTH
CENTURIES)

NEGLECTED SIXTEENTH-CENTURY BEGINNINGS:

THE NEED TO STUDY EUROPEAN TRENDS IN THE EARLY PERIOD OF THE “MILITARY REVOLUTION” THEORY

A SIXTY-YEAR-OLD THEORY

A conference on the concept of the fiscal-military state held by the Institute of History of the Hungarian Academy of Sciences on 19 June 2018¹ devoted a section to the “Military Revolution” theory. This seems to have been part of a trend: on 11 July the same year, Nottingham Trent University held the workshop *Thirty Years’ War – 400 Years on Military History and the ‘Military Revolution’ in the Early Seventeenth Century*. On 29–30 May 2018, Evora University in Portugal held a conference on the Military Revolution commemorating thirty years since the publication of Geoffrey Parker’s *The Military Revolution. Military Innovation and the Rise of the West, 1500–1800*,² of which the latest edition was planned for publication in 2018.³

Although the theory is usually credited to Parker, he himself traces it to earlier origins. He claimed in a 2005 book, published when he was a professor at Ohio State University, that the “Military Revolution” theory was fifty years old and doing well. Despite constant criticism, representatives could be found everywhere from Barcelona or The Hague to Belfast.⁴ That assertion would stand up today: monographs extending the theory have since been published in

1 *Hadügyi forradalom – fiskális állam – fiskális katonai állam Európában a 16–18. században* [Military Revolution – Fiscal State – Fiscal Military State in 16th–18th-Century Europe], a conference held at the Institute of History, Research Centre for the Humanities, Budapest, on 19 June 2018. The proceedings were published in *Századok* 152:5 (2018) 937–1149.

2 *The Military Revolution in Portugal and Its Empire (15th–18th Century)*. Host institution: CIDEHUS, University of Évora (Portugal), 29–30 May 2018.

3 <https://history.osu.edu/sites/history.osu.edu/files/ParkerG-cv16.pdf> (accessed: 03.06.2018).

4 Geoffrey Parker, ‘The “Military Revolution”, 1955–2005. From Belfast to Barcelona and The Hague’, *The Journal of Military History* 69 (2005) 205–209.

Poland and the Czech Republic,⁵ and we can also read about Irish and Indian military revolutions. In 2015, Philip T. Hoffman, an economic historian at California Institute of Technology, used the theory to interpret the world-conquering success of the “West”⁶ and in 2010, two staff of the City University of New York devoted a hefty volume to a revision and re-interpretation of the whole theory.⁷

Parker first published on the subject in 1976, but the putative “father” of the theory was a specialist in Swedish history at Queen’s University Belfast (Northern Ireland), Michael Roberts, who published his study *The Military Revolution, 1560–1660* in 1956.⁸ Roberts placed the military developments of that hundred years in a broader context: after the widespread adoption of firearms, the Dutch and Swedish “tactical revolution” of the sixteenth century developed their battlefield capabilities, and they finally eclipsed the hitherto dominant “feudal” cavalry. At the same time, European armies became much bigger, manoeuvres more complex, and wars more prolonged, increasing the burdens on society. A crucial element behind this was the strengthening of state regimes.⁹

Roberts’ book was eventually very widely cited, but did not arouse much response at the time. One reason may have been that mainstream history had moved in a very different direction after the Second World War: the dominant approach was that of historians engaged in the “Crisis of the Seventeenth Century” debate, and the similarly Marxist-rooted but more complex and strongly economic-and-social-history-oriented “War and Society” approach of “New Military History” was born at almost the same time and place and soon became highly fashionable. Consequently, Roberts’ rather purist military-history study, which conveyed to English-speaking historians the “very military”

5 Jerzy Maroń, *Wokół teorii rewolucji militarnej. Wybrane problemy*. Wrocław 2011; Petr Wohlmuth, *Bastionové pevnosti a vojenská revoluce*. (Fakulta humanitních studií Univerzity Karlovy v Praze a Ravelin, XIV.) Praha, 2015.

6 Phillip T. Hoffman, *Why Did Europe Conquer the World?* Princeton, 2015, preceded by Philip T. Hoffman, ‘Prices, the Military Revolution, and Western Europe’s Comparative Advantage in Violence’, *The Economic History Review* 64 (2011) 39–59.

7 James O’Neill, *The Nine Years War, 1593–1603: Mountjoy and the Military Revolution*. Dublin, 2017; Richard M. Eaton and Philip B. Wagoner, ‘Warfare on the Deccan Plateau, 1450–1600: A Military Revolution in Early Modern India?’, *Journal of World History* 25 (2014) 5–50; Andrew de la Garza, *The Mughal Empire at War: Babur, Akbar and the Indian Military Revolution, 1500–1605*. (Asian States and Empires) Abingdon, New York, 2016.

8 Michael Roberts, *The Military Revolution, 1560–1660. An Inaugural Lecture Delivered Before the Queen’s University of Belfast*. Belfast, 1956. New edition: Clifford J. Rogers (ed.), *The Military Revolution Debate: Readings on the Military Transformation of Early Modern Europe*. Boulder, 1995, 13–35.

9 For a broad review of recent literature, see Frank Jacob and Gilmar Visoni-Alonzo, *The Military Revolution in Early Modern Europe: A Revision*. New York, 2016.

conclusions of the nineteenth- and twentieth-century school of German military history,¹⁰ somewhat jarred with the spirit of the time.¹¹

The response to Roberts' original thesis consisted of two basic approaches. One, which we might call the "extension approach", was represented by the first substantial critic of Roberts' views, Geoffrey Parker, then a lecturer at St Andrews University and a specialist in sixteenth-century Spanish military history. In 1976, he clearly pointed out that Roberts' Dutch- and Swedish-centred views, declaredly rooted in nineteenth-century Prussian-Protestant historical traditions, did not stand the test of comparison. Parker's early work¹² made clear to everyone that the leadenly cumbersome and obsolete-seeming armies of the Spanish Habsburgs, together with – indeed ahead of – the Protestant armies that were so widely admired for their logistical abilities, tactical flexibility and weaponry, were the leading military force up to the middle of the seventeenth century.¹³

The other approach was radical criticism, challenging the legitimacy of the entire philosophy, of which perhaps the most lucid proponent at this time was David Parrott of Oxford, an expert on the French army of the Richelieu era. In a 1985 exposition that concentrated on changes in tactics and weaponry, he fairly convincingly argued that neither Spain's Eighty Years' War in the Netherlands nor the Holy Roman Empire's Thirty Years' War may be regarded as bringing "revolutionary" innovations in a general sense, because victory usually went to the army that was stronger and more experienced – or committed fewer errors – than its opponent.¹⁴

Of the two, it was the first approach that proved itself capable of being carried further. Parker immediately extended his line of thought to a longer period of time, retaining the core of Roberts' theses: he identified the primacy of the new system of fortification, the *trace italienne*, born out of the decades-long Italian Wars, which spread from Italy throughout Europe between 1530 and

10 "For a general treatment of the period, Hans Delbrück, *Geschichte der Kriegskunst im Rahmen der Politischen Geschichte*, IV. Berlin 1920, is the best authority, though this volume is on a slighter scale than is predecessor Paul Schmitthenner, *Krieg und Kriegführung im Wandel der Weltgeschichte*. Potsdam 1930." (Roberts, *The Military Revolution*, 13: note 1.)

11 Gábor Ágoston, *Európa és az oszmán hódítás*. Budapest, 2014, 146; Geoffrey Parker, *The Military Revolution: Military Innovation and the Rise of the West, 1500–1800*. Cambridge, 1988, 2; Peter H. Wilson, 'British and American Perspectives on Early Modern Warfare', *Militär und Gesellschaft in der Frühen Neuzeit*, *Bulletin* 5:2 (2001) 108–10; the early bird: George N. Clark, *War and Society in the Seventeenth Century*. Cambridge, 1958.

12 Geoffrey Parker, *The Army of Flanders and the Spanish Road 1567–1659: The Logistics of Spanish Victory and Defeat in the Low Countries' Wars*. Cambridge, 1972.

13 Similar views concerning the army of the other great European power of the time, France, were published in 1985: John L. Lynn, 'Tactical Evolution in the French Army, 1560–1660', *French Historical Studies* 14 (1985) 176–191.

14 The Protestant armies, which were in principle trained in the same way as the Dutch, suffered a series of defeats by the armies of the king of Spain and the Catholic League in the first half of the Thirty Years' War; see David A. Parrot, 'Strategy and Tactics in the Thirty Years' War. "The Military Revolution"', in Rogers (ed.), *The Military Revolution Debate*, 230–234 (paper first published in *Militärgeschichtliche Mitteilungen* 18 [1985] 7–25).

1710. He claimed that it decisively influenced European strategic thinking as wars in the area where the “Military Revolution” was spreading mostly became series of sieges. In the more advanced areas of Europe, great open battles could decide the outcome of wars “only” in areas where the new-style forts had not been built in large numbers, meaning the areas that remained outside the world of the “Military Revolution”.

He claimed that all of this had a decisive effect on the development, economy and society of early modern states. The Military Revolution was accompanied by a strengthening of central power and the emergence of absolutist states (eventually modern European nation-states), because only such major concentrations of resources were capable of maintaining the requisite stocks of artillery and systems of fortification, and of raising armies capable of taking them.

British historians of the period did not show unalloyed enthusiasm for the first, “European” version of Parker’s theses: the critical “siege” launched by some of the essays in the widely-read book *The Military Revolution Debate* of 1995, notwithstanding the date of publication, was aimed at his first version of 1976. Another significant early contributor,¹⁵ in a book he edited in 1980, was Michael Duffy of Exeter University. He demonstrated the significance of the “Ottoman challenge” to early modern Europe and incorporated the influence of maritime power into the theory. Thirdly, on the grounds of the proposed role of state development, he greatly extended the time limits of the Military Revolution.¹⁶ In 2016, Tonio Andrade identified flexibility and expandability as among the main strengths of the Military Revolution theory.¹⁷ Indeed, Parker was at that time working on extending the geographical range of the theory, and in his next book, he adopted latter two of Duffy’s considerations.

The expanded version published in 1988 broadened the scope of the theory beyond European developments and proposed that the sixteenth-century European military revolution was the engine of the world-scale European hegemony in the period 1500–1800. In regions where he did not find the signs he considered necessary, he introduced the slightly mystical explanatory concept of “resistance”.¹⁸

15 Among them was the German-born English world-war veteran Gunther Erich Rothenberg, professor at Purdue University, Indiana, who – effectively following in Roberts’ tracks – set the outstanding military commander of the Danubian Habsburg Monarchy, the Catholic Italian Raimomundo Montecuccoli against Maurice of Nassau and Gustavus Adolphus, presaging Jeremy Black’s shift in focus. Gunther E. Rothenberg, ‘Maurice of Nassau, Gustavus Adolphus, Raimondo Montecuccoli, and the “Military Revolution” of the Seventeenth Century’, in Peter Paret, Gordon A. Craig and Felix Gilbert (eds.), *Modern Strategy from Machiavelli to the Nuclear Age*. Oxford, 1986, 32–63.

16 Michael Duffy, *The Military Revolution and the State, 1500–1800*. Exeter, 1980.

17 Tonio T. Andrade, *The Gunpowder Age, China, Military Innovation, and the Rise of the West in World History*. Princetown, Oxford, 2016, 118.

18 “In fact, most of Spain also resisted the military revolutions. There were very few bastions [in Spain] before 1640, except along the frontier with France.” Parker, *The Military Revolution*, 24:

This new book, published in 1988, was based on a series of lectures delivered in Cambridge University in 1984. It embraced a global explanatory function of history, a refreshingly simple solution to a somewhat complex question: why did Western Europe become the leading region of the world in the early modern age? In addition, it appeared just when the Cold War had been won and the Eastern bloc had collapsed, among the much-mentioned causes of which were the arms race and President Reagan's "Star Wars" project. Many made the inference that past and present developments were following a similar course, the source of Cold War victory being the same as what had originally given the "West" its global hegemony.¹⁹

In this mood of euphoria, Parker's book was an enormous success. The author himself put the number of copies sold by 2016 at 30,000, and it was translated into German, Spanish and Italian in 1990, French in 1992, Japanese in 1995, Chinese in 1996, Turkish in 2007 and Korean in 2012.²⁰

All over the world, military historians – who had long been undervalued and kept in the shadows in the historical profession – grasped the opportunity to join a global historical discourse in their own discipline. The "Great Theory", however, showed some cracks early on. Parker called the subject of his book a "revolution", somewhat at odds with the fact that he had extended its period to three centuries, making it more like a kind of Braudelian *longue durée* approach. The use of the term "revolution" came in for serious criticism, and some obviously more appropriate concepts were applied to describe the dynamics of certain changes, such as the evolutionary approach and the "punctuated equilibrium" proposed by Clifford J. Rogers, but they did not make anything like such a deep impression in historical consciousness.

This kind of reconsideration and revision, however, was not characteristic of the thinking behind the use of the term "revolution".²¹ The theory had emerged in the middle of the twentieth century, just when Marxist historical philosophy was exerting its greatest influence on Western scholarship, and to describe such far-reaching changes as "revolutionary" was simply fashionable. In archaeology, for example, there came the "Neolithic Revolution",²² and in history, the "Stirrup

note 54. But why should modern and very expensive fortifications have been built in unthreatened parts of the country during long period of peace in the peninsula?

19 Geoffrey Parker, *The Cambridge Illustrated History of Warfare: The Triumph of the West*. Cambridge, 1995.

20 <https://history.osu.edu/sites/history.osu.edu/files/ParkerG-cv16.pdf> (accessed: 05.06.2018).

21 Cf. Geoffrey Parker, 'In Defense of the Military Revolution', in Rogers (ed.), *The Military Revolution Debate*, 337–365.

22 The expression "Neolithic Revolution" was coined by V. Gordon Childe in the 1920s. An interesting example of how widely the use of the term "revolution" spread is Thomas T. Allsen's "Asian perspective" on Eastern Europe: "Those states and cultures with a lengthy history of interaction with the nomads, who for so long lived under the threat and the spell of an earlier 'cavalry revolution', were the more ... hesitant to join the 'gunpowder revolution'". Thomas T. Allsen, 'The Circulation of Military Technology in the Mongolian Empire', in Nicola Di Cosmo (ed.), *Warfare in Inner Asian History, 500–1800*. Leiden, 2002, 286.

Revolution” connecting the cavalry to the birth of feudalism and the eighteenth- and nineteenth-century “Industrial Revolution”.²³

Some scholars argued that changes in warfare were more the result of demographic, economic and political factors than of technology, and proposed that the appearance of a new military technique or technology always demanded a special response. As early as 1991, the University of Durham professor Jeremy Black pointed out that we may speak of two or three revolutions rather than just one. The truly important global changes in warfare essentially took place before – or later – Roberts’ period of 1560–1660, such as the rapid spread of firearms and the appearance of efficient siege artillery, or afterwards, such as subsequently the emergence of standing armies, the combination of defence and firepower in the infantry through the bayonet, and the decline of the cavalry. We may also add a third “revolution” during the wars of the French Revolution, starting in 1789. Parker only fitted the early period of these into his theory.²⁴

Since Parker basically extrapolated Dutch phenomena – his own original field – to the European scale, a fairly broad circle of scholars concerned with the same age and similar questions in other areas were led by their own observations to a radical rejection of Roberts’ and Parker’s theses, and even of their premises. One obvious source of difficulty was that Parker, a highly esteemed and well-informed worker in his own field, had set out to study the entire early modern world on his own, at least in principle. His study of all the other areas, especially considering that the relevant scholarship was not fully accessible in either English or Spanish, could hardly have been in the same depth. Thus, the wider the arc the theory was drawn on, the more vulnerable it became to pinpricks by historians with a deeper knowledge of certain specific areas.

Jeremy Black, who started as a specialist in eighteenth-century British history, and has shown himself over the years to be a very well-rounded historian, not to mention his excellent organizational capabilities, first made comments relating to his own area but then “globalized” the criticism pouring down on Parker by editing thematic books of papers by specialists whose knowledge of specific regions was unassailably deeper than Parker’s. Black himself then used these as a basis for a series of books on Europe and the world, approximately one for each century.

Black’s emphasis on diversity in military history has had a very beneficial effect on debates on the theory, and he has worked tenaciously to show that Parker’s original, rigid centre-and-periphery model, in which the technology and knowledge base of the Military Revolution radiated directly from the centre in almost straight lines through European colonization, was untenable. It was difficult to derive from this model of early European dominance how the early

23 Lynn Townsend White, Jr., *Medieval Technology and Social Change*. Oxford, 1962; Ákos Paulinyi, ‘Revolution and Technology’, in Roy Porter and Mikulas Teich (eds.), *Revolution in History*. Cambridge, 1986, 261–289.

24 Jeremy Black, ‘A Military Revolution? A 1660–1792 Perspective’, in Rogers (ed.), *The Military Revolution Debate*, 95–115.

sixteenth-century Muslim “gunpowder empires” (the Ottomans, Safavids and Moguls) could have arisen,²⁵ or how the European effect was present in the “homeland” of gunpowder, China – and subsequently Korea – in the Ming age, when the use of various firearms was very widespread and sophisticated.²⁶ In the meantime, even Parker had to admit that the technique he had considered an almost iconic element of the Military Revolution – the combination of volley and countermarch – reached some parts of Asia, such as in mid-sixteenth-century Japan, by a route other than export from Europe.²⁷ Black’s method was eventually taken up by Parker, who started to write papers together with local specialists in areas he was less familiar with. In these, the emphases (for example, in Asian cases) fell far from those in the first edition of the book. The joint work proved fruitful: “Parker and Sanjay Subrahmanyam in a joint essay globalized the discussion – and also dodged the theory’s teleological trajectory – by considering the different ways that firearms were received by a number of Asian societies in the early modern period.”²⁸

In a delicately restrained discussion of the theory published in 2007, the University of Reading lecturer Frank W. Tallet and his co-author Davis J. B. Trim neatly summed up the outcome of the twenty-year debate thus: “However, European warfare in this period has generally been approached either from a late-medieval or from an early-modern perspective, leading to substantial confusion over whether change occurred, the nature of changes (if any) and when changes occurred (if they did) ... Certainly, while the military revolution thesis has not gained universal acceptance amongst historians of warfare, it has been widely adopted by sociologists, such as Charles Tilly and Michael Mann; by authors of general histories; and by economic historians, such as John Brewer and Jan Glete; all of whom see significant military change, if not revolution, as integral to the development of the state and to wider political developments.”²⁹

Parker, however, undoubtedly achieved a “linguistic turn” in military history, something he shares with very few of his peers, because for a long period he gave new names to the topics he embraced, which had previously been known (in relation to the sixteenth and seventeenth centuries) as “Renaissance Warfare” and (in relation to the eighteenth) as “Ancien-Regime or Absolutist Warfare”, and “Renaissance and Baroque Military Architecture”. The new expression

25 Marshall Hodgson, *The Venture of Islam: Conscience and History in a World Civilization III. The Gunpowder Empires and Modern Times*. Chicago, 1974.

26 Andrade, ‘The Gunpowder Age’, 55–72, 135–187; cf. Tonio Andrade, Hyeok Hweon Kang and Kirsten Cooper, ‘A Korean Military Revolution? Parallel Military Innovations in East Asia and Europe’, *Journal of World History* 25 (2014) 47–80.

27 Geoffrey Parker, ‘The Limits to Revolutions in Military Affairs. Maurice of Nassau, the Battle of Nieuwpoort (1600), and the Legacy’, *Journal of Military History* 71 (2007) 331–372.

28 Rolf Loeber and Geoffrey Parker, ‘The Military Revolution in Seventeenth-Century Ireland’, in Jane H. Ohlmeyer (ed.), *Ireland from Independence to Occupation, 1641–1660*. Cambridge, 1995, 66–88; Geoffrey Parker and Sanjay Subrahmanyam, ‘Arms and the Asian: Revisiting European Firearms and Their Place in Early Modern Asia’, *Revista de Cultura* (Macau) 26 (2008) 32; for a reflection, see Eaton and Wagoner, ‘Warfare on the Deccan Plateau’, 42.

29 Frank Tallett and David J. B. Trim (eds.), *European Warfare, 1350–1750*. Cambridge, 2010, 1, 7.

“Military Revolution”, as applied to the entire era, condensed into itself – or in many cases simply borrowed – the meaning of the words *effect*, *interaction*, *transformation*, *innovation*, *modernization* and *reform* and their place in the historical discourse.³⁰ Consequently, it provided a useful building block for economic and sociological history, which are much more theory-centred than military history. There have therefore appeared sideshoots of the Military Revolution debate: the state-centred theoretical framework of the early modern period and the “Fiscal-Military State” theory.³¹

KEEPING DISTANCE IN THE EUROPEAN CENTRE – A “SECOND BLOOM” IN THE PERIPHERY?

Set against all this criticism, there is also something to be learned from an examination of where Parker’s theory lives on today, or at least where its phraseology is used, and where it was unable to establish itself. It seems that within English historiography in the narrow sense, the fate of the Roberts-Parker theses was sealed at quite an early stage: since their area effectively stayed out of the great process traced by Parker for a large part of the early modern age,³² the theory of a Military Revolution offering a grand “global explanation” was challenged – or supported – by historians who identified “revolutions” of smaller extent, concerning specific periods or aspects. The start of the changes could thus slip back into the golden age of English military glory, the late medieval period, where there appeared the concept of the fourteenth-century “Infantry Revolution”,³³ and there have been revolutions associated with specific kings – Edward III in the fourteenth century and Henry VIII in the sixteenth.³⁴ By such means, it is possible to get round the question of the extent to which

30 In most cases, however, only in the sense that describes the appearance or spread of firearms.

31 For an overview, see Mark Knights, ‘Fiscal-Military State’, in *Oxford Bibliographies* (<http://www.oxfordbibliographies.com/view/document/obo-9780199730414/obo-9780199730414-0073.xml>, accessed: 10.03.2018).

32 The situation is concisely reflected in the title of John M. Stapleton, Jr’s MA dissertation of 1994 at the University of Ohio: *Importing the Military Revolution: William III, the Glorious Revolution, and the Rise of the Standing Army*. Mark Charles Fissel of Augusta University addresses the problem with subtlety and restraint in *English Warfare, 1511–1642*. London, New York, 2001, 47, 146, 181–183.

33 Clifford J. Rogers, an American historian of the Hundred Years’ War, has drawn attention to the medieval cycles in the growing significance of the infantry and the artillery, quite rightly challenging the legitimacy of the term “revolution”. Kelly de Vries recommended putting the start of the “revolution” back to the fourteenth century and claimed that no causal relationship could be found between technical development and military changes.

34 Edward III’s activities and victories were first interpreted as a “Military Revolution” by Clifford J. Rogers: ‘The Military Revolutions of the Hundred Years’ War’, *The Journal of Military History* 57 (1993) 241–278; Andrew Ayton, ‘Katonai forradalom a 14. századi Angliában’, *Aetas* 10:4 (1994) 5–27; James Raymond, *Henry VIII’s Military Revolution: The Armies of Sixteenth-Century Britain and Europe*. London, 2007.

historical accounts concerning England can be reconciled with Parker's schemas.³⁵

Surprisingly at first sight, but quite understandably, historians of the major countries that Parker identified as the core areas of the Military Revolution, countries still regarded as the advanced centres of Europe, were not full of enthusiasm for the theory: if we look at either French³⁶ or German³⁷ historiography, we find few traces of sustained and substantial adoption of Roberts' and Parker's theses. These countries obviously had their own linguistic-scholarly universes, in which they traditionally carried on their own debates on their own internal questions. An exception is the case of little Netherlands, right in the centre of the core area. At a somewhat late stage in the process, historians of the topic in that country, with their special linguistic isolation, saw the opportunity to link a very important period of their own history into the anglophone discourse, and they did so positively and thoroughly. Like Roberts right at the beginning, however, they did not expressly emphasize the importance of technical development.³⁸ Olaf Nimwegen, for example, recognizing the validity of the "tactical revolution" of around 1600 emphasized by Roberts and Parker, and following Black, placed the Dutch army within the "organizational revolution" that took place between 1670 and 1680.³⁹ Historians in the other modern state that shares the history of the sixteenth-century Netherlands, Belgium, are perhaps more divided on the topic. Some, viewing the phenomenon from the advanced francophone studies of military architecture have criticized

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- 35 This distancing is perceptible in the title of a lecture by Philip Gervaise: *England, Scotland and the European 'Military Revolution', 1480–1560*. (Richard III Foundation Symposium, Dixie Grammar School, Market Bosworth, August 2013), although he ventured an analysis for this very reason. David Eltis offers a somewhat more dismissive opinion: Eltis, *The Military Revolution*, 99–135.
- 36 The foremost French proponent of the "War and Society" approach, André Corvisier, warmly welcomed Parker's book; see *Revue Historique* 283:2 (1990) 375–376. An example of the arms-length approach is Jean Bérenger (ed.), *La révolution militaire en Europe – XV^e-XVII^e siècles. Actes du colloque... 4 avril 1997 à Saint-Cyr Coëtquidan*. Paris, 1998. The revised French version of the theory was written in the state history approach and comes close to the "Revolution in Military Affairs" (RMA) concept; see Laurent Henninger, 'La «révolution militaire». Quelques éléments historiographiques', *Mots. Les langages du politique* 73 (2003) 87–94; Michel Fortmann, *Les cycles de Mars – Révolutions militaires et édification étatique de la renaissance à nos jours*. Paris. 2009.
- 37 Despite the basically social-history disposition of German military historiography, one or two authors have taken it up, but primarily in connection with the idiosyncratic development of the German state; see Jürgen Luh, *Ancien Régime Warfare and the Military Revolution: A Study*. (Baltic Studies) Groningen, 2000; Thomas Wollschläger, *Die Military Revolution und der deutsche Territorialstaat. Determinanten der Staatskonsolidierung im europäischen Kontext 1670–1740*. S. l., 2004.
- 38 Jaap A. de Moor, 'Experience and Experiment: Some Reflections upon the Military Developments in 16th- and 17th-Century Western Europe', in Marco van der Hoeven (ed.), *Exercise of Arms: Warfare in the Netherlands, 1568–1648*. Leiden, New York, Köln, 1997, 17–32.
- 39 Olaf Nimwegen, *The Dutch Army and the Military Revolutions, 1588–1688*. Woodbridge, 2010, 1–18.

Parker for superficiality,⁴⁰ while medievalists see Charles the Bold, duke of Burgundy, as the “inventor” of the Military Revolution.⁴¹

At the same time, anglophone historiography, traditionally identifying progress with Protestantism, has been revealed as undervaluing the significance of the southern Catholic countries and neglecting the prominent figures in their history. Having in the past played an important role, these countries in the last two or three centuries have counted as merely the periphery or semi-periphery of advanced Atlantic Europe.⁴² For these lands, most of which were previously linked to the Habsburgs, Parker’s theory offers an opportunity for historical correction, although as historians of the region have found, it is in need of some addition and extension. By this means, the southern Catholic countries may be shown to have been very much part of the modernization process⁴³ and indeed to have set it in motion, starting with Parker’s iconic volley and countermarch.⁴⁴ The Italians created new quality in military architecture⁴⁵ and siege warfare, and the Spanish modernized infantry tactics and were also the first to transmit these advances to the world.⁴⁶

40 Pieter Martens, ‘Siege Warfare (Early Modern)’, in *The Encyclopedia of War*. Vol. IV. Oxford, 2012, 1987–1994.

41 Quentin Verreycken, ‘Charles le Hardi a-t-il inventé la révolution militaire?’, in Paul Delsalle et al. (eds.), *Pour la singulière affection qu’avons a luy. Études bourguignonnes offertes à Jean-Marie Cauchies*. Turnhout, 2017, 515–522. Cf. David S. Bachrach, ‘A Military Revolution Reconsidered: The Case of the Burgundian State under the Valois Dukes’, *Essays in Medieval Studies* 15 (1998) 9–17.

42 Jeremy Black, ‘Military Revolutions and Early Modern Europe: the Case of Spain’, in Enrique García Hernán and Davide Maffi (eds.), *Guerra y sociedad en la monarquía hispánica: política, estrategia y cultura en la Europa moderna (1500–1700)*. Madrid, 2006, 17–30, particularly 20–21.

43 József Kelenik, ‘The Military Revolution in Hungary’, in Géza Dávid and Pál Fodor (eds.), *Ottomans, Hungarians, and Habsburgs in Central Europe: The Military Confines in the Era of Ottoman Conquest*. (The Ottoman Empire and Its Heritage. Politics, Society and Economy, 20.) Leiden, Boston, Köln, 2000, 117–159.

44 Luís Costa e Sousa, ‘From Tangier to Alcácer Quibir. The Portuguese Military Revolution (Re) visited’, *Portuguese Studies Review* 23 (2015) 1–29; René Quatrefages, *La revolución militar moderna: el crisol español*. Madrid, 1996; Fernando Gonzalez de Leon, ‘Spanish Military Power and the Military Revolution’, in Geoff Mortimer (ed.), *Early Modern Military History, 1450–1815*. Basingstoke, 2004, 25–42; Lorraine White, ‘Guerra y revolución militar en la Iberia del siglo XVII’, *Manuscripts: Revista d’història moderna* 21 (2003) 63–93. For recent work on Italy, see Luciano Pezzolo, ‘La “rivoluzione militare”: una prospettiva italiana 1400–1700’, in Alessandra Dattero and Stefano Levati (eds.), *Militari in età moderna: la centralità di un tema di confine: Milano, 20 giugno 2004*. Milano, 2006, 15–62.

45 This possibility was discovered in Italy before the Second World War; see Leone Andrea Maggiorotti, *Architetti e architetture militari. Gli architetti militari italiani nella Spagna, nel Portogallo e nelle Loro colonie. L’opera del genio italiano all’estero*. Roma 1939.

46 Fernando Gonzalez de Leon, ‘Doctors of Military Discipline. Technical Expertise and the Paradigm of the Spanish Soldier in the Early Modern Period’, *The Sixteenth Century Journal* 27 (1996) 61–85; Eduardo de Mesa Gallego, ‘Innovaciones militares en la Monarquía Hispánica durante el siglo XVI: origen y desarrollo’, in García Hernán and Maffi (eds.), *Guerra y sociedad*, 537–552.

This debate has proved much less remunerative for Central and Eastern Europe, where until recently, only one or two isolated Polish or Czech historians have devoted much attention to the topic. They seem to have been isolated even in their own milieus, and regardless of their position on the issue, their ideas have not yet broken through the language barrier.⁴⁷ As for the Mediterranean and beyond, anglophone studies have concentrated on the great catalyst of change in the sixteenth and seventeenth centuries, the Ottoman Empire, and the terrifying great power of the future, the Russian Empire.⁴⁸ (Understandably, considering that global historiography traditionally concentrates on the great empires.) The accepting-extending interpretation also appears, as in the Spanish case, in today's Turkish and Russian historiography.⁴⁹

THE POTENTIAL OF LOCAL FACTORS

Before joining this world-scale discourse, we should note the strength of local factors in early modern Europe. Even the "model" Western European military culture was not some kind of monolithic unit during the period. This argument was put forward some time ago by John F. Lynn of Illinois, a specialist on the early modern French army, who proposed that not even in Europe can we think simply in terms of models (tactics and organization, for example) spreading out from a "centre" to the "periphery". For example, several areas of France went their own way. He thus anticipated the concept of local military cultures in Europe.⁵⁰ Historians of the British Isles have clearly identified at least three

47 On the reception in Hungary, see Zoltán Bagi, 'A hadügyi forradalom elméletének rövid összefoglalása', in Adrienn Horváth and Zoltán Bagi (eds.) *Mozaikok a Magyar Királyság 16–17. századi történelméből*. Budapest, 2012, 141–158. Romanian historians have touched on the theory in relation to Poland and the Principality of Transylvania; see Ovidiu Cristea, 'In visceribus regni. Constrângerii militare în timpul Războiului cel Lung', *Revista istorică* 17 (2006) 141–152; Florin Ardelean, *Organizarea militară în Principatul Transilvaniei (1541–1691)*. Cluj-Napoca, 2019, 25–50.

48 For example, Brian Davies, 'The Development of Russian Military Power, 1453–1815', in Jeremy Black (ed.), *European Warfare, 1453–1815*. London, 1999, 145–179; Idem, 'The Foundations of Muscovite Military Power, 1453–1613', in Frederick W. Kagan and Robin Higham (eds.), *The Military History of Tsarist Russia*. New York, 2002; Eric Lohr and Marshall Poe (eds.), *The Military and Society in Russia, 1450–1917*. Leiden, Boston, 2002; Carol Belkin Stevens, *Russia's Wars of Emergence: 1460–1730*. Harlow, 2007; Virginia Aksan, 'Ottoman War and Warfare 1453–1812', in Jeremy Black (ed.), *War in the Early Modern World*. London, 1999, 147–175; Gábor Ágoston, *Guns for the Sultan: Military Power and the Weapons Industry in the Ottoman Empire*. Cambridge, 2006.

49 On the "extension criticism" approach, see Colin Imber, 'İbrahim Pecevi on War: A Note on the European "Military Revolution"', in Colin Imber, Keiko Kiyotaki and Rhoads Murphy (eds.), *Frontiers of Ottoman Studies. Vol. II*. London, New York, 2004, 7–22; Cf. Günhan Börekçi, 'A Contribution to the Military Revolution Debate. The Janissaries Use of Volley Fire during the Long Ottoman–Habsburg War of 1593–1616 and the Problem of Origins', *Acta Orientalia Academiae Scientiarum Hungaricae* 59 (2006) 407–438; Vitalij Viktorovich Penskoj, *Vojennaja revoljucija v Evrope i vooruzhjonnye sily Rossii vtoroj poloviny XV–XVIII vv. ot družiny k reguljarnoj armii*. Moscow, 2004.

50 Lynn, 'Tactical Evolution'.

mutually-interacting local military cultures, which continuously – if at a varying pace – adapted to innovations from the continent but retained many of their archaic features.⁵¹ The same was manifestly true in Italy and the Iberian Peninsula.⁵²

European conditions in the sixteenth century are therefore much more amenable to interpretation as an interaction of competing military cultures and adaptation of each other's advances, particularly when we bear in mind that in the first hundred years, there was little way of telling what the “winning combination” would be.⁵³ The military culture of the Kingdom of Hungary, for example, always maintained distinctively non-Western-European features that may be regarded as legacy of the “East”, such as the massive use of cavalry. The same may be said for neighbouring Poland, which in terms of military culture bore an affinity to Hungary in the late Middle Ages. Even though the states of Central Europe – notably the Czech lands – were contributors as well as victims of the military changes at this time, there has been a serious neglect of military affairs of the whole region, primarily the lands of the Danubian Habsburg Monarchy,⁵⁴ a key player in sixteenth- to eighteenth-century European history.⁵⁵

As the Russian military history specialist Brian Davies recently commented, the linguistic and cultural barrier that lies behind this phenomenon is a problem in joint European studies that persists even now, decades after the Iron Curtain has come down: “Scholars in Central and Eastern Europe have produced a rich literature on the military history of Eastern Europe – Polish and German historians have been especially prolific – but until recently little of it was made available in English. Anglophone readers are therefore less familiar with the

51 Eltis, *The Military Revolution*, 99–135; Fissel, *English Warfare*.

52 On the Iberian Peninsula, see Albert D. McJoynt's introduction in William H. Prescott, *The Art of War in Spain: The Conquest of Granada, 1481–1492*. London, 1995. On Italy, see Mallett and Hale, *The Military Organization*; Maurizio Arfaio, *The Black Bands of Giovanni: Infantry and Diplomacy during the Italian Wars (1526–1528)*. Pisa, 2005, 12–27.

53 For example, there is a rich literature from the period on English searches for the way forward; see Eltis, *The Military Revolution*, 99–140.

54 Zoltán Péter Bagi, *A császári-királyi mezei hadsereg a tizenöt éves háborúban. Hadszervezet, érdekérvényesítés, reformkísérletek*. Budapest, 2011, 357–366.

55 Paradoxically, Austrian military historiography voluntarily withdrew from the study of the imperial legacy, and we see few attempts to connect with the Parker theses. A rare exception is Andrea Pühringer, ‘Die Entwicklung des Militärs und die militärische Revolution in der Habsburgermonarchie’, in Karin Sperl, Martin Scheutz and Arno Strohmeyer (eds.), *Die Schlacht von Mogersdorf/St. Gotthard und der Friede von Eisenburg/Vasvár 1664. Rahmenbedingungen, Akteure, Auswirkungen und Rezeption eines europäischen Ereignisses*. (Burgenländische Forschungen, 108.) Eisenstadt, 2016, 63. It has thus been left to Hungarian historians to draw attention to the significance of the Danubian Habsburg Monarchy in the military developments of early modern Europe; see Gábor Ágoston, ‘Empires and Warfare in East-Central Europe, 1550–1750: The Ottoman–Habsburg Rivalry and Military Transformation’, in Tallett and Trim (eds.), *European Warfare*, 110–134; Géza Pálffy, ‘The Habsburg Defense System in Hungary against the Ottomans in the Sixteenth Century: A Catalyst of Military Development in Central Europe’, in Brian J. Davies (ed.), *Warfare in Eastern Europe, 1500–1800*. (History of Warfare, 72.) Leiden, Boston, 2012, 35–61.

ways in which resource mobilization for war, and the impact of war on the state and society differed in Eastern from Western Europe. This has perpetuated some misunderstandings...”⁵⁶

The essays in this book, written in a mutually-comparable form and with an aspiration to territorial comprehensiveness, present these local European features from the late fifteenth century to the middle of the sixteenth. Looking from the Central European standpoint, they go beyond the familiar Western European considerations (the Habsburg–Valois conflicts, Italian dominance, etc.) and show that the military changes of this crucial period were also driven by the relentless Ottoman threat and the failure of the medieval Hungarian–Bohemian personal union under the Jagiellonians, decisively influencing the birth of the Habsburgs’ Danube monarchy and the whole subsequent history of the continent.

⁵⁶ Davies (ed.), *Warfare in Eastern Europe*, 1.

THE BEGINNINGS OF THE EUROPEAN FISCAL-MILITARY STATE IN THE FIRST THIRD OF THE SIXTEENTH CENTURY

“PECUNIA NERVUS BELLI” AND THE MILITARY REVOLUTION

The aphorism *pecunia nervus belli* or *pecunia nervus rerum* – “money is the sinew of war (or things)” – may be traced to ancient authors,¹ but it became increasingly popular in the sixteenth century, and much so than the assertion – falsely – attributed to Raimondo Montecucoli (1609–1680) that three things were needed for war: “money, money and again money”.² In 1524, Charles V, in a letter to his brother, the later Ferdinand I, used the formula: *...l'argent est le nerf et force de la guerre...*³ Ferdinand I, king of Hungary and Bohemia and later Holy Roman Emperor, used another form in an instruction concerning Hungary in 1552: *Proventus nostri, qui sunt rerum omnium et praecipuae belli nervi*.⁴ For a

- 1 Michael Stolleis, ‘Pecunia nervus rerum. Zur Diskussion um Steuerlosh und Staatsverschuldung im 17. Jahrhundert’, in Idem, *Pecunia nervus rerum. Zur Staatsfinanzierung der frühen Neuzeit*. Frankfurt a. M., 1983, 63–67. The origin of the expression may be traced to ancient – pre-Socratic – Greek authors, but in the early modern age it was used with reference to Cicero, Plutarch, Tacitus and others. Michael Stolleis, ‘„Pecunia nervus rerum” – Die Finanzfrage in der deutschen Staatsräsonliteratur des 17. Jahrhunderts’, in Aldo de Maddalena and Hermann Kellenbenz (eds.), *Finanzen und Staatsräson in Italien und Deutschland in der frühen Neuzeit*. (Schriften des Italienisch-Deutschen Historischen Instituts in Trient, 4.) Berlin, 1992, 21.
- 2 Stolleis, ‘Zur Diskussion’, 64. The aphorism attributed to Montecuccoli (*Danari, danari e poi danari*) was actually first used by the Italian condottiero Gian-Giacomo Trivulzio (1440–1518), in answer to the king of France’s question of the equipment and supplies needed to take Milan: Stolleis, ‘Die Finanzfrage’, 31.
- 3 Letter from Charles V to Ferdinand I, Vitoria, 16 January 1524. Charles made the comment in connection with the war against the Ottomans: *Die Korrespondenz Ferdinands I. Bd. 1. Die Familienkorrespondenz bis 1526*. (Korrespondenzen österreichischer Herrscher. Veröffentlichungen der Kommission für neuere Geschichte Österreichs, 11.) Bearbeitet von Wilhelm Bauer. Wien, 1912, 96–101. Passage cited: *ibid.*, 97. Mentioned in: Peter Rauscher, *Zwischen Ständen und Gläubigern. Die kaiserlichen Finanzen unter Ferdinand I. und Maximilian II. (1556–1576)*. (Veröffentlichungen des Instituts für Österreichische Geschichtsforschung, 41.) Wien, München, 2004, 272.
- 4 Quoted in Ignác Acsády, ‘Végváraink és költségeik a XVI. és XVII. században’, *Hadtörténelmi Közlemények* 1 (1888) 68. Acsády does not give the exact source, but it may be found in: Johann Christian Engel, *Geschichte des ungrischen Reichs und seiner Nebenländer. Vol. II*. Halle, 1798, 17. See also the original source: instruction of Ferdinand I to Bishop Pál Bornemissza of

government in the early modern age, *pecunia nervus belli* was a principle that guided nearly every financial decision.

The need for money to wage war was as obvious then as it is now. Building and maintaining forts alone involved great expense. Most wars of the time were fought by mercenaries who, like artisans, had to be paid. The armies were provided with food and supplied with firearms and ammunition. The latter items presented a special challenge as artillery developed and spread rapidly at the opening of the “Military Revolution”: the acquisition of raw materials for cannons and hand-held firearms and the capacity to manufacture them demanded skilled labour, logistical planning and, of course, much money. The new types of artillery also required costly changes in military architecture – the Italian fortification system (*trace italienne*). Such forts could be conquered only by a new kind of mass army, requiring a financial background that exceeded the resources of European states at the time. The capability of a country to mobilize its army, build forts, maintain a fleet and provide all of these with firearms greatly depended on the structure of the state, its administrative and military systems, financial administration and state revenues, but there was also a need for sources of finance that could be called upon in time of need, particularly credit.

THE EMERGENCE OF FISCAL-MILITARY STATES IN THE EARLY SIXTEENTH CENTURY

Although the fiscal-military state assumed its clearly-identifiable form towards the end of the seventeenth century, the processes that led up to this began around 1500.⁵ According to Brewer, who coined the term, the principal

Veszprém and aulic councillor György Werner concerning a review of Transylvanian revenues: Prague, 1 January 1552. Magyar Nemzeti Levéltár Országos Levéltára (= MNL OL) Magyar Kamara Archivuma Diversae instructiones E 136, vol. 1, pp. 109–117.

5 There is a substantial body of literature on the fiscal-military state model, of which only the most important works are: John Brewer, *The Sinews of Power: War, Money and the English State, 1688–1783*. New York, 1989; Jan Glete, *War and the State in Early Modern Europe: Spain, the Dutch Republic and Sweden as Fiscal-Military States, 1500–1660*. (Warfare and History). London, New York, 2002; Rafael Torres Sánchez (ed.), *War, State and Development: Fiscal-Military States in the Eighteenth Century*. Pamplona 2007; Christopher Storrs (ed.), *The Fiscal-Military State in Eighteenth-Century Europe: Essays in Honour of P. G. M. Dickson*. Burlington, 2009. For an overview of the theory of the fiscal and the fiscal-military state and an assessment of the Habsburg Monarchy, see István Kenyeres, ‘A “Fiscal-Military State” és a Habsburg Monarchia a 16–17. században’, in Ildikó Horn et al. (eds.), *Művészet és mesterség. Tisztelgő kötet R. Várkonyi Ágnes emlékére. Vol. I*. Budapest, 2016, 91–122, particularly 95–101. On the Habsburg Monarchy, see also William Godsey, Petr Mat’a and Thomas Winkelbauer (eds.), *The Habsburg Monarchy as a Fiscal-Military State c. 1648–1815: Contours and Perspectives* (in press); István Kenyeres and Géza Pálffy, ‘A Habsburg Monarchia és a Magyar Királyság had- és pénzügyigazgatásának fejlődése a 16–17. században. Modellek és értelmezési lehetőségeik’, *Századok* 152 (2018) 1033–1076. Recently, on Spain and Russia, see Zoltán Korpás, ‘A fiskális-katonai állam és a Katolikus Monarchia a 16–17. században’, *Századok* 152 (2018) 981–1012; Endre Sashalmi, ‘A 17–18. századi Oroszország mint fiskális-

characteristics of the fiscal-military state are: 1) “the development of a substantial military (but, above all, naval) establishment”; 2) “the rocketing costs of war”; 3) “the importance of government borrowing – that is obtaining credit to fund that spending in the short term (especially in wartime)”; 4) “the expansion of tax revenues”; 5) “taxation which was at first direct (typified by the land tax), but the burden of which was shifted by government towards indirect impositions”; 6) “the elaboration of remarkably effective new administrative structures to oversee both the expanding military establishment and the fiscal one”; and 7) “finally, these developments largely rested on the achievement of political stability”.⁶ These factors were in place in most of the great powers of Europe by the early eighteenth century.

Recent research has traced the beginning and early stage of the fiscal-military state to the early sixteenth century. Jan Glete divides the development of the fiscal-military state during the sixteenth and seventeenth centuries into two periods, 1480–1560 and 1560–1660. He identifies the first as the period of cooperation within the traditional state. Its chief characteristics are: 1) the “rise of the new monarchies” (examples being England, Spain, France, Denmark-Norway, Sweden, the Habsburg Monarchy, the Ottoman Empire and the Grand Principality of Moscow); 2) the formation of “the European tax or fiscal state, when central authorities were able to raise the level of resource extraction from society permanently”; 3) “a marked economic upsurge and population growth, which increased customs duties and the tax base”; 4) the first effects of the “Military Revolution” (development of artillery weapons, infantry-based mass armies, naval developments and new forms of fortification); 5) “European rulers developed contractual relationships with the elites and estates: the latter provided resources and loyalty in exchange for rulers’ chief commodity – protection.”⁷ Glete notes that “the fiscal-military state with large permanent armed forces, practically unknown in 1500, had two centuries later become the normal European type of state”.⁸ This gives good reason for examining the beginnings of the fiscal-military state in Europe in late fifteenth and early sixteenth centuries. European states took varying routes of development during this period. They differed in their levels of economic, social and cultural advancement, in the options open to their rulers and in the burdens they were capable of enduring. Our investigation of the potential and relative power of European countries at that time concentrates on the trio of territory, population and state revenue.

katonai állam’, *ibid.*, 1013–1032. The key works on the emergence of the fiscal state are: Richard Bonney (ed.), *The Rise of the Fiscal State in Europe c. 1200–1815*. Oxford, 1999; Bartolomé Yun-Casalilla and Patrick K. O’Brien with Francisco Comín Comín (eds.), *The Rise of Fiscal States: A Global History, 1500–1914*. New York, 2012.

6 For a summary of Brewer’s theses, see Christopher Storrs, ‘Introduction: The Fiscal-Military State in the “Long” Eighteenth Century’, in Idem (ed.), *The Fiscal-Military State in Eighteenth-Century Europe*, 4.

7 Glete, *War and the State*, 16–21.

8 *Ibid.*, 41.

THE FISCAL-MILITARY POTENTIAL OF EUROPEAN STATES IN THE FIRST THIRD OF THE SIXTEENTH CENTURY⁹

The focus point of our review is the Ottoman Empire, which had already grown into a superpower and came closest to meeting the criteria of the fiscal-military state.¹⁰ The records leave no doubt that no other state of the time could match the Ottoman Empire in terms of material resources, the militarization of broad sections of society, the grant of land for military service, the maintenance of a central professional army and even the use of paramilitary groups. Let us look at how other European states compared to the strongest European power of the time in terms of financial and military potential:

	Population	Revenue in ducats	Military potential (troops)
Ottoman Empire	12–13 million	8.3 million	176,000
France	16 million	2.9–4.4 million	80,000
Lands of the Spanish crown	14 million ¹¹	3 million	50,000
England	3 million	350–400,000 ¹²	–
Polish-Lithuanian Commonwealth	2.7 million	400,000 ¹³	25–30,000–450,000
Venice	–	1 million ¹⁴	30,000

⁹ This chapter draws on the thoroughly referenced essays in this volume.

¹⁰ Erol Özvar, 'Transformation of the Ottoman Empire into a Military-Fiscal State: Reconsidering the Financing of War from a Global Perspective', in Pál Fodor (ed.), *The Battle for Central Europe: The Siege of Szigetvár and the Death of Süleyman the Magnificent and Nicholas Zrínyi (1566)*. Leiden, Boston, 2019, 21–63.

¹¹ Wim Blockmans, 'Die Untertanen des Kaisers', in Hugo Soly (ed.), *Karl V. und seine Zeit*. Köln, 2003, 234.

¹² According to a Venetian diplomatic report of 1531, Henry VIII's treasury had reserves of 6 million ducats or 1,300,000 pounds sterling. Others put the reserves – held in gold – higher, at 1,800,00 pounds: Frederick C. Dietz, 'English Government Finance 1485–1558', *University of Illinois Studies in the Social Sciences* 9:3 (1920) 86–87.

¹³ According to the 1519 report of the Venetian ambassador Alvise Bon: *I diarii di Marino Sanuto*. Vol. XXVI. Venezia, 1899, 495–502; cf. István Balogh, *Velencei diplomataák Magyarországról (1500–1526) (Forrástanulmány)*. Szeged, 1929, XXV. Casimir IV (1447–1492) had revenues estimated at 140,000 *zlotys*, but sovereign revenue fell to 96,000 *zlotys* after his death, although there is no data available on Lithuanian revenues at the time. In the 1560s, 435,000 *zlotys* were paid into the Lithuanian public treasury and about the same amount (445,000 *zlotys*) into the Polish treasury, a total of 880,000 *zlotys*; see László Szokola's study in the present volume (pp. 132–134). Based on evidence from 1544 that 1,000 *zlotys* were equivalent to 627 Hungarian ducats (cited by Endre Veress, *Izabella királyné*. Budapest, 1901, 25: note 5), this sum amounted to 551,000 ducats, since the Hungarian and Venetian ducats were of equal value.

¹⁴ Carlo Capra, 'The Italian States in the Early Modern Period', in Bonney (ed.), *The Rise of the Fiscal State*, 421.

	Population	Revenue in ducats	Military potential (troops)
Portugal	1.3 million	700,000	–
Kingdom of Hungary	3.3 million	350–400,000	27,000–70,000
Kingdom of Bohemia	2.3 million	160,000 ¹⁵	–

The states with the greatest military and financial potential in the western half of Europe were Spain and France however the Ottomans were the strongest protagonist. The actors in this contest grew together, as each constantly tried to get ahead of the other and widen or exceed their resources, usually by taking out loans.¹⁶

MONEY FOR WAR: LOANS AND DEVALUATION

Most states during the period retained a fundamentally medieval system of financial administration based on the royal domains and revenues (*regales*), such as minting and customs duties. These revenues proved inadequate when there was a sudden increase in fiscal requirements, and sovereigns looked to other sources of finance: credit and novel arrangements such as assigning state concessions, introducing new taxes and persuading the estates to provide more funds. The period therefore also marks the beginning of state indebtedness, when the growing body of finance essential for the war aims of European powers was provided by the globalizing credit system.

The roots of sovereign debt go back to the thirteenth century. When monarchs had an immediate need for money, they took out short-term loans at high rates of interest, and undertook to pay them back within a short time. In the thirteenth and fourteenth century, the main providers of royal loans were Italian banking houses in Florence, Siena and Lucca, and one of their main customers was the king of England. The first major Italian banking crisis

15 Alfons Huber, 'Studien über die finanziellen Verhältnisse Oesterreichs unter Ferdinand I., *Mitteilungen für Österreichische Geschichtsforschung*, Ergbd. 4 (1893) 198–199. Huber does not state which kind of gulden he worked with, but it was probably the Rhenish gulden. Around 1526, this sum would have been equivalent to no more than 160,000 ducats.

16 Here we will discuss only the "state" loans to Christian countries of Europe. The Ottoman Empire in this period did not take up the same kind of credit, although the Ottoman political elite, including the sultan, extended private loans to the treasury. See Özvar, 'Transformation', 54–61; Pál Fodor, 'Die Kriegsfinanzierung des Osmanischen Reiches im ausgehenden 16. Jahrhundert. Dargestellt am Beispiel des Feldzuges von 1596', in Peter Rauscher, Andrea Serles and Thomas Winkelbauer (eds.), *Das „Blut des Staatskörpers“*. *Forschungen zur Finanzgeschichte der Frühen Neuzeit*. (Historische Zeitschrift, Beiheft 56.) München, 2012, 43–54. The pre-Mohács credit transactions of Hungarian kings is the subject of another study by the present author: István Kenyeres, 'A Magyar Királyság pénzügyei és katonai költségei Mohács előtt', forthcoming.

occurred in the first third of the fourteenth century, when several companies went bankrupt – Ricciardi of Lucca (1301), Bonsignori of Siena (1302), and Mozzi (1301–1302), Pulci-Rimbertini (1305), Frescobaldi (1311) and Scali (1326) of Florence, and later the largest Florentine banks, Bardi and Peruzzi (1342–1346), mainly through the king of England defaulting on his loans. Edward III (1327–1377), following his defeat in war, set off the biggest banking crash in 1340, when he defaulted on loans totalling 300,000 pounds sterling (about 2 million ducats), half to the companies of Bardi and Peruzzi.¹⁷ In the middle of the fifteenth century, the Florentine bank that took their place, the Medici, learned from the experience and set up branches as separate companies throughout Europe, so that the home bank faced much lower risks even from loans granted to sovereigns. In the second third of the century, the Medici bank had an interest in managing papal revenues and maintained branches outside Italy, in Lyon, Avignon, Bruges and London. The latter, due to financial problems and falling profits, was wound up by 1480. From the 1430s to the 1480s, the Medici company was the leading bank of Europe. They financed the king of England, the pope, the Burgundian court and later Emperor Maximilian.¹⁸ The failure of the bank in 1494 following Charles VIII's Italian campaign, contrary to popular belief,¹⁹ was not final or total. Through their broad network of contacts, the Medici kept many of their branches alive in the form of companies operated by partners.²⁰

The Florentine bankers also had a presence in the Central European region. Their activity, particularly in the Kingdom of Hungary, reached its peak in the first and last thirds of the fifteenth century and despite a subsequent decline remained perceptible in the early decades of the sixteenth century.²¹ Venetian

17 Richard A. Goldwaite, *The Economy of Renaissance Florence*. Baltimore, 2009, 236–237; Idem, 'Italian Bankers in Medieval England', *Journal of European Economic History* 2 (1973) 763–771; James Macdonald, *A Free Nation Deep in Debt: The Financial Roots of Democracy*. New York, 2003, 110; Edwin S. Hunt, *The Medieval Super-Companies: A Study of the Peruzzi Company of Florence*. Cambridge, 1994, 212–229. For a critique of the latter, see Goldwaite, *The Economy*, 236: note 64. On the major loans the Italian banks extended to the pope and the Kingdom of Naples, see also Goldwaite, *The Economy*, 231–235.

18 Raymond De Roover, *The Rise and Decline of the Medici Bank 1397–1494*. (Harvard Studies in Business History, 21.) Cambridge, London, 1963, 279–375. On the Burgundian loan: *ibid.*, 348. On the English credit: Macdonald, *A Free Nation*, 11.

19 De Roover, *The Rise*, 358–375.

20 Götz-Rüdiger Tewes, *Kampf um Florenz: die Medici im Exil (1494–1512)*. Köln, Wiemar, Wien, 2011, 91–249, 603–837. Tewes calls the Medici associates Mediceers. They maintained Medici interests in Naples, Lyon, Rome and Venice.

21 Zsuzsa Teke, 'Firenzei kereskedőtársaságok, kereskedők Magyarországon Zsigmond uralmának megszilárdulása után 1404–1437', *Századok* 129 (1995) 195–214; Eadem, 'Firenzei üzletemberek Magyarországon 1373–1403', *Történelmi Szemle* 37:2 (1995) 129–150; Eadem, 'Egy firenzei kereskedő a Jagelló-korban: Raggione Bontempi', *Századok* 141 (2007) 967–990; Krisztina Arany, *Florentine Families in Hungary in the First Half of the Fifteenth Century: A Prosopographic Study of Their Economic and Social Strategies*. Kiel, 2020; Eadem, 'Florentine Families in Hungary in the First Half of the Fifteenth Century in Context', *The Hungarian Historical Review* 6:1 (2017) 5–39; Eadem, 'Magyarországi hitelezésre vonatkozó adatok az 1427. évi firenzei Catastóban', in Gábor Mikó, Bence Péterfi and András Vadas (eds.), *Tiszteletkőr: Történeti tanulmányok Draskóczy István egyetemi tanár 60. születésnapjára*.

merchants were also active in Central Europe. In Buda, for example, they channelled Venetian financial aid to the Jagiellonians for the war against the Ottomans, thus functioning as bankers.²²

Even after the decline of the Medici, Florentine bankers remained major lenders to European sovereigns in the first half of the sixteenth century. The Salviati of Florence set up a banking house in Lyon in 1508 from which, in collaboration with the Welsers, they provided loans to the king of France. These were secured against royal revenues. In 1521, for example, the French sovereign received a loan from the Florence-Augsburg consortium of 112,000 *livres* in return for an eight-year *rente* on the silk duty. The same year, he received a further 100,000 *livres* of credit from Florentine merchants in Lyon, and the following year, also in Lyon, he took out loans of 200,000 *livres* from Florentines, 100,000 *livres* from Lucca merchant bankers and a further 50,000 *livres* from the Welsers. Eighty-seven of Francis I's 124 known creditors were Italian, of which 45 were Florentine and 17 Luccan. There were 18 German, 15 French and 4 Spanish bankers among them. In 1555, three Florentine companies – the Salviati, the Guadagni heirs and the Panciatichi-Rinuccini company – lent 400,000 *scudis* to the French crown.²³

Genoese bankers were also prominent in European affairs. They lent 160,000 ducats to Charles VIII of France for his Italian campaign in 1494 and 42,000 ducats to the Spanish monarchs in 1501. In the imperial election of 1519, the Genoese banks of Gualterrotti, Benedetto Fornari and Lorenzo Vivaldi provided 55,000 ducats to finance the Habsburg candidate, who became Emperor Charles V. Thereafter, the Genoese mainly provided loans to the kingdoms of Spain and Portugal. Charles V, for example, borrowed 300,00 ducats from them in 1547.²⁴

Budapest, 2012, 165–177; Eadem, 'Buda mint uralkodói székhely és távolsági kereskedelmi központ a 15. században, a firenzei és dél-német üzletek tevékenységének tükrében', *Urbs. Magyar Várostörténeti Évkönyv* 7 (2012) 153–170; Eadem, 'Firenzei–magyar kereskedelmi kapcsolatok a 15. században', in András Kubinyi, József Laszlovszky and Péter Szabó (eds.), *Gazdaság és gazdálkodás a középkori Magyarországon. Gazdaságtörténet, anyagi kultúra, régészet*. Budapest, 2008, 277–296; Eadem, 'Foreign Business Interests in Hungary in the Middle Ages', in József Laszlovszky, Balázs Nagy, Péter Szabó and András Vadas (eds.), *The Economy of Medieval Hungary*. (East Central and Eastern Europe in the Middle Ages 450–1450, 49.) Leiden, Boston, 2018, 491–508.

22 Teke, 'Egy firenzei kereskedő', 979; András Kubinyi, 'Budai kereskedők udvari szállításai a Jagelló-korban', in Idem, *Tanulmányok Budapest középkori történetéről*. Budapest, 2009, 341–342. There are also records of Genoese merchants working in Buda: Gusztáv Wenzel, *A Fuggerek jelentősége Magyarország történetében*. Budapest, 1882, 24.

23 Heinrich Lang, 'Herrscherfinanzen der französischen Krone unter Franz I. aus Sicht italienischer und oberdeutscher Bankiers. Die Rolle der Florentiner Salviati als Financiers der französischen Regierung', in Rauscher, Serles and Winkelbauer (eds.), *Das „Blut des Staatskörpers“*, 457–508, particularly 471–498.

24 Fernand Braudel, *Civilization and Capitalism, 15th–18th Century*. Vol. 2: *The Wheels of Commerce*. London, 2002, 392–395; Richard Ehrenberg, *Das Zeitalter der Fugger. Geldkapital und Creditverkehr im 16. Jahrhundert*. 1. Band: *Die Geldmächte des 16. Jahrhunderts*. Jena, 1892, 325–344; Korpás, 'A fiskális-katonai állam', 1006–1010.

The Grimaldi were another Genoese banking of increasing prominence, and the Casa di San Giorgio functioned as the state bank.²⁵

Italian banks thus remained active on the French and Italian markets, and they also extended into the Iberian Peninsula. An important base for their sovereign lending operations outside the Italian centres of Florence, Genoa and Venice was Lyon, which became an important financial centre during the period.

Antwerp also developed into a major trading and banking centre by the early sixteenth century, and it was particularly prominent in bills of exchange and deposit transactions.²⁶ American silver, South German capital and the strong Habsburg presence were the main factors that drove the Antwerp money market. Many Spanish and Italian businesspeople settled in Antwerp, and the Fuggers also had a major depot there. The main borrowers present were the Spanish, Portuguese and English crowns.²⁷ A few examples: Charles V's loans from Antwerp bankers amounted to 700,000 ducats in 1538 and 1.9 million in 1554; the Antwerp branch of the Fuggers also lent 150,000 ducats to Henry VIII in 1554; and the king of Portugal's borrowing arranged in the city rose from 2 to 3 million *cruzados* between 1543 and 1552.²⁸

Another phenomenon of relevance to the germination of the military revolution and the fiscal-military state in our period is the entrance of German merchant bankers into the international lending business. They were taking advantage of changes in the international and domestic credit system, the greater availability of capital for merchant bankers to invest and favourable changes in interest rates. In Central Europe, the main protagonists at the time were the Fuggers and the Welsers, and their stories clearly illustrate the changing circumstances. The Fuggers, a family of merchants-turned-bankers, were principally interested in sovereign lending, and their first prominent client was the Habsburg Emperor Maximilian. They soon acquired others. In 1495, they encroached on the interests of the Italian banking houses by gaining exclusive rights to collecting the *servitium* and *annata* revenues of the Roman Curia and to the indulgence trade. After 1500, they extended substantial loans to the papal court for the finance of embassies and the hiring of Swiss soldiers. The Fuggers were granted the *rente* on papal minting, transferred money for the papal court for a fee, and had interests in the purveyance and transport of luxury goods. It was during the papacy of the Medici pope, Leo X (1513–1521), that their business with the papal court became very substantial.²⁹ An indication of the Fuggers' expansion in the

25 Götz Freiherr von Pölnitz, *Die Fugger*. Frankfurt am Main, 1960, 132; Macdonald, *A Free Nation*, 94–100.

26 Macdonald, *A Free Nation*, 124–125.

27 Ehrenberg, *Das Zeitalter*, 356–373; Macdonald, *A Free Nation*, 122–128, 153–155; Herman Van der Wee, *The Growth of the Antwerp Market and the European Economy*. The Hague, 1963, 199–207.

28 Blockmans, 'Die Untertanen', 252; Macdonald, *A Free Nation*, 161; Van der Wee, *The Growth*, 204; note 351.

29 Mark Häberlein, *Aufbruch ins globale Zeitalter. Die Handelswelt der Fugger und Welser*. Darmstadt, 2016, 22–25.

region and their areas of investment are the silver and copper mining concessions they acquired in ore-rich Tyrol in the 1480s. In both the management of papal revenues and the operation of the ore mines, the Fuggers followed the example of the Medici.³⁰ In the Kingdom of Hungary, they entered the copper business in 1494, for which they launched a joint venture with the Thurzós, the *Gemeiner Ungarischer Handel*.³¹ The Fuggers' commercial activity thereafter concentrated on copper, and their depots in the region – in Buda, Leipzig, Breslau, Krakow and Danzig – played a dominant part in banking, credit and the copper trade.

Through their extensive network of contacts, the Fuggers also became politically active in the region, looking to future profits by financing the expenditure of the Habsburgs and Jagiellonians.³² Their largest sovereign customer was Emperor Maximilian: in 1496, they lent him 121,600 Rhenish gulden for his Italian campaign, secured against the Tyrolean copper mines, and another 27,000 immediately afterwards. In 1508, they first extended an 8,000-ducat loan to the emperor, secured against the Hall salt office, and another loan of 128,750 ducats, secured against extraction of Tyrolean copper and silver.³³ These were followed in 1514 by one loan of 12,000 ducats against the Tyrolean revenues and another of 32,000 ducats, for which Maximilian mortgaged his Biberach estate. In 1515, the emperor's debt to the Fuggers totalled 300,000 ducats. He paid almost none of it back. After he died, a struggle began for the imperial throne. Behind the scenes, this was also a struggle among the money men, out of which the Fuggers came out best when their candidate won. At Frankfurt am Main on 28 June 1519, the estates of the Holy Roman Empire elected – from among candidates who included Francis I of France – Charles V of Habsburg as emperor.³⁴ The amounts disbursed to “persuade” the electors turned out to be a sound investment, but the Fuggers had further reasons for supporting Charles. They considered that only if a Habsburg ascended to the imperial throne would they have a chance of recovering the 350,000 ducats that Maximilian owed them when he died. The expenses of the 1519 imperial election amounted to 850,000 ducats, of which Jacob Fugger provided 543,585 ducats!³⁵

30 On the management of papal revenues by the Medici, see De Roover, *The Rise*, 194–223. The Medici had interests in the operation of alum and iron-ore mines: *ibid.*, 142–166.

31 Wenzel, *A Fuggerek*, 16–54; Max Jansen, *Jakob Fugger der Reiche. Studien und Quellen 1.* (Studien zur Fugger-Geschichte, 3.) Leipzig, 1910, 149, 367–373, 377–378; Götz Freiherr von Pölnitz, *Jakob Fugger. Kaiser, Kirche und Kapital in der oberdeutschen Renaissance*, 2 vols. Tübingen, 1949, I, 50–53; Peter Kalus, *Die Fugger in der Slowakei*. (Materialien zur Geschichte der Fugger, 2.) Augsburg, 1999, 40–211.

32 On the latter, see Kenyeres, ‘A Magyar Királyság pénzügyei és katonai költségei Mohács előtt.’

33 Ehrenberg, *Das Zeitalter*, 90–93.

34 Karl Brandi, *Kaiser Karl V. Werden und Schicksal einer Persönlichkeit und eines Weltreiches*. Darmstadt, 1979, 82–94; Alfred Kohler, *Karl V. 1500–1558. Eine Biographie*. München, 2001, 72–74.

35 Ehrenberg, *Das Zeitalter*, 107; Pölnitz, *Die Fugger*, 132; Häberlein, *Aufbruch*, 25–27.

The Fuggers also lent to the Jagiellonian monarchs who held both the Hungarian and Bohemian thrones.³⁶ For this, they greatly relied on their partners in Hungary, the Thurzó family, with whom they jointly ran the Hungarian copper business. The Thurzós also gradually worked their way into the Hungarian noble elite,³⁷ and in 1498, János Thurzó was made chamber count of Körmöcbánya (Kremnica, Slovakia), with control of the country's main gold mines and mint. He was obliged to pay 14,000 Hungarian ducats into the royal treasury each year.³⁸ From that time, the Thurzós and the Fuggers ran the Körmöcbánya chamber and the associated copper company of Besztercebánya (Banská Bystrica, Slovakia) as businesses, with the capital always being provided by the Augsburg party. The Fuggers were also likely to have been behind the 200,000 ducats provided by János Thurzó to pay off the debt owed by King Vladislaus II to Queen Beatrix, widow of King Matthias, in 1502.³⁹ In 1503, the Fuggers lent 6,000 ducats to pay for the jewels for Vladislaus II's wife, Queen Anne.⁴⁰ In the same year, Anne pledged the Körmöcbánya chamber and the Zólyom (Zvolen, Slovakia) castle domain, both queen's estates from 1504–1505, to the Fugger-Thurzó company against her debts. The annual rent payable on these was 10,000 Hungarian ducats, and there was a single accounting sum of 6,000 ducats.⁴¹ The king's debt to the Fuggers totalled 25,000 Hungarian ducats in the beginning of the 1500s and rose steeply first to 28,000 and to 35,500 in 1505.⁴² As it grew in influence, however, the Fugger-Thurzó company soon became an object of jealousy for the Hungarian estates and rival businesspeople. In 1525, these interests persuaded Vladislaus II's successor Louis II to seize the assets of the Fuggers, arrest their factor in Buda and rescind their control of the Körmöcbánya chamber and the Besztercebánya copper business. The Fuggers' losses, by their own admission, was 267,000 Hungarian ducats, of which 23,900

36 Ehrenberg, *Das Zeitalter*, 90–93, 107, 126–131; Pölnitz, *Jakob Fugger*, passim; Häberlein, *Aufbruch*, 25–27, 132–151.

37 Jacob Thurzó, whose father János had entered the joint venture with the Fuggers, and Elek Thurzó, who also maintained good personal relations with Rajmund Fugger, held the post of royal treasurer a total of three times between 1522 and 1526: Norbert C. Tóth, Richárd Horváth, Tibor Neumann and Tamás Pálosfalvi, *Magyarország világi archontológiája 1458–1526. I. Főpapok és bárók*. (Monumenta Hungariae Historica, Elenchi) Budapest, 2016, 134–135. Elek Thurzó was *magister tavernicorum*, Hung. *tárnokmester* (master of the treasury) between 1527 and 1532, *judex curiae regis*, Hung. *országbíró* (judge royal) between 1532 and 1543, and at the peak of his career, from 1532 to 1542, *locumtenens regius*, Hung. *királyi helytartó* (governor-general): Erdélyi Gabriella, *I. Ferdinánd és Thurzó Elek levelezése. Források a Habsburg-magyar kapcsolatok történetéhez. I. 1526–1532*. (Lymbus kötetek, 1.) Budapest, 2005, 19–77.

38 Pölnitz, *Jakob Fugger*, II. 56.

39 Wenzel, *A Fuggerek*, 19.

40 *Ibid.*, 22.

41 Pölnitz, *Jakob Fugger*, II. 139.

42 *Ibid.*, 139–140. Queen Anne's charter of 10 February 1505 concerning the credit transactions: Wenzel, *A Fuggerek*, 100–102.

was the debt “left with” the king.⁴³ The rival business interests in Hungary struggled to manage the Körmöcbánya chamber and the Besztercebánya copper business, however, and through the manoeuvrings of Jacob Fugger and the international contacts he was able to call on, Louis II eventually “enticed” the Fuggers back to Hungary. Under the lease agreement on the chamber and mines signed with Jacob’s successor Anton Fugger on 19 July 1526, the annual rent was increased to 25,000 ducats, and a loan of 50,000 ducats had to be extended to the young king. The latter was expressly for military purposes and must have been vital for the Hungarian court’s preparations for the campaign against the Ottomans.⁴⁴ In 1528, Ferdinand I of Habsburg, having ascended the Hungarian throne after the Battle of Mohács, shouldered the Jagiellonians’ debts to the Fuggers, including the losses caused by the seizures of 1525. The total amount of Hungarian royal debts at this time was 206,000 Hungarian ducats.⁴⁵

After 1526, the Habsburgs – Emperor Charles V and King Ferdinand I of Hungary and Bohemia – were almost the exclusive major clients of the Fuggers. In 1528, the Fuggers provided credit of 33,333 Rhenish guildens to Ferdinand I, an advance on copper from Besztercebánya.⁴⁶ In 1530, they lent Ferdinand 275,000 guildens for his election as king of the Romans, repayable over five years with 10% interest and a 40,000-gulden “commission”. This brought Ferdinand I’s debt to the Fuggers up to approximately 1 million guildens!⁴⁷ In 1536, they lent 100,000 ducats to Charles V for one year at 14% interest, against the Castile revenues and gold and silver coming from America. They lent to the emperor again the following year, on the same terms. In 1537, Ferdinand I borrowed 83,000 guildens from the Fuggers for military equipment. In 1539, the Fuggers’ lending secured against Charles V’s Spanish revenues amounted to 1.25 million guildens. Between 1540 and 1542, King Ferdinand I borrowed a total of 155,000 guildens, and in 1548, at the time of the Schmalkaldic War, the Fuggers lent another 150,000 guildens to Charles V against the Neapolitan revenues, this time at 12% interest.⁴⁸

The Fuggers’ economic strength is reflected in the family’s balance sheet: assets stood at 3 million guildens and liabilities at 870,000 guildens in 1527, and at 7 million and 2 million respectively around 1546.⁴⁹

Another Augsburg merchant house active in this period was the Welser family. They contributed 143,333 guildens to the election of Charles V. They differed from the Fuggers in their trading and lending activity. Their commercial

43 For a summary of the losses, see Wenzel, *A Fuggerek*, 31: note 1; Pölnitz, *Jacob Fugger*, I. 602–639; Idem, *Anton Fugger. Bd. 1. 1453–1535*. (Schwäbische Forschungsgemeinschaft bei der Kommission für Bayerische Landesgeschichte, Reihe 4, Band 6; Studien zur Fuggergeschichte, 13.) Tübingen, 1958, 67–72, 399–403.

44 Wenzel, *A Fuggerek*, 32, 47. Emperor Charles V confirmed this latter agreement in 1544. Published in: *ibid.*, 156–157.

45 *Ibid.*, 33, 160–166.

46 *Ibid.*, 158–160.

47 Ehrenberg, *Das Zeitalter*, 126–131; Häberlein, *Aufbruch*, 25–27.

48 Ehrenberg, *Das Zeitalter*, 135–140.

49 Häberlein, *Aufbruch*, 27.

interests remained in luxury goods, cloth and spices, all highly remunerative lines. An indication of the political neutrality of money is that they lent to both the Habsburgs and their enemies, the Valois dynasty of France. The Habsburgs were their main borrowers, however, and they accepted as security no less than the *rente* on the revenues of an entire country. The Welsers thus gained “possession” of Venezuela. It seemed like good business, but the Venezuela venture was a catastrophic failure, bringing down the whole Welser company in the final third of the century.⁵⁰

The affairs of these two banking families clearly indicate the extent of the interests of the men of money at that time and their connections with the leading powers of Europe. The Fuggers and the Welsers were not, however, the only German sources of finance for European sovereigns. The sources record many instances of lending by the Baumgartners, the Herwarts, the Höchstätters and others, mainly based in Augsburg.⁵¹

Towards the middle and end of the fifteenth century, Italian and South German merchant bankers were joined in sovereign lending by other players: the lay and ecclesiastical magnates, wealthy cities and highly capitalized local merchants also entered the business. These local financiers assisted the sovereigns on a more modest level, and mostly for war. This occurred, for example, in France,⁵² England⁵³ and Saxony. We have figures for the latter case: in 1514, local nobles provided 49% of the 203,000 guldens borrowed by the Ernestine electorate, and in 1516, nobles provided 42.5% of the 598,000-guldens loans taken out by the Albertine part of principality. The latter proportion rose to 67% in 1535–36, 54% in 1539–40 and 45% in 1545–46, a very convincing series of figures.⁵⁴ The aristocrats and prelates were also the main sovereign lenders in the Kingdom of Hungary. They provided the bulk of the 400,000 Hungarian ducats that Vladislaus II owed upon his death in 1516. The loans taken out by his successor, Louis II, secured by letters of pledge, bonds and debt letters, amounted to at least 637,000 Hungarian ducats. Most had come from members of the Hungarian elite – prelates, magnates and commanders of border defence forts, the latter being wealthy aristocrats who were able to advance the wages of their troops. Merchant-citizens of Buda provided credit to purchase goods and finance the army and were thus strongly represented among lenders to the crown.⁵⁵

As an example, we will examine figures concerning our period from a report on loans extended to the Habsburgs compiled in the early eighteenth century. It

50 Häberlein, *Aufbruch*, 32–35.

51 Ehrenberg, *Das Zeitalter*, 186–209. See also below!

52 Jacques Couer was the main financier of Charles VII of France between 1438 and 1451, but he borrowed from merchants in Florence and Barcelona: Macdonald, *A Free Nation*, 112. Jacques Samblançay played a similar part in French finance during the 1520s: *ibid.*, 126.

53 William M. Ormrod, ‘England in the Middle Ages’, in Bonney (ed.), *The Rise of the Fiscal State*, 36.

54 Uwe Schirmer, *Kursächsische Staatsfinanzen. Strukturen – Verfassung – Funktionseliten*. Stuttgart, 2006, 338–347, 488–495.

55 Kenyeres, ‘A Magyar Királyság pénzügyei és katonai költségei Mohács előtt’.

is a long, if incomplete, list and gives a good impression of how much the Habsburg Empire borrowed in the period between 1492 and 1543, and the distribution of the loans:

TABLE 1: DISTRIBUTION OF LENDERS TO THE HABSBURGS BETWEEN 1492 AND 1543⁵⁶

Lender	Rhenish guldens	%
Loans from magnates	316,615	39.1
Merchant bankers	170,720	21.1
Loans from clergy	159,980	19.8
Loans from towns	104,356	12.9
Loans from provincial nobility	57,411	7.1
Total	809,082	100

The table clearly shows the magnates to have been the main creditors of the Vienna Habsburgs during the period. Interestingly, the greatest loans were provided by noblemen who managed the Habsburg sovereign's finances. A total of 135,000 Rhenish guldens were lent by Graf von Ortenburg (Gabriel Salamanca), a nobleman from a merchant family of Castile. Ortenburg became secretary to Ferdinand I in 1519, archchancellor in 1521 and general treasurer between 1522 and 1526.⁵⁷ His successor as head of the treasury, Hans Hoffman von Grünbühel (1526–1530), provided 37,000 Rhenish guldens in credit.⁵⁸ The

56 Österreichisches Staatsarchiv (=ÖStA), Allgemeines Verwaltungsarchiv, Finanz- und Hofkammerarchiv (= HKA). Sammlungen und Selekte, Archivverhandlungen Zl. 9/1, No. 1115, "Verzeichnis Deren Kays. König. Cassierten Schuldverschreibungen". The report is compiled as a book where the lenders are arranged in alphabetical order, with the amount and other details of each loan. A study of the source, restricted to lenders of more than 50,000 guldens is Lucas Winder, 'Die Kreditgeber der österreichischen Habsburger 1521–1612', in Rauscher, Serles and Winkelbauer (eds.), *Das „Blut des Staatskörpers“*, 435–458. A more detailed analysis along the same principle is Lucas Winder, *Die Kreditgeber Ferdinands I., Maximilians II. und Rudolfs II. (1521–1612)*. Diplomarbeit, Universität Wien, 2013. For the data concerning the period up to 1543, I used Lucas Winder's compilation, for which I would like to express my gratitude. I compared the figures with the original source.

57 For a biography, including his financial administration activities, see Gerhard Rill, *Fürst und Hof in Österreich. Von den habsburgischen Teilungsverträgen bis zur Schlacht von Mohács (1521/22 bis 1526)*. Band. 2: *Gabriel von Salamanca, Zentralverwaltung und Finanzen*. (Forschungen zur Europäischen und Vergleichenden Rechtsgeschichte, 7/2.) Wien, Köln, Weimar, 2003, 105–238; Winder, 'Die Kreditgeber Ferdinands I.', 112–118. Up to 1564, he and his son lent a total of 157,547 guldens to the sovereign: *ibid.*, 117.

58 Hoffman lent a total of 299,453 guldens to the sovereign between 1528 and 1547. On his life and financial transactions, see Winder, *Die Kreditgeber Ferdinands I.*, 100–103.

next-largest lenders after the magnates were the merchant bankers of Augsburg: the Bimmels, for example, lent 56,000 Rhenish guildens in 1527 and the Herwarts 105,000 in 1542–43.⁵⁹ The clergy – one of whom was Cardinal Bishop Erhard von der Mark of Lüttich, abbot of Lambrecht in Styria – supported Ferdinand I to the same extent as the merchant bankers. The city providing the Habsburgs with the most credit was Ulm – 46,641 Rhenish guildens between 1492 and 1542 (6,000 to Emperor Maximilian), and Nuremberg and Vienna also appear on the list of creditors from that period. The distribution of loans during the period is shown below:

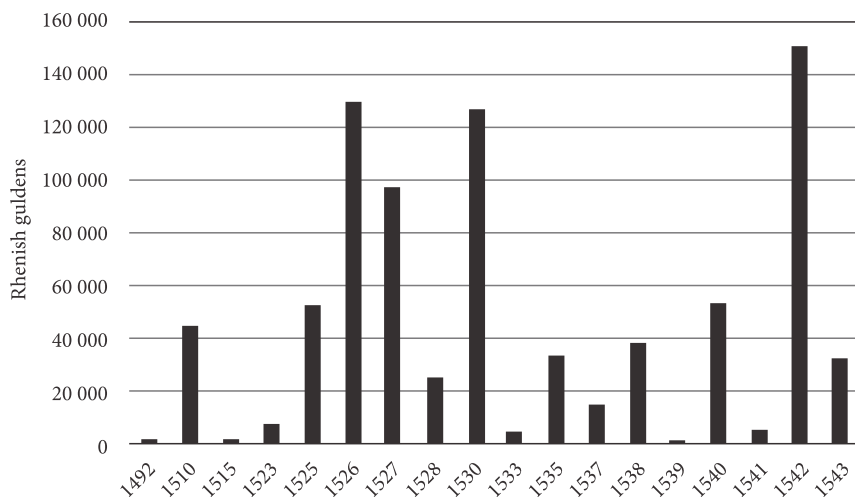


FIGURE 1: DISTRIBUTION OF HABSBURG LOANS (1492–1543)

The high points on this graph correspond to events that required large-scale finance: Emperor Maximilian I's Italian wars; the struggle between Francis I and Charles V (1525); the Battle of Mohács and the subsequent Habsburg campaign in Hungary (1527); the aftermath to the defence of Vienna in 1529; and finally, in 1542, the unsuccessful imperial campaign to recover Buda, which had fallen to the Ottomans in 1541.

In the late fifteenth and early sixteenth centuries, the monarchs of the powerful states of Europe – England, the united Spanish kingdoms and France – were not (yet) in debt,⁶⁰ the only exception being Maximilian's empire.⁶¹ By the

59 On Anton and Hans Bimmel, see Winder, *Die Kreditgeber Ferdinands I.*, 47–48. On the Herwarts: *ibid.*, 55–59. Between 1542 and 1570, the Herwarts lent the sovereign 944,000 Rhenish guildens, a figure that includes only the major credit transactions: *ibid.*, 59.

60 Macdonald, *A Free Nation*, 116.

61 At the time of Maximilian's death, the value of the estates and revenues he had pledged has been estimated at 6 million guildens; see the study of Bence Péterfi in the present volume, p. 184; Hermann Wiesflecker, *Maximilian I. Die Fundamente des habsburgischen Weltreiches*.

middle of the sixteenth century, however, all of these countries had piled up considerable debts, and France and Spain faced bankruptcy. The debts derived mostly from the costs of the Habsburg–Valois contest and attempts to stop the European expansion of the Ottoman Empire. The latter was also the reason for the rising indebtedness of Venice, the Kingdom of Hungary and, after Mohács, the lands of the Habsburgs from Spain to Hungary.

Another factor in the rising levels of debt was the fall in interest rates. In the early sixteenth century, short-term interest rates went down from 5–15% to 4–13% in Italy, from 15–20% (as they had been in the fourteenth and fifteenth centuries) to 5–12% in France, and from 8–17% to 4–13% in Spain and the Netherlands.⁶² In the 1520s, Charles V took out short-term credit (*asiento*) at rates of 18–20%, but equivalent rates went down to 15% after 1530 and 10% in the 1540s. Where it was possible to take out long-term credit secured with annual revenues (*juros*), the interest rate went as low as 5% in the 1530s. On the 7 million ducats in credit secured with *juros* in 1550, interest was around 6%, very low by contemporary standards.⁶³ In 1536, the French crown took out loans at 12% interest in Lyon. This tendency turned round towards the end of the 1540s, however, and the great wars of that decade raised the volume of borrowing sky-high, causing interest rates to rise again. The situation became increasingly serious for the dynasties at the head of the two great powers, the Habsburgs and Valois. In 1554, Charles V abdicated in favour of Philip II, who took control in the Netherlands in 1555 and Castile in 1556. Castile at that time had revenue of 3 million ducats and debts of 20 million. In the Netherlands, short term debt amounted to 3.5 million ducats. As repayment of short-term debt became increasingly unmanageable, interest rates on such loans in Antwerp, for example, went up from 10 to 14%. Upon reviewing the situation, Philip II decided not to repay the short-term loans, or rather not to pay the interest on them. This announcement, in 1557, set off the first state bankruptcy in world history. Rather than outright default, there was a renegotiation of debt and interest rates between the sovereign (the borrower) and the bankers (the lenders). The conditions were of course much better for the king and caused enormous losses for the creditors.⁶⁴

When Francis I died in 1547, his short-term debt amounted to 6.8 million *livres* (3 million ducats).⁶⁵ Two years previously, to address the increasingly difficult financial position of the French crown, the Florentine banks in Lyon offered what

Wien, München, 1991, 386. This amount seems exaggerated, because when his heir to the Austrian domains, Ferdinand I, shared with his brother Charles V their grandfathers' "debt legacy", he undertook a total of 1 million loans against the Austrian estates: Rill, *Fürst und Hof*, 299–301.

62 Sidney Homer and Richard Sylla, *History of Interest Rates*. New Jersey, 2005⁴, 135–141.

63 Macdonald, *A Free Nation*, 125–124. According to Blockmans, Charles V was obliged to pay interest on *asientos* of 17.6% (1521–32), 21.3% (1532–42), 27.9% (1543–51) and 48.8% (1552–56); he mentions interest of less than 10% on *juros*: Blockmans, 'Die Untertanen', 252.

64 Macdonald, *A Free Nation*, 127. The Fuggers lost 600,000 at this time: *ibid.*, 128.

65 *Ibid.*, 126.

was to be the greatest state debt consolidation of the time, the “Grand Parti”. The aim was to exchange short-term for long-term debt secured by state revenues, at a quarterly interest rate of 4% (annual 16%). By 1557, debt amounting to 9.6 million *livres* (about 4.4 million ducats) had been consolidated, but payment difficulties and the effects of the Spanish state bankruptcy led to the collapse of the scheme and, in 1558–59, the first bankruptcy of the French state.⁶⁶

The other option open to the state or sovereign for raising money was devaluation or debasement. There are many examples of devaluation throughout Europe, but the method was particularly favoured by French and Castilian monarchs. For example, France devalued by 75% in 1342 and England by 16.5% in 1411. There were 123 devaluations in France between 1285 and 1490, and in 112 of these cases, the silver content of coins was reduced by more than 5%. In the same period, the precious metal content of gold coins was reduced on 64 occasions, 48 of which involved debasement of more than 5%. In the period 1354–1490, debasement increased the profit on minting in France from the usual 7.5% to 21% (2% to 4.3% in the case of gold), but there was a period (1419–1422), when these figures reached 40 and 60% respectively.⁶⁷ The political elite and the estates did not necessarily oppose debasement if the king sought their permission in advance. In Aragon and England in the fourteenth and fifteenth centuries, for example, devaluation was made dependent on parliamentary consent.⁶⁸

In advanced money markets, devaluation did sometimes substantially reduce and consolidate state debt. In Genoa, one ducat was worth 1.25 Genoese *lira* in 1407, but following a series of devaluations, 3 *liras* had to be paid for a ducat in 1509. What was the positive yield from this? Genoese state debt was 5.9 million *lira* in 1407 and rose by a factor of more than three (327%) to 19.3 million in 1509. In ducats, however, the debt increased “only” from 4.7 to 6.4 million, hardly more than a third (36%). As for the effect on interest payments, the annual interest payable on the state debt in 1407 was 280,000 *liras*, and in 1507 it was nearly twice as much, 540,000; in ducats, however, interest actually fell, from 220,000 to 180,000!⁶⁹ This shows that – in advanced money-market conditions – devaluation could be worthwhile. We should add that devaluation remained a continuous device of monetary policy. In England, there were substantial debasements of the coinage between 1544 and 1551. In 1544, Henry VIII reduced the precious metal content of both gold and silver coins by 75%. In France, the value of silver coins was reduced to 54% between 1519 and 1641, and in the Ottoman Empire during the

66 Macdonald, *A Free Nation*, 126–127. Georges Gallais-Hamonn, *The Stupendous Modernity of the 1555 ‘Grand Parti De Lyon’ Loan*. (Association Française de Cliométrie Working Papers, 7.) 2009.

67 Arthur J. Rolnick, François R. Velde and Warren E. Weber, ‘The Debasement Puzzle: An Essay on Medieval Monetary History’, *The Journal of Economic History* 56:4 (1996) 793–795.

68 Macdonald, *A Free Nation*, 113–115.

69 *Ibid.*, 97.

same period, it was reduced to 57.5%.⁷⁰ The most severe devaluation in the Holy Roman Empire took place in 1620–1621, when inflation rose above 500%.⁷¹

Devaluation was resorted to in the Kingdom of Hungary, too. In the period of devaluation between 1521 and 1526, the Hungarian ducat was left unchanged, but its smaller denominations were devalued. Silver *denars* of half value were minted, and a statute passed by the national diet – thus with the approval of the estates – required that they be accepted at face value. Previously, the face value of a *denar* was equal to its real value, which was one hundredth of a ducat. The objective was clear: if the crown debt, undertaken in ducats, was converted to silver coins of half the value, the value of the debt would immediately decrease by half, thus greatly reducing military expenditure. The timing of Hungarian devaluation – at the height of fighting against the Ottomans – was highly unfortunate. Instead of making a profit for the crown, it caused serious losses, because the new *denar* was not accepted in trade in much of the country, and not even by the soldiers stationed in the border fortresses facing up to the Ottomans. They demanded to be paid in ducats rather than, as before, in silver coins, forcing the treasury to pay what was frequently a very high conversion premium to enable payment to be made in ducats.⁷²

The European ruling houses accumulated very large debts during the period. Loans were taken out in increasing amounts from the beginning of the sixteenth century, and state revenues provided increasingly inadequate security. It is therefore not surprising that a system based on short-term loans collapsed and – at almost the same time – the Spanish and French states went bankrupt. The frequent practice of devaluation did not provide a remedy.

SUMMARY

The dominant European states, or rather dynastic empires, went through great transformations in their economic and military potential during the period 1490–1530. The late medieval sovereign revenue system no longer satisfied the rising demand – chiefly for spending on war. Credit assumed increasing role in satisfying the demand for finance. Equipping and mobilizing armies, building warships and improving fortifications required funds of such magnitude in such a short time scale that loans were the only option. That is what led to the rise of merchant bankers, who could rapidly mobilize large sums in capital, such as the

⁷⁰ Ling-Fan Li, 'After the Great Debasement, 1544–51: Did Gresham's Law Apply?', *Economic History Working Papers* 126:09 (2009) 8–9; Özvar, 'Transformation', 60; Rolnick, Velde and Weber, 'Debasement', 789, 793. There were ten devaluations in England between 1542 and 1551, eventually reducing the silver content of the pound sterling by 83%, and minting profit increased from 2% to 57% (*ibid.*).

⁷¹ The period of hyperinflation known as "Kipper und Wipper" broke out around 1620–21: one imperial thaler (silver coin) was worth 180 *kreuzers* in 1620, but the exchange rate went up to 1,000 *kreuzers* in 1622: Günther Probst, *Österreichische Münz- und Geldgeschichte. Von den Anfängen bis 1918*. Wien, Köln, Weimar, 1994³, Teil 2, 426.

⁷² Kenyeres, 'A Magyar Királyság pénzügyei és katonai költségei Mohács előtt'.

Fuggers, the Welsers, and the Florentine and Genoese banks. Modern methods of sovereign credit finance were developed: short-term loans were joined by a system of consolidated, long-term debt, although this required state bankruptcies to become general. The old method of debasing the coinage, however, remained on the palette of fiscal devices. By the end of the seventeenth century, the system of state credit became one of the fundamental elements of the fiscal-military state and was used to great effect by the British and French as they built their colonial empires and established themselves as great powers.

THE DEVELOPMENT OF FIREARMS IN EUROPE UP TO THE MIDDLE OF THE SIXTEENTH CENTURY

“People, not things make revolutions” – claimed Thomas Arnold in his excellent book *The Renaissance at War*.¹ Nonetheless, he admitted that the appearance of gunpowder changed warfare, and with it, the world. Then he immediately asked, “Yes, but how?” His answer was that a technical innovation cannot by itself make a decisive change in social and political relations, but it can generate significant changes in the thinking of those who use them.²

War and the struggle for possession have clearly always stood at the centre of human thought, and they still do and probably always will. We can certainly see this in medieval Europe, where political fragmentation and the lack of strong central power set the ideal conditions for competing persons and groups to press their interests through the organized violence we call warfare. This was the scene into which gunpowder appeared, and all protagonists understandably seized on it in the hope of securing advantage over the others. Even that, however, would probably not have been enough for gunpowder weapons to have developed as fast as they did if it had not been for the simultaneous appearance and spread of Renaissance thinking. The Renaissance world had a new conception of art, philosophy, ideology, and the place of humanity in the world. Why would it not have taken a new line on warfare, too?

European warfare transformed decisively between the mid-fifteenth and the mid-sixteenth centuries. It took place as part of a broader and comprehensive progress that changed the whole of Europe. As its dimensions broadened and developed, there was also a transformation in the philosophy of war. People realized that war could be planned, analyzed, evaluated and most of all described, like everything else in the world. Thus, was born a new, now systematized science of war, and it was made accessible and understandable to a broad public through another new technology – printing.³ We may conceive of this multifaceted transformation in society, politics, economics and military technology

1 Thomas Arnold, *The Renaissance at War*. London, 2001, 16.

2 *Ibid.*, 18.

3 Horst de la Croix, ‘The Literature on Fortification in Renaissance Italy’, *Technology and Culture* 4 (1963) 30–50.

and theory as a kind of “military revolution”, of which the “invention” of gunpowder was a component, but certainly not the root cause.⁴

Following their first appearance in the first half or middle of the fourteenth century, firearms progressed within one and a half or two centuries – a very short period in historical terms – from rare beasts to ubiquitous species of military equipment capable of deciding the outcome of battles and sieges. The types of cannon and small arms developed during this period, in terms of their basic form and operation, then remained unchanged almost until the nineteenth century.

THE DESIGN AND MANUFACTURE OF EARLY IRON CANNONS

The operation and effectiveness of a firearm depend on the material, character, quality and interaction of three components: the barrel, the propellant (gunpowder in this case) and projectile (then stone, lead or iron balls). The first and most important technical problem was to produce an adequate gun barrel. The firearm used in the first half of the fourteenth century resembled a vase and shot large arrows (see Appendix, Figures 1–2). Its immediate successor was a longer iron rod into which the bore was made from the front (Appendix, Figure 3), and its projectile was a stone or lead ball. Since these early products had very low effectiveness, weapon makers instinctively sought improvement by increasing the calibre. But barrels could not be made homogeneous beyond a certain size even if cast in bronze, a technology that could draw on centuries of experience of making bells, let alone in hard, brittle iron. At the same time, experience showed that the impact of the projectile increased with speed and weight. The former depended on the quantity of gunpowder in the charge, which was limited initially by the price and latterly by the low efficiency of gunpowder. Additionally, material weaknesses often caused cannon barrels to burst. The only alternative was to increase the weight and thus the diameter of balls, which of course again demanded larger-calibre barrels.⁵ This meant experimenting with new technology. For smaller weapons, iron pieces of quarter-round section were made,⁶ and for larger guns, trapezoidal-section staves were set side by side along a cylindrical mandrel. Then – for both types – red-hot hoops were slid on to the staves and held the tube together as they cooled. The gaps were filled with lead, or more rarely by welding together.⁷ For the large guns, a separate powder chamber was attached, a fairly long tube of

4 We might mention the series of Swiss victories against the “chivalrous” armies of the dukes of Burgundy, which had little to do with gunpowder.

5 Volker Schmidtchen, *Bombarden, Befestigungen, Büchsenmeister. Von den ersten Mauerbrechern des Spätmittelalters zur Belagerungsartillerie der Renaissance*. Düsseldorf, 1977, 32–33; William H. McNeill, *The Pursuit of Power: Technology, Armed Force, and Society since A. D. 1000*. Oxford, 1982, 86.

6 Peter H. Kunz, *Technische Entwicklung der Feuerwaffen 1200 bis 1900*. Zürich, 2008, 125–127.

7 To be precise: this is blacksmith welding, where red-hot pieces of iron are joined by hammering.

much smaller internal diameter but with thicker walls.⁸ This was designed to reduce the risk of the barrel bursting and economize on expensive gunpowder. In addition, less powder was found to be equally effective if the force of the explosion was exerted on a smaller surface in line with the centre of gravity of the projectile. The desire for increased destructive power thus resulted in larger pieces,⁹ and very large-calibre wrought-iron cannons appeared in the early fifteenth century (Appendix, Figures 4–5),¹⁰ although increasing numbers of smaller guns, made by the same method, were being produced at the same time.

These enormous cannons proved excellently suited for kings to flaunt their power, but their military value was somewhat less impressive. Even smaller versions proved almost impossible to transport,¹¹ and even if they could somehow be dragged in front of a castle under siege, a rapid retreat meant certain loss of the cannon to the enemy. Firing such guns was equally awkward.¹² Attention thus turned to the smaller guns that had developed alongside their giant peers and were easier to transport and handle. Several small guns were found to have the same effect as one of these giants if stone balls, which had to be laboriously carved to shape, were replaced by much smaller, cheaper, and

8 Heinrich Müller, *Deutsche Bronzegeschützrohre 1400–1750*. Berlin, 1968, 28; Erich Egg, Joseph Jobé, Henry Lachouque, Philipp E. Cleator and Daniel Reichel, *Kanonnen. Illustrierte Geschichte der Artillerie*. Lausanne, 1971, 12–13; Schmidtchen, *Bombarden*, 103–105.

9 Some authors consider that the fall in the price of gunpowder that started at this time was also a factor. Kenneth Chase, *Firearms: A Global History to 1700*. Cambridge, 2008, 60; Sean McLachlan, *Medieval Handgonnes. The First Black Powder Infantry Weapons*. Oxford, 2010, 20.

10 The largest surviving example is the 80 cm calibre *Pumhart von Steyr*, made in Styria in the early fifteenth century and now held in the Heeresgeschichtliches Museum, Vienna. It weighs 7.5 tonnes, fired a 697-kilogram ball and used fifteen kilograms of gunpowder. According to modern calculations, the projectile, if fired at a ten-degree angle, would have reached a speed of 160 m/s and had a range of about 600 m. The title of heaviest cannon goes to the 498 cm long, 64 cm calibre, 16.4 tonne *Dulle Griet*, also made in the early fifteenth century and now on display in the city of Ghent. The barrel is made of thirty-two iron staves and sixty-one hoops, and its powder chamber is attached to the barrel by a screw thread. Its stone ball weighs 356 kg. I should also mention *Mons Meg*, held in Edinburgh Castle, made in Mons in Flanders in 1449 for Philip the Good, prince of Burgundy, who gifted it to James II of Scotland in 1457. It is 406 cm long, weighs “only” 6.6 tonnes, and its 175 kilogram stone ball measures 50.5 cm across, but its iron ball weighs 526 kg. With a 47.6 kilogram powder charge and an angle of elevation of 45 degrees, such a projectile could travel a distance of 1288 m, and a stone ball could travel 2622 m. At a ceremonial salute in 1682, it was overloaded, and the back two hoops split. An extraordinary artillery piece is the *Dardanelles Gun*, cast in bronze (!) for Sultan Mehmed II in 1464 and now held in the Tower of London. It is 518 cm long and weighs 18.6 tonnes; its ball is 63 cm in diameter and weighs 340 kg; and its powder chamber is also connected to the barrel by a screw thread. Schmidtchen, *Bombarden*, 33–42; see also Robert D. Smith and Ruth Rhynas Brown, *Bombards. Mons Meg and Her Sisters*. (Royal Armouries Monograph, 1.) London, 1989, 1–38.

11 During the siege of Constantinople, it proved simpler to cast the siege guns on site. Dudley Pope, *Feuerwaffen*. Bern, München, Wien, 1965, 38–41; McNeill, *The Pursuit of Power*, 81.

12 DeVries also notes that these enormous beasts had to be brought up relatively close to the walls during a siege and mounted in a fixed frame, offering an easy target to the defensive artillery, which gained in strength after the mid-fifteenth century. Kelly DeVries, *Medieval Military Technology*. Peterborough, Lewiston, 1992, 152.

reusable iron balls. These appeared in the early fifteenth century and became the standard projectiles in the 1470s.¹³ Smaller projectiles required smaller and thus lighter barrels, even though the introduction of the iron ball and the increased strength of charge following the development of granular gunpowder (see below) required a thicker tube wall relative to the calibre. The shape of cannons also changed: short, wide barrels gave way to thinner, longer types. A further reduction in weight took place after the examination of burst gun barrels in the Netherlands showed that this usually occurred at the powder chamber, showing that the gas pressure in the barrel gradually reduces towards the muzzle, and so the wall of the barrel could be tapered from the powder chamber (Appendix, Figure 6). Instead of wrought or cast iron, cannons were increasingly made of bronze.¹⁴ Longer barrels and the use of iron balls in all of these greatly improved their aiming accuracy and destructive power.

THE CASTING OF BRONZE CANNONS

Cast bronze cannons had many advantages over iron cannons made in a blacksmith's forge. Casting was simpler and perhaps quicker than iron forging, and benefited from centuries of experience of casting bells. Cannons made this way also turned out to be stronger than those made by forging. Bronze has a much lower melting point than iron and is much more flexible when it solidifies, and casting results in a much more even wall thickness, so that the cannon much better resists the forces generated by the explosion of the charge. Overall, therefore, bronze cannons were much more reliable.¹⁵ Another substantial factor was that bronze is not vulnerable to the effects of weather.

Making a bronze cannon was not, however, a simple procedure. It started with a 1:1 scale clay model, which was fired in an open fire. Patterns for lifting lugs¹⁶ and various decorations (such as coats of arms) were then attached to the model with wire. Then the mould was made by applying a clay mixture to the

13 Schmidtchen, *Bombardern*, 105–109; Simon Pepper and Nicholas Adams, *Firearms and Fortifications. Military Architecture and Siege Warfare in Sixteenth-Century Siena*. Chicago, London, 1986, 8; Robert D. Smith and Kelly DeVries, *The Artillery of the Dukes of Burgundy 1363–1477*. Woodbridge, 2005, 47.

14 McNeill, with some exaggeration, talks of a second Bronze Age (*The Pursuit of Power*, 86). Why did they not use iron, if it was so much cheaper? The answer is simple: before the middle of the sixteenth century, cast iron implements and tools – and of course gun barrels – were very rigid and fragile, primarily because of the high carbon content of the metal. Historians date the turn to 1543, when the problem was solved in England by technical development that has remained a mystery. The date and the persons who developed the new process are somewhat uncertain, but it was from that time onward that iron cannons started to make headway, slowly at first, and more forcefully in the seventeenth century: Charles Ffoulkes, *The Gun-Founders of England*. London, 1937 (reprint 1969), 73; Edmund B. Teesdale, *Gunfounding in the Weald in the Sixteenth Century*. (Royal Armouries Monograph, 2.) London, 1991, 13–24.

15 Egg, Jobé, Lachouque, Cleator and Reichel, *Kanonnen*, 16; Schmidtchen, *Bombardern*, 27; McLachlan, *Medieval Handgonnes*, 13.

16 These were used mainly in the first half of the fifteenth century, and were replaced by handles, usually in the shape of dolphins – the origin of their name – on the top of the barrel, to the

finished model in several layers. The mould was left to dry, removed from the model by cutting into pieces, reassembled, and held together by iron hoops.¹⁷ The breech was made separately. The core rod that formed the bore was inserted into the mould and held in place at each end by iron rings with three hooked stalks. The mould was then set into the casting pit and earth was pressed around it. Meanwhile, the requisite quantity of metal was melted, another process demanding expertise and care and sometimes lasting several days. When the metal reached the molten condition, casting could begin.

Initially, the mould oriented muzzle downwards in the pit, and the hot metal was poured in from above. As a result, any dirt that went in with the molten metal remained in the casting, and air bubbles also developed, weakening the tube. When the gun was fired, these defects often caused the barrel to crack – in the fortunate case – or burst. The whole procedure was reversed the early sixteenth century. The mould was placed with the muzzle at the top, and the molten metal was poured by the principle of communicating vessels, so that it ran upwards into the mould. All contaminants, enclosures and bubbles thus gathered at the top of the poured metal, where a large overflow was left at the top, creating a projection that was later cut off and molten down again. The method had the additional advantage of compressing the metal forming the chamber at the bottom by the weight of the molten metal above. Consequently, the part exposed to the greatest forces was also the strongest. The technique produced cannons of much improved quality.

The next stage, cooling, was sometimes accelerated to better temper the metal. The mould was removed, and the core was pulled out. The core had a diameter only three quarters that of the final bore, and the desired calibre was attained using a water-driven drill. This enabled the bore to be straightened, within limits, if the core had not been positioned precisely. Drilling also removed surface unevenness. After the final cleaning and smoothing, the cannon was prepared for trial firing, and if that succeeded, it was ready to deploy.¹⁸

Cast bronze cannons had three serious drawbacks. One was the high material cost – three times that of iron. Another was that they could only be made where raw materials, water power, smelters and foundries were available.

right and left of the centre line, at the centre of gravity. The trunnions were attached in the same way on each side of the barrel, somewhat in front of the centre of gravity (see below).

17 When a way of making reusable moulds was discovered in the sixteenth century, cannons of the same calibre could be produced in series, which led to standardization.

18 The process of casting bronze cannons is described in Schmidtchen, *Bombarden*, 27–32. Like everyone else, he relies on two principal sources: Kaspar Brunner (1547) and Vannoccio Biringuccio (1550). Both were professional gunners, and Brunner was a master of the Nuremberg arsenal: Otto Johannsen, 'Kaspar Brunners gründlicher Bericht des Büchsenengiessens vom Jahre 1547', *Archiv für die Geschichte der Naturwissenschaften und der Technik* 7 (1916) 165–184, 245–255, 313–323; Otto Johannsen (übersetzt und bearbeitet), *Biringuccios Pirotechnia: ein Lehrbuch der chemisch-metallurgischen Technologie und des Artilleriewesens aus dem 16. Jahrhundert*. Braunschweig, 1925; Cyril Stanley Smith and Martha Teach Gnudi (transl. and eds.), *The Pirotechnia of Vannoccio Biringuccio: The Classic Sixteenth-Century Treatise on Metals and Metallurgy*. New York, 1990.

This was less of a problem with forging, which could be done in almost any large forge. The third drawback was that they could only be repaired by recasting, whereas a blacksmith in a field workshop could repair minor damage to wrought iron cannons.¹⁹

THE DEVELOPMENT OF MOBILE ARTILLERY

Developments in the artillery were also driven by the need for mobility. This required the barrels to be reduced in weight and mounted on a gun carriage of suitable design.²⁰ The earliest cannons were transported on specially reinforced carts and transferred at the point of use to a timber base that lay on the ground. This meant that the cannon could only fire in a single direction.²¹ A step forward, at the turn of the fourteenth and fifteenth centuries, was the invention of the wheeled gun carriage,²² which made guns easier to move around in siege works and enabled them to be turned laterally for aiming. It also solved the problem of recoil.²³

Several different mechanisms were developed to set the elevation. One was the Burgundian gun carriage, “invented” during the reign of Charles the Bold (Appendix, Figure 7),²⁴ on which the stock consisted of a base connected by a hinge at the front to the upper part on which the cannon was fixed. The free end of the upper part could be fixed to holes at various heights in a curved bar on each side. It was a somewhat weak mechanism, however, and could only be used for small guns.²⁵

Burgundian gunners are also credited with the idea of the trunnion, a pin cast on to each side of the barrel, projecting horizontally, slightly in front of the centre of gravity. This fitted into a groove on the top of the gun carriage and enabled the barrel to be easily tilted up and down (Appendix, Figure 8).²⁶ The wheeled gun carriage developed for this was much more massive than its fixed predecessors. It was usually made of oak, with strong iron fittings. Carts were still used for long-distance transport, and only the appearance of the limber in

19 Schmidtchen, *Bombarden*, 2; Smith and DeVries, *The Artillery*, 45; McLachlan, *Medieval Handgonnes*, 13.

20 Here we must also mention the Hussites, whose war wagons formed a kind of mobile battery. The firearms mounted on these wagons were of relatively small calibre and had a basically defensive function.

21 Schmidtchen, *Bombarden*, 63–68; Smith and DeVries, *The Artillery*, 49.

22 DeVries claims that it did not come into common use until the middle of the fifteenth century: DeVries, *Medieval Military Technology*, 158.

23 Upon firing, the gun simply rolled backwards, and if a sloping wooden ramp was set up behind it, the gun rolled back into position by itself.

24 Gerhard Kurzmann, *Kaiser Maximilian und das Kriegswesen der österreichischen Länder und des Reiches*. (Militär-geschichtliche Dissertationen österreichischen Universitäten, 5.) Wien, 1985, 123.

25 Egg, Jobé, Lachouque, Cleator and Reichel, *Kanonen*, 18; Schmidtchen, *Bombarden*, 72–76.

26 Egg, Jobé, Lachouque, Cleator and Reichel, *Kanonen*, 18; Schmidtchen, *Bombarden*, 77–82.

the late fifteenth century that enabled the gun carriage itself to be drawn by a team of horses (Appendix, Figure 9).²⁷

GUNPOWDER

There were also improvements in gunpowder.²⁸ A source of saltpetre, the ingredient that made up three quarters of its mass, was the first essential.²⁹ European countries, lacking natural deposits of their own, had to import saltpetre from China and India, where it was abundant. The expense of transport over such long distances stimulated a search for alternatives, leading to the establishment of “saltpetre farms”³⁰ in Europe and a fall in the price of saltpetre – and thus of gunpowder – by half or two thirds between 1380 and 1420.³¹ Saltpetre still remained much more expensive than the other components, because it had to be purified in an extremely complicated process to attain the quality required for gunpowder of sufficient strength.³²

Sulphur was available closer at hand, from Sicily and Iceland, where it was relatively easy to gather from abundant surface deposits resulting from volcanic activity. Because of its proximity to Western Europe, Iceland was the main supplier of sulphur from the fourteenth century onwards. The third component, charcoal, was available everywhere, depending of course on what species of wood was considered most suitable.

Until the early fifteenth century, there was only one basic kind of gunpowder, made simply by mixing the finely-ground ingredients. This simple procedure producing very fine powder, led to several problems. To explode properly when rammed into the gun barrel, it had to have just the right compaction. If pressed too hard, it did not ignite, and if left too loose, it just burned and did not produce enough gas. The quality of the constituents was highly variable, and the mixture was sometimes too weak or too strong, the latter case being highly dangerous.

27 On this, see the *Zeugbuch* of Emperor Maximilian I, produced around 1502. It shows several such gun carriages. *Zeugbuch Kaiser Maximilians I*. Bayerische Staatsbibliothek, Cod.icon. 222, <https://daten.digital-e-sammlungen.de/~db/0002/bsb00020956/images/index.html?seite=00001&l=de> (downloaded: 11.01.2010).

28 For all aspects of the history of gunpowder, see James Riddick Partington, *A History of Greek Fire and Gunpowder*. Baltimore, London, 1999.

29 Various proportions are known, but the highest-quality gunpowder comprised 75% saltpetre, 12% sulphur and 13% charcoal. McLachlan, *Medieval Handgonnes*, 22. There is a view, however, that the proportions make no difference above a saltpetre content of 50%: Smith and DeVries, *The Artillery*, 46.

30 On the role, production, acquisition and processing of saltpetre, particularly in the English connection, a full survey is: David Cressy, *Salt peter: The Mother of Gunpowder*. Oxford, 2013. The first documented saltpetre farm went into operation in Frankfurt in 1388: McLachlan, *Medieval Handgonnes*, 20.

31 Chase, *Firearms*, 60; McLachlan, *Medieval Handgonnes*, 12.

32 Saltpetre has two forms: calcium nitrate and potassium nitrate. The former is more common, but quickly absorbs moisture from the environment, rendering the gunpowder useless. It therefore had to be converted to potassium nitrate, and this complex process kept the price of saltpetre high even later.

Experiments to find the proper proportions resulted in many casualties. Finally, there was the apparently banal problem that powder packed into sacks or barrels separated during transport according to specific gravity of the ingredients. This problem was sometimes addressed by transporting the constituents separately and mixing them at the point of use, but that procedure was not without its hazards, and the product was of uneven quality. Around 1420,³³ there was an accidental discovery that the saltpetre in fine powder partially dissolved in humid conditions and mixed with the other components to form lumps. When these were dried and broken up, they formed irregular granules that burned much more intensely and thus generated gas much more quickly. This was because, in contrast with fine powder, the process was not confined to the interior of the granule, involving only the oxygen provided by saltpetre. Combustion was also fed by the oxygen between the granules, and the granules also increased the combustion surface. Because gas was generated faster and at greater force, a projectile of a given weight could be fired using a smaller quantity of expensive gunpowder. Master gunners thereafter deliberately produced granular powder, which also had better resistance to moisture. Vinegar, ammonia or distilled alcohol were added to the three basic constituents (although water turned out to work just as well), and the thorough mixing ensured the even distribution of ingredients. The mixture was dried in large blocks and ground in special mills, the grain size being adjusted by the duration of grinding. The result was a much more reliable gunpowder of consistent performance. By the mid-fifteenth century, types of gunpowder were distinguished by grain size: fine powder, granular powder, and fine priming powder, which had additives to make it more flammable. The various grades were required because many existing cannons had walls of thickness designed for the old, weak fine powder. In the sixteenth century, the basic types of gunpowder were established: special strong powder for explosive devices, cannon powder, hackbut or musket powder for soldiers' weapons and fine powder used in hunting muskets and for priming. They differed from each other mainly in the size of the grain and were produced by passing through sieves of different mesh size.³⁴

33 According to McLachlan, granular gunpowder was mentioned as early as 1407. It was probably developed in England around 1372 and was in widespread use by 1420: McLachlan, *Medieval Handgonnes*, 22–23.

34 Schmidtchen, *Bombarden*, 114–119; DeVries, *Medieval Military Technology*, 156–157; McLachlan, *Medieval Handgonnes*, 9–12, 22–26. There is a view, based on systematic tests, that challenges the contemporary and modern belief in the difference in the propellant strength of fine and granular powder: Smith and DeVries, *The Artillery*, 46. They conclude that it is almost impossible to date the phases of gunpowder development, and so there is no provable connection between the improvement in the efficiency of gunpowder and the development of weapons technology. By contrast, McLachlan quotes a *Feuerwerkbuch* of the early fifteenth century, in which the unknown but clearly competent author states that two pounds of granular gunpowder has a greater strength than three pounds of fine powder: McLachlan, *Medieval Handgonnes*, 24. On page 14 of that *Feuerwerkbuch* (there are no folio numbers) we do indeed find the text: *das knollen puluer zway pfundt mer tund dann gestossen*

THE EMERGENCE OF SMALL ARMS

In the first half of the fifteenth century, the time when giant cannons were developing, there was a parallel process of specializing firearms to certain purposes. Initially, cannons were deployed only for castle sieges,³⁵ but by the middle of the fourteenth century, they also appeared among defensive arsenals. Since the fortresses of the time could not accommodate large guns, defence had to be provided by small guns that could be operated by one or two soldiers.³⁶ This is no doubt what prompted the development of hand-held firearms.³⁷ Another theory traces their beginning to a problem of field artillery: although small cannons could be deployed in battle, they could not be transported at a speed that kept up even with the infantry. Because the effectiveness of firepower had been proved in several large battles by that time, there was a clear need for a firearm that one soldier could carry and operate, and which did not obstruct him in battlefield manoeuvres or on the march.³⁸

Early handguns had short barrels of cast bronze or forged iron, attached at the breech to a long wooden stock that could be set on the ground to absorb the recoil (*Stangenbüchse* – Appendix, Figure 10).³⁹ The same purpose was served on guns by a hook welded to the front of the barrel appearing in the early 1400s,⁴⁰ enabling the gun to be fixed in a loop or on the edge of a wall (Appendix, Figure 11). Growing demand drove improvements in manufacturing technology. Cast

puluer dru pfundt tun möchten. Feuerwerkbuch. Universitätsbibliothek Heidelberg, Cod. Pal. germ. 122, <http://digi.ub.uni-heidelberg.de/diglit/cpg122/0014> (downloaded: 14.11.2012). McLachlan also quotes Biringuccio, who recorded that if cannon powder was loaded into an arquebus, the ball fell to the ground fifteen feet from the mouth of the barrel: *ibid.*, 27.

35 DeVries, *Medieval Military Technology*, 145–147: gives the earliest cases.

36 In 1364, the city of Perugia ordered 500 *bombardelli*, hand-sized cannons, which were found by trial to be capable of firing through armour: Moritz Thierbach, *Die geschichtliche Entwicklung der Handfeuerwaffen, bearbeitet nach den in den deutschen Sammlungen noch vorhandenen Originalen*. Dresden, 1889 (Nachdruck, Graz, 1965), 3. In the same year, Modena ordered hand cannons called *sclopi*: Pope, *Feuerwaffen*, 41. In 1388, forty-eight persons were registered in Augsburg as being capable of shooting well with handguns: August Essenwein, *Quellen zur Geschichte der Feuerwaffen. Textband und Tafelband*. Leipzig, 1877, 12.

37 Pope, *Feuerwaffen*, 41; Georg Ortenburg, *Waffe und Waffengebrauch im Zeitalter der Landsknechte*. (Heerwesen der Neuzeit, Abteilung I.) Koblenz, 1984, 52. Müller, however, claims that all early firearms should be regarded as cannons, because they were too heavy and awkward for one man to hold and operate. He notes that the expression *Handbüchse* first appears in the sources only in the late fourteenth century: Müller, *Deutsche Bronzegeschützrohre*, 14.

38 DeVries, *Medieval Military Technology*, 148–149; McLachlan, *Medieval Handgonnes*, 14–18. DeVries lists the earliest uses of artillery in the field.

39 Konrad Kyser, *Bellifortis* (c. 1405).

40 Some authors claim this to be the origin of the name *Hakenbüchse*, while others trace it to the shape of the gunstock, resembling a hook: George Gush, *Renaissance Armies 1480–1650*. Cambridge, 1975, 11. The German name was borrowed by Latin languages in the forms *arquebuse*, *archibugio* or *arcabuz*. For the etymology and meaning of various weapon names, see József Kelenik, 'Szakállas puskák 16. századi magyarországi inventáriumokban. A terminológia problémái', *Hadtörténelmi Közlemények* New series 35:2 (1988) 484–490.

bronze barrels proved too weak,⁴¹ and cast iron was too rigid. A new process was introduced in the early fifteenth century, by which an iron plate was bent around a steel rod of slightly smaller diameter than the desired calibre, and the two edges were welded by forging. The tube was then drilled to the desired calibre and filed to remove internal unevenness, as with cannons. The end of the tube was sealed initially with an iron plug and, starting some time between 1460 and 1490, with a screw.⁴² The stock was originally a simple wooden pole, much shorter than before, fixed to the barrel by iron hoops, but in the second half of the fifteenth century, it took a form that partly surrounded the barrel from below and extended back from the barrel to provide the appropriate grip (Appendix, Figure 12).

THE DEVELOPMENT OF HANDGUNS: LOCK, STOCK AND CHARGE

Early handguns could not be aimed at all. The gunner had to hold the weapon with one hand (clasping it to his side) and bring a red-hot iron rod (or smouldering wood) to the touch hole, which was – as on cannons – located on the top of the barrel. This operation completely occupied his attention (Appendix, Figure 13). After the 1370s, the hot rod gradually gave way to the slow match,⁴³ but that, too, had to be held in the hand. It was probably to address this problem, rather than to support the substantial weight of the barrel, that two persons were required to operate the gun. The breakthrough came in the 1420s or 1430s, when the first primitive lock appeared. This had an iron rod bent into an elongated S shape fixed at its centre to the side of the stock, and held the match in jaws at one end, the “cock”. By raising the lower, backward-inclined arm, the match was made to strike the touch hole, which was still at the top of the barrel (Appendix, Figure 14).⁴⁴ The first step towards a truly useful handgun came in the middle of the fifteenth century with the relocation of the touch hole to the right side of the weapon and the addition, alongside it, of a little pan to hold the priming powder (Appendix, Figure 15).⁴⁵ At about the same time, the long lower arm was replaced by a trigger, probably borrowed from the crossbow,⁴⁶ requiring a somewhat more complicated mechanism. This marked the beginning of the true matchlock (Appendix, Figure 16).⁴⁷

41 Müller, *Deutsche Bronzegechützrohre*, 13.

42 Thierbach, *Die geschichtliche Entwicklung*, 5; Herbert Schwartz, *Gefechtsformen der Infanterie in Europa durch 800 Jahre*. München, 1977, 117–118; Müller, *Deutsche Bronzegechützrohre*, 13.

43 Kunz, *Technische Entwicklung*, 76.

44 Thierbach, *Die geschichtliche Entwicklung*, 7. This was improved by cutting a slot in the mid-line of the butt, immediately behind the breech, into which the serpentine and trigger were attached. Arne Hoff, *Feuerwaffen I*. Braunschweig, 1969, 12–13; Müller, *Deutsche Bronzegechützrohre*, 21.

45 Müller, *Deutsche Bronzegechützrohre*, 22; Kunz, *Technische Entwicklung*, 187.

46 Thierbach, *Die geschichtliche Entwicklung*, 7; Müller, *Deutsche Bronzegechützrohre*, 14.

47 Thierbach, *Die geschichtliche Entwicklung*, 7–17; Schwarz, *Gefechtsformen*, 118–119; Ortenburg, *Waffe und Waffengebrauch*, 58–61.

Every component of the matchlock was attached to a single metal lock plate. The mechanism operated as a simple hoist: raising the lower arm or pulling the trigger caused the end of the long metal rod (sear) to move downwards. The hook at the end of the sear latched into the tumbler, causing it to rotate about its pivot and cause the cock fixed at its end to impact on the flash pan.⁴⁸

The greatest defect of this mechanism was the danger of unintended firing because there was nothing to hinder the movement of the lever arm or trigger (the trigger guard came into use only later). To prevent this from happening, a spring was incorporated to provide some resistance against pulling the trigger. A similar consideration lay behind the invention, in the late fifteenth century, of a variant that for a while was in use alongside the standard version. This was the *Luntenschnappschloss* or snap matchlock, in which the cock was drawn back against a spring and held in position by a pin. The pin was held in place by another spring and released by pressing a button, causing the cock to strike the flash pan. In this type of lock, the match was often replaced by smouldering touchwood. Although it did not solve the problem of accidental firing, the lighter touch required to press the button, relative to pulling a lever or trigger, meant less disturbance to the direction of the gun and greater accuracy of aiming.⁴⁹

Both locks had another fundamental flaw: wind and rain could easily render them inoperable. They were eventually protected by the flash pan cover, which also prevented accidental firing. Another problem was that the continuously-burning match was always running out, and its glowing end made concealed movement impossible, especially at night. The latter problem was solved by keeping the match in the slow-match box.⁵⁰ Nonetheless, the simplicity and ease of manufacture of the matchlock – and the matchlock musket – kept them in widespread use right up to the early eighteenth century.

We must also mention two other lock types that were invented around the turn of the fifteenth and sixteenth centuries, even though they came into widespread use only much later: the wheellock and the flintlock. Both were probably inspired by lighters that were common at the time.⁵¹ The first representation of the wheellock mechanism appears among the drawings of Leonardo da Vinci, who is consequently regarded as its “inventor”.⁵² The flintlock mechanism came slightly later, in the early sixteenth century, and only became

48 Hoff, *Feuerwaffen*, 13–14.

49 Thierbach, *Die geschichtliche Entwicklung*, 12; Hoff, *Feuerwaffen*, 14–15, 30–36; Müller, *Deutsche Bronzegechützrohre*, 22; Kunz, *Die geschichtliche Entwicklung*, 191–192.

50 Thierbach, *Die geschichtliche Entwicklung*, 19.

51 Thierbach stresses that lock mechanisms developed gradually, through long experimentation: Thierbach, *Die geschichtliche Entwicklung*, 29. For a picture of the tinderboxes that were the source of the invention, see Peter Krenn (ed.), *Von alten Handfeuerwaffen. Entwicklung, Technik, Leistung. Katalog der Sonderausstellung im Landeszeughaus Graz, Mai bis Oktober 1989*. Graz, 1989, 36.

52 Hoff, *Feuerwaffen*, 39–50; Heinrich Müller, *Gewehre, Pistolen, Revolver. Hand- und Faustfeuerwaffen vom 14. bis 19. Jahrhundert*. Leipzig, 1979, 41–43.

truly widespread about a hundred years later. There is much more uncertainty surrounding the time, place and circumstances of its emergence.⁵³ Without going into the technical details, the operation of both locks had two features that fundamentally distinguished them from the matchlock. Firstly, a weapon with such a lock could be kept ready for firing for an unlimited time, which made the wheellock pistol and carbine the weapons of the cavalry.⁵⁴ Secondly, they were complicated mechanisms, making them much more expensive and demanding much more care and maintenance than the matchlock.

The stock of an early handgun did not facilitate aiming, because the gunner had to support the weapon on the ground or hold it to his body and could not position it precisely. To address this problem, first the long stock was shortened and flattened, so that it could be held under the armpit or laid on the shoulder and pressed against the face. This was not found to be satisfactory, and in about the second half of the fifteenth century, experiments began with firearms that could be rested against the shoulder.⁵⁵ The limiting factor was the ability of the human body to absorb the recoil without injury, which set limits on the calibre and charge of hand-held firearms for general military use.⁵⁶

Another factor limiting accuracy was the fit of the ball to the bore. With contemporary technology, it was not possible to drill the bore sufficiently evenly or to make perfectly-fitting balls.⁵⁷ If either surface was uneven, the ball could easily get jammed, which caused the barrel to burst. Consequently, balls were made smaller than the calibre, to extents that varied by weapon type. This “rattling” caused the propellant gas to escape past the projectile, which thus emerged with reduced energy and uncertain direction. To diminish the former effect, repeated powerful strokes of the ramrod deformed the lead ball so that it pressed against the wall of the barrel and prevented the escape of gas. Wadding was used for the same purpose, if with lesser effect, for iron musket balls and cannonballs.

The gas seal therefore greatly affected efficiency. Contemporary descriptions do not, of course, give us precise data on the power of weapons, but they do

53 Hoff, *Feuerwaffen*, 173–177.

54 Chase, *Firearms*, 68.

55 Thierbach, *Die geschichtliche Entwicklung*, 5; Schwarz, *Gefechtsformen*, 116–117; Ortenburg, *Waffe und Waffengebrauch*, 57–58.

56 This assertion may to some degree be contradicted. The challenge of firearms caused armour to be improved, resulting in some protection against arquebus fire outside a certain range. In response, the duke of Alba, in 1521, introduced into the Spanish armed forces a musket that was larger and heavier than the arquebus and had to be supported on a fork rest. No armour could withstand the impact of its 60 g projectile. The resulting gradual disappearance of armour allowed the musket to shrink to an acceptable size. The difference between arquebus and musket gradually diminished, and by the middle or end of the sixteenth century, they merged into the standard infantry weapon known as the matchlock musket. Thierbach, *Die geschichtliche Entwicklung*, 19–20; Kelenik, ‘Szakállas puskák’, 488–489.

57 Even if it had succeeded, it would have slowed down the process of loading even further, because to push the ball down the barrel, the soldier would have had to overcome the resistance of the air being compressed behind it. This was one of the reasons for the later use of straight rifling.

permit some inferences. There have also been well-documented modern firing experiments that tell us about the strength of early handguns. One series of experiments was carried out in Graz in the winter of 1988–1989. These mostly involved late-sixteenth-century or later weapons, but two of these were analogous to the types used in the late fifteenth and early sixteenth century. One was a smooth-bore matchlock musket, whose ball penetrated 2 mm steel plate from a distance of 30 m, and 1 mm plate from 100 m.⁵⁸ The other was a rifled wheellock *Doppelhaken* dated to 1571, which could penetrate 2 mm steel plate at a range of 100 m.⁵⁹ A more graphic illustration is that the muzzle exit energy of the former musket was the same as that of the *Sturmgewehr 77* used in the Austrian army at the time of the experiments, and that of the *Doppelhaken* was two and a half times greater!⁶⁰

This performance was achieved through the use of granular powder and long barrels with walls that were thicker, relative to the calibre, than those of cannons, allowing them to take a relatively more powerful charge. The fine powder used in early firearms could only accelerate the ball over a short distance, and the barrel had to be dimensioned accordingly. Granular powder could provide enough propellant energy to accelerate the ball all the way along a barrel about a metre long, increasing the maximum speed and the kinetic energy, proportional to the square of the speed, thus increasing the range and accuracy.⁶¹

It should be noted that the names and technical parameters of handguns varied greatly from time to time and place to place, and I will not go into the details of these. It is enough to mention that the heavier and high-calibre versions (*Doppelhaken* and *Hakenbüchse*) were used in forts and the smaller, easier-to-carry versions (*Halbhaken*, *Handrohr* and arquebus) were used on the battlefield.⁶²

THE AUSTRIAN HABSBURG MILITARY-INDUSTRIAL COMPLEX

Since the main raw materials of firearms were iron and copper, the latter being alloyed with tin and lead to make bronze, the locations of major weapon manufacturing centres were defined by local availability of these raw materials or proximity to appropriate transport routes, usually rivers. Examples were the

58 The barrel was 760 mm long with a calibre of 15.1 mm, and the musket had an overall length of 1050 mm. It weighed 2.5 kg, took a powder charge of 15 g, and fired an 18 g ball.

59 The barrel was 1100 mm long with a calibre of 19.8 mm across the lands and 22.1 mm across the grooves, and the musket had an overall length of 1560 mm. It weighed 13.4 kg, took a powder charge of 25 g, and fired an 84 g ball.

60 For a full account of the experiments, see Krenn (ed.), *Von alten Handfeuerwaffen*, 44–49, 51, 64.

61 McLachlan sets out this theory but does not give the source or any data to back it up: McLachlan, *Medieval Handgonnes*, 26.

62 Thierbach, *Die geschichtliche Entwicklung*, 9; Schwarz, *Gefechtsformen*, 117; Ortenburg, *Waffe und Waffengebrauch*, 54–56; Chase, *Firearms*, 61. According to data given by Gush, the average firearm of the early sixteenth century was 1 m long, had an overall weight of about 5 kg, fired lead balls of 26–44 g, had a range of 370 m, and was accurate over 100–150 m: Gush, *Renaissance Armies*, 11.

South German trading towns of Nuremberg and Augsburg, and a town specifically renowned for its gunsmiths, Suhl in Saxony. Towns in Flanders (Ghent and Mons) were also major centres. After the mid-fifteenth century, when the less reliable iron cannons gradually gave way high-quality bronze guns, copper became – to use the modern expression – a strategic material. This greatly contributed to the rise of the Fugger family, which secured a monopoly of the mining and trade of copper. Italy, despite its long tradition of making the finest armour and crossbows,⁶³ lost out in this competition because of the excessive cost of importing large quantities of metal from distant sources.

For firearms to achieve their decisive role, they needed to be produced in large quantities as well as improved quality. Manufacture and deployment of the new weapons involved more than finding sources of raw material. There was a greatly increased need for transport, workshops, craftsmen, an administrative organization and, above all, large sums of money. There were various ways of raising the finance: the Italian city states, for example, used the profits on trade,⁶⁴ and King Charles VII of France raised higher taxes from his subjects.⁶⁵ In the mid-fifteenth century, recovering from the turmoil of the Hundred Years' War, the French crown embarked on tight centralization and gained control of extensive new territories and the accompanying tax revenues. By using this income to build up its armed forces, France managed to expel the English from the country and acquire part of the Burgundian legacy. The artillery played a significant part in this, well illustrated by the Normandy campaign of 1449–1450, when the French captured more than sixty castles from the English.⁶⁶

We should also mention the neighbouring dukes of Burgundy, who were in the forefront in the developing and applying the artillery, and firearms in general. The marriage of Maximilian of Habsburg to Mary of Burgundy, the sole heir of Charles the Bold, showed the third way to raising money: he acquired the greater part of her wealthy Burgundian inheritance. This must have had a bearing on the priority given to artillery and military industrial developments in Maximilian's military reforms. In and around the town of Innsbruck, he established one of the largest centres of weapons and war material production of that period. This was an area of minor, low-grade iron ore deposits, and so he also set up workshops in Styria (Thörl, Vordernberg and Eisenerz) to make cannons from the much better iron ore there. Such was the difference in quality that iron was transported from Styria to Innsbruck despite the higher costs. Copper was mined from local mines, mainly in Mühlau and Schwaz. To increase local copper production, however, the monopoly of the copper trade held by Nuremberg first had to be broken. This happened at the turn of the century. Surviving orders give a good impression of the volume of production. In 1500,

63 McNeill, *The Pursuit of Power*, 80–81.

64 Peter Wilson, 'European Warfare 1450–1815', in Jeremy Black (ed.), *War in the Early Modern World 1450–1815*. London, 1999, 181.

65 DeVries, *Medieval Military Technology*, 162.

66 Pope, *Feuerwaffen*, 8; McNeill, *The Pursuit of Power*, 83.

Maximilian ordered 300 cannons, 2,000 heavy and 2,000 light infantry firearms (*Hakenbüchse* and *Handbüchse* – described below), and twenty thousand balls for them. A new blast furnace was dedicated to making the latter.

We get a good impression of these developments from the figures for the output of one of the largest workshops, in Thörl, run by a great family of weapons manufacturers, the Pögl. Sebald Pögl was one of the main suppliers to the Innsbruck *Zeughaus*. The workshop employed about eighty people and hired additional labour to meet large orders. Between 1502 and 1505, it produced 3,845 heavy handguns, 417 small and medium-sized cannons and 35,000 balls, together with tools for artillery operations. In 1507, the Innsbruck *Zeughaus* held, in addition to these, twenty-nine heavy, thirty-four medium-sized and twelve light cannons made for Maximilian. The corresponding figures in 1515 were twenty-six, twelve and twenty-eight, but in the meantime, the Italian Wars had been making constant demands. There were also 1,594 *Hakenbüchse* and 2,327 *Handbüchse* in the inventory, together with about 125,000 – mainly iron – balls.

From an order Maximilian issued to his newly-appointed “chief of all armouries” (*Obrister Zeugmeister*) in 1500, we can also get an impression of the prices. For bronze cannons, two Rhenish guildens and forty-five *kreuzers* were paid per cast hundredweight. A smaller cannon cost between thirteen and twenty guildens, a large *Hakenbüchse* one gulden, and a small *Hakenbüchse*, half a gulden. By comparison, the monthly pay of a lowly *landsknecht* was four guildens, and that of an infantry captain, twenty guildens.⁶⁷

FIREARMS ON THE BATTLEFIELD

Marking a new stage in the development of firearms was the appearance, in the final quarter of the fifteenth century, of the *Hakenbüchse* or arquebus (Appendix, Figure 17). It was widely adopted by the military and became the standard military hand-held firearm in the first half of the following century. Its popularity stemmed partly from the low cost of manufacture in large quantities and the very low operating costs. A ten-kilogram charge for a medium-sized cannon was enough for 400–650 handgun rounds, and gunpowder prices were steadily falling.⁶⁸ Perhaps the greatest advantage of the arquebus over other weapons, however, was the very short time required to teach its use. A professional archer, with constant practice, took up to ten years to train, and a lost archer was very difficult to replace, whereas anybody could learn how to handle an arquebus or musket within a month, and fallen soldiers could quickly be replaced. Since soldiers in battle fired into large armies from a relatively short distance, only men of average ability, rather than skilled marksmen, were needed.

The rate of fire, however, was severely limited by the mechanism, which made loading an awkward procedure. Firing three or four rounds per minute is

⁶⁷ Kurzmann, *Kaiser Maximilian*, 83–84, 122–163.

⁶⁸ “Cheaper gunpowder also democratized the handgunne.” McLachlan, *Medieval Handgonnes*, 22.

the stuff of legend and may not have been achieved even with the flintlock musket and paper cartridge of the eighteenth century, let alone in the early sixteenth century.⁶⁹ Considering the weight of the weapon, the complexity of the procedure,⁷⁰ and – very importantly – real battlefield conditions, firing once per minute was a good rate, and even slower rates were almost certainly common. In order to maintain the constant fire essential for battle, some other solution had to be found. This takes us considerably beyond the technical questions, and into the much more important area of tactics and organization.

The consequences of firearms appearing on the battlefield were profound, in both the short and long term. In medieval wars, the elite of armies were the knights, but the Battle of Courtrai of 1302 and the Battle of Morgarten of 1315 showed that well-organized and competently-led infantry armies could defeat an army of knights. The Swiss infantry, victorious in the latter clash, went on to be almost invincible, three times standing up to the army of Charles the Bold, duke of Burgundy, who also had firearms (Grandson, 2 March 1476; Murten, 22 June 1476, and Nancy, 5 January 1477). On that last occasion, Charles himself was left dead on the battlefield.⁷¹

In the wake of these victories, the 4–6 metre pike⁷² became the main weapon of the infantry, in whose hands it could hold up a cavalry charge and overcome a force of enemy infantry armed with sword and shield. We should note, however, that although the pike was the weapon that gave the infantry the edge over the cavalry, handguns were developing and spreading at the same time. This brings us to the main tactical and organizational problem of the age, the two-century quest for the optimum composition and deployment of units using different weapons. Several basic facts had to be reconciled: the pike-armed infantry could repulse a cavalry charge, but could not defend itself against enemy firearms, especially after the artillery started to become a regular feature

69 Rather than the “historical” videos proliferating on the internet, I recommend to everyone the scene in *The Last Samurai*, where the hero wishes to demonstrate the unsuitability for battle of the newly-trained government forces. What was possible in the calm, sheltered circumstances of a museum did not really work in the midst of a sixteenth-century battle.

70 For a start, the soldier had to juggle several separate items – the fine powder for priming, the powder to be loaded into the barrel, the ball and the ramrod – and take care throughout the procedure that the burning match he was holding in his hand did not get too close to the gunpowder. For a description of the whole procedure, with illustrations, see Jacob de Gheyn, *Waffenhandlung von den Röhren, Musquetten und Spiessen...* Gravenhagen, 1608, Bayerische Staatsbibliothek, https://reader.digitale-sammlungen.de/de/fs1/object/display/bsb10496588_00001.html (downloaded: 27.03.2012). A later bilingual (French-German) edition with more detailed commentaries: Jacob de Gheyn, *Die Drillkunst. Das ist Kriegsübliche Waffenhandlung der Musquetten und Piquen*. Nuremberg, 1664, Staats- und Universitätsbibliothek Dresden, <https://digital.slub-dresden.de/werkansicht/dlf/6493/1/> (downloaded: 28.05.2009). There are English documents recording that a rate of twelve rounds per hour was acceptable for the infantry during the time of Elizabeth I, while horsemen with short carbines or pistols could fire forty times per hour: Gush, *Renaissance Armies*, 12.

71 For a highly detailed description of the Swiss *Gewalthaufen*, see Schwarz, *Gefechtsformen*, 54–89.

72 Schwarz, *Gefechtsformen*, 65–66; Ortenburg, *Waffe und Waffengebrauch*, 45.

on the battlefield; beside them stood the handgunners, whose low hit rate and slow rate of fire made them incapable of withstanding a cavalry charge; the artillery could be devastating for any enemy force that came within its range of fire but needed substantial cover from cavalry and infantry; and the cavalry, while proven to be impotent against pikemen, could charge down handgunners and artillerymen.⁷³

The quest above all involved efforts to perfect cooperation between arquebusiers and pikemen. The basic scheme was for the arquebusiers to stand in front of the pikemen in small units, firing until the attackers drew close, when they withdrew into the cover of the pikes, from where they continued to fire, because the first rank of pikes provided cover for at least two ranks of handgunners. Many variants of this were developed over time.

This was the basic dilemma, and there was another complicating factor: superiority in numbers did not always determine the outcome of a military encounter. One side could prevail if it was stronger than the other in one branch of arms and could press this advantage through the mutual support of different branches.⁷⁴ There were many examples of this, particularly in the Italian Wars (1494–1559), which are well known for their political consequences – the start of the century-long Habsburg–Valois rivalry – but are equally significant for setting off unprecedented developments in military affairs.⁷⁵

Briefly, Charles VIII of France mounted a campaign to pursue what he saw as his rightful claim to the Angevin succession in 1494. His army of about 20,000 included 4,800 Swiss mercenaries, against whom the Italian armies had no answer, but his main strength was in mobile siege artillery. This, and news of French brutality, opened Charles' way to Naples, which he entered in February 1495.⁷⁶ Worried by Charles' success, several Italian states allied against him, and their fleet cut off the French maritime supply routes. Charles was therefore constrained to forge a route home by land. At Fornovo, 30 km south-west of Parma, the allies tried to block his way in early July 1495 but could not prevail even in "traditional" hand-to-hand fighting against the highly effective cooperation between the French heavy cavalry and the Swiss infantry. Almost at the same time, Spanish forces under Gonzalo Fernández de Córdoba landed at

73 Since the firearms of this period were impossible to handle on horseback, they were not cavalry weapons. The first mention of the pistol, the firearm small enough for this purpose, is in 1548: Ortenburg, *Waffe und Waffengebrauch*, 54.

74 Wilson, 'European Warfare', 187.

75 On the history of the Italian Wars, first of all: Michael Edward and Christine Shaw, *The Italian Wars 1494–1559*. (War, State and Society in Early Modern Europe) London, New York, 2012; Frederick Lewis Taylor, *The Art of War in Italy 1494–1529: The Transition from Mediaeval to Modern Warfare during the Renaissance*. Cambridge, 1921 (reprint: s. l., 2012); Stephen Turnbull, *The Art of Renaissance Warfare. From the Fall of Constantinople to the Thirty Years War*. London, St. Paul, 2006, 61–80, and the chapter by Mónika F. Molnár in this book.

76 DeVries and Smith take a diametrically opposite view. Citing Simon Pepper, they claim that Charles' success derived less from his artillery than from intimidation, political bargaining, luck, and the fact that the Italians did not want to fight him: Smith and DeVries, *The Artillery*, 42–44.

Calabria and joined with the Neapolitans to recapture the French-held territory. The two sides met on 28 June 1495 at Seminara, and the Spanish were defeated, once again thanks to the cooperation between the Swiss infantry and the French cavalry.

This victory had ironic and heavy consequences for the French. Córdoba learned from the experience, and not much later, in the Battle of Barletta in 1502, the newly-raised Spanish pike infantry defeated the Swiss. The real breakthrough, however, was the Battle of Cerignola the following year. Córdoba dug a trench in front of his own front line and used the extracted earth to build a parapet. Behind this, he set up two thousand handgunners, four ranks deep. The French knights remained unaware of the stake-studded trench until they reached it. Their charge stopped short and suffered serious losses from the Spanish volleys. The Swiss infantry following the knights attempted a breakthrough with their customary momentum, but the Spanish shot them to pieces. The battle taught several lessons, demonstrating above all the utility of well-positioned field fortifications and potential inherent in massed firearms when systematically deployed.⁷⁷

The defeat at Cerignola, and another at Garigliano shortly afterwards, put an end to the Neapolitan ambitions of the Valois kings, leaving Milan as their only realistic objective. The focus of fighting therefore shifted to North Italy, and the next major battle took place at Ravenna in 1512, where the French, supported by Ferrara, destroyed the Spanish-Papal armies. The decisive element was the French artillery, which tore gaps in the enemy ranks before the battle even started, forcing them to move from their positions and attack from a disadvantageous situation. The French then completed their victory in bloody hand-to-hand fighting. Both sides paid an enormous price. The Spanish-Papal army lost two thirds (!) of their troops, the French one fifth of theirs.

In 1515, the new French king, Francis I, made another attempt on Milan, culminating in the Battle of Marignano, which proved to be another milestone. There, the Swiss, under Habsburg pay, encountered the *landsknechts* hired by the French. These two infantry forces, eternal rivals, laid into each other for a whole day, without result. Next day, the French changed tactics, attacking the Swiss alternately with cavalry and artillery. The cavalry made little headway, but the cannons cut swathes through them: by the end of the battle, 12,000 Swiss lay dead, and the myth of Swiss invincibility died with them. It was not until 1522, however, that the Swiss finally learned their lesson in the shameful defeat of Bicocca.

This was something of a reprise of Cerignola. The Spanish arranged themselves behind a sunken road which they had been deepened and used the earth to raise a parapet. The arquebusiers stood in the front line with the *landsknechts* behind them, and the cavalry covered the flanks. On the other side,

⁷⁷ Turnbull, *The Art of Renaissance Warfare*, 66–69. The author quietly notes that an essential element in Córdoba's victory was the stupidity of the French commander, who risked a frontal attack in these circumstances.

the Swiss were protesting about not being paid, and gave the French commanders an ultimatum: lead us into battle, or we will leave. Lautrec had little choice, but before the assault, he wanted to soften up the Spanish positions with his artillery. The Swiss, however, did not wait for this, and advanced in two 4,000-man squares. By the time they reached the sunken road, they had lost about a thousand men, and in front of the parapets, another two thousand fell in a very short time. In addition to the arquebusiers in front of them, they were being fired on by the field guns at the end of the sunken road. The attack collapsed, and the Swiss had to wait twenty-two years to regain their reputation themselves, with reformed forces and tactics, at the battle of Ceresole.

The series of great Italian battles ended at Pavia in 1525. Besides the capture of the French king, Francis I, the significance of this battle from the military viewpoint derives from the action of the Spanish arquebusiers. Making use of the morning mist, without any cover, divided into small units that kept in constant motion on the battlefield, they systematically cut down the French cavalry charges, and then the Swiss infantry. The ineffectiveness of the pike “hedgehog” without firearm support was finally proved. What started at Bicocca came to completion at Pavia.

French attempts continued, and the war dragged on, but Pavia nonetheless marked the end of French ambitions in Italy. The principal military factor in the French failure was the weakness of their own infantry. Although they were ahead of their opponents in cavalry and artillery, they were obliged to rely on uncertain mercenaries, the Swiss pikemen, who had not kept abreast with the use of the arquebus and the tactical changes it demanded. The Spanish displayed much greater flexibility, moving quickly to integrate the arquebus and arquebusiers into the military organization and battlefield tactics, and adopting innovations in field fortifications. This flexibility led to the establishment of the *tercios* in the 1530s,⁷⁸ formations that dominated the battlefields of Europe right up to the defeat at Rocroi in 1643.

There was another area where the Italian Wars brought a breakthrough in military development. No fortification of the time could withstand Charles VIII's mobile siege artillery. The only way to defend a castle was to prevent a siege from beginning, which meant forcing an enemy with such artillery to join battle in advance. This is no doubt one of the reasons why there were so many open battles in the first half of the Italian Wars. By the 1530s, the geometrically based system of fortification later known as the “Italian fortification system” had been developed, which at least evened out the disadvantages of the defence and forced the attackers to mount a long, cumbersome and costly siege with many casualties.⁷⁹ This largely explains why the number of battles fell off sharply after

78 For a detailed description of the *tercio*, see Schwarz, *Gefechtsformen*, 89–101, 205–234 and the chapter in this book by Zoltán Korpás.

79 One of the foremost authorities on the subject is John Rigby Hale, who has worked on the original Italian sources. Perhaps his best study of the origins of the bastion is: John Rigby Hale, ‘The Early Development of the Bastion: An Italian Chronology, c.1450–c.1534’, in John Rigby Hale, John Roger Loxdale Highfield and Beryl Smalley (eds.), *Europe in the Late Middle Ages*.

Pavia, although we should note that one of the most effective measures against modern siege artillery, the thick, strong, earth parapet, was used in the siege of Pisa in 1500 and stood up to the French artillery. Such experiences made earth parapets a basic component of the Italian system.

The involvement of every major European military force of the age is what gives the Italian Wars their singular significance in military history. When opponents are in such close (military) contact for a sustained period, new techniques and tactics spread very fast. Italy was a proving ground where firearms and infantry earned a position of supremacy over other means of warfare.

Evanstone, 1965. See also Heinrich Adolf von Zastrow, *Geschichte der beständigen Befestigungen oder Handbuch der vorzüglichsten Systeme und Manieren der Befestigungskunst*. Leipzig, 1839; Christopher Duffy, *Siege Warfare: The Fortress in the Early Modern World*. London, Henley, 1979, 8–22.

Gergely Buzás

LATE MEDIEVAL EUROPEAN MILITARY ARCHITECTURE AND HUNGARY (1450–1526)

EUROPEAN FORT ARCHITECTURE BETWEEN 1450 AND 1526

Firearms and black powder were among the most important military innovations in late medieval Europe. First appearing in the fourteenth century, firearms made a considerable impact on military architecture in the following hundred years, and in the second half of the fifteenth century they became the determining factor in the design of forts. Among the architectural features they gave rise to at that time were thicker ramparts, new tower shapes, loopholes and casemates. The new towers were lower than the old, with thicker walls, and their rounded shape eliminated corners that could easily be broken off by cannonballs. New defensive firearms were placed in casemates inside the towers and within the thick walls, and on wide platforms at the top of walls and towers.

These alterations still mainly drew on the experience of medieval trebuchets, but the greater penetrating force of firearms and the different shape and trajectory of the projectiles required further innovations. Stone walls could be strengthened against the greater power of cannons by increasing wall thickness, but this was not an option for palisades. These could be strengthened with earth embankments: either a double palisade was filled with earth or an earth rampart was built in front of the palisade. At first, narrow vertical arrow slits and cross-shaped slits for crossbows were simply adapted for cannons and smaller-calibre firearms by adding an aperture big enough for the gun barrel. This led, even before the end of the fourteenth century, to the inverted keyhole-shaped loophole, usable for firearms, bows and crossbows. The flatter trajectory and greater impact of firearm projectiles enabled these weapons to be placed lower down the castle wall rather than at the top, so that they could fire directly at an assault by the enemy, whose hand-held shields no longer provided effective protection. This required casemates to be built into the thick walls. A new problem arose from the smoke generated by the black powder, which would have rapidly rendered such enclosed chambers useless without ventilation, usually some kind of chimney.

In France, firearms were a prominent feature of warfare even before 1453, when the Hundred Years' War went into its final phase. One French commander

in the war, Antoine de Chabannes, added round artillery towers to Blanquefort Castle in the 1450s and 1460s.¹ In the same period, he also started to modernize the fortress of Saint-Fargeau by thickening its old walls and towers. Similarly, Jean de la Marck modernized the castle of Sedan, building a large rondella with casemates in front of its gate.² Another common method of upgrading old castles in the second half of the fifteenth century was to build a low, sloping outer rampart with embrasures, topped with a parapet, in front of the castle wall (e.g. at Bouligneaux, Chastelnau-Bretenoux and Bonaguil en Quercy).³

Between 1460 and 1477, Louis de Luxembourg built new-style artillery towers in a coordinated system at the new fortress of Ham. The fortress had a rectangular ground plan with relatively low but very thick-walled round towers at the corners (see Appendix, Figure 1). The donjon was higher than the other towers and its walls were eleven metres thick. Casemates were built into the walls of the towers.⁴

As the Kingdom of France gained strength and expanded under Louis XI (1461–1483), many modern fortresses were built to accommodate firearms, particularly in large towns in annexed territory. In 1477, work started on a citadel in Dijon, the newly-conquered capital of Burgundy.⁵ It was a square-plan structure with four corner towers (Appendix, Figure 2). In the first phase, 1478–1483, a curtain wall was built on the side facing the town, with casemates and two thick-walled artillery towers. A barbican was built in front of the town gate.⁶ This was a large U-shaped structure with cannon embrasures that covered the main gate and defended the approaches to the fort and the moat. In the next phase, the outward-facing half of the fortress was built according to the same system, but with thicker curtain walls and broader towers. The final phase was the construction of the citadel's external barbican, with thicker walls than the first, and extending over a very large area, covering the entire length of the curtain wall between the two corner towers. After 1477, similar citadels were built in the Burgundian towns of Beaune⁷ and Auxonne.⁸ Between 1513 and 1524, a low, thick-walled rondella with cannon embrasures was built in Beaune.

Duke Francis II of Brittany, in his efforts to hold off the French threat to the independence of his duchy, rebuilt the castle of Nantes after 1466. The castle did avert a French siege in 1487, after which the ramparts had to be rebuilt. It was during these decades that the round artillery towers and the very large U-shaped

1 Jean Mesqui, *Châteaux et enceintes de la France médiévale. De la défense à la résidence*. Vol. I. Paris, 1991, 276–277.

2 *Ibid.*, 278–279.

3 *Ibid.*, 252–253.

4 *Ibid.*, 277.

5 Jean Mesqui, *Châteaux forts et fortifications en France*. Paris, 1997, 129, 222.

6 The barbican is a type of external gate fortification that first featured in European military architecture in the thirteenth century: Mesqui, *Châteaux forts*, 45.

7 Mesqui, *Châteaux et enceintes*, 308–310; Idem, *Châteaux forts*, 429.

8 Mesqui, *Châteaux forts*, 36–38.

Horseshoe Tower were constructed in the castle.⁹ The latter was closely related to the multi-storey U-shaped artillery towers of two other fortifications in Brittany: the town wall of Dinan, built between 1477 and 1488, and the fortress of Fougères, from the period around 1480 (Appendix, Figure 3).¹⁰

In the central area of Castile, forts with artillery towers, bastions, external walls with batters at the base and masonry-lined dry moats (Coca, Belmonte, La Mota, El Real de Manzanares and Simancas) were built during the reign of Henry IV (1454–1474) and his daughter, Isabella (1474–1504).¹¹ In Rousillon in Aragon, near the French frontier area, Ferdinand II of Aragon built the fortress of Salses between 1497 and 1504.¹² This was a square-plan fort with round, thick-walled artillery towers at the corners and a U-shaped barbican defending the gate. The wide moat with counterscarp was a key element of the defensive system. Vaulted corridors under the moat connected the internal rampart with a U-shaped external structure provided with a triangular projection, which had the form of a barbican but was without a gate. The fortress of Calahorra near Granada, shortly after that region was added to newly-unified Spain by Ferdinand and Isabella, was built between 1501 and 1512.¹³ With four enormous round artillery towers, it betrays the influence of contemporary Italian fortress architecture.

In parallel with the developments in France and Spain, the spread of firearms also drove innovations in Italian military architecture. Between 1456 and 1467, the Republic of Venice built the fortress of Ravenna.¹⁴ Its defensive system was comparable to – but more consistent than – the contemporary fort of Ham in France (Appendix, Figure 4). It had no donjon, and the walls between the low corner towers were made thicker and incorporated casemates, which had a means of venting the gunpowder smoke. The fortress has two parts: a square inner fort with four corner towers lies at the corner of a larger outer fortification of which only two walls were built – those facing the town. These are similar to, but thinner than, the walls of the inner fort, and have smaller towers – two round corner towers, two semicircular side towers and a square gate tower.

Forts on the Ravenna pattern sprang up all over Italy from the 1470s onwards. These were mostly – but not in every case – square, with round artillery towers at the corners the same height as the thick walls: Imola (after 1472),¹⁵ Volterra (Il Francione, after 1472),¹⁶ Forlì (1472–1482),¹⁷ Pesaro (Luciano Laurana,

9 Mesqui, *Châteaux forts*, 262–264.

10 Mesqui, *Châteaux et enceintes*, 279–281.

11 Luis Monreal y Tejada, *Mittelalterliche Burgen in Spanien*. Köln, 1999, 248–297.

12 Mesqui, *Châteaux forts*, 342–343.

13 Monreal, *Mittelalterliche Burgen*, 308–315.

14 Carlo Perogalli, *Rocche e forti medicei*. Milano, 1980, 36.

15 Paolo Marconi (ed.), *I Castelli. Architettura e difesa del territorio tra Medioevo e Rinascimento. Monumenti d'Italia*. Novara, 1989, 305–309.

16 *Ibid.*, 220–223.

17 *Ibid.*, 310–311.

1474–1505),¹⁸ Senigallia (Luciano Laurana–Baccio Pontelli, 1474–1502 – Appendix, Figure 5),¹⁹ San Leo (Francesco di Giorgio Martini, before 1479), Otranto (Ciriaco Ciri, after 1481),²⁰ Ostia (Baccio Pontelli, 1483–1486 – Appendix, Figure 6),²¹ Sarzana (Il Francione, 1488–1492),²² Sarzanello (Il Francione–Luca del Caprina, 1493–1498)²³ and Civitavecchia (Bramante, 1508–1522).²⁴ Some of these, such as the citadels of Imola and Sarzanello, also had round-plan barbicans that functioned as outworks.

Although they better withstood cannon fire, round defensive structures had the severe drawback of having a triangular “dead ground” where the guns of the neighbouring towers could not fire. In the 1470s, Francesco di Giorgio Martini attempted to eliminate the dead ground outside round towers. Aiming to retain the advantage that round structures gave against cannon fire, he placed round or mandorla-shaped artillery towers at the points of triangular or pentangular corner bastions. These ideas betray a knowledge of mid-fifteenth-century Ottoman military architecture.²⁵ He was probably responsible for the extension of the small citadel of Sassocorvaro after 1474, where a mandorla-plan bastion was placed between two round artillery towers.²⁶ The fortress of Fossombrone has a similar bastion, with an ogee plan, also probably designed by Francesco di Giorgio.²⁷ Fossombrone also has small, polygonal artillery towers at its corners. They were primarily aimed at eliminating the dead zone, but did not entirely succeed in this respect. In 1488–1489, Francesco di Giorgio added a polygonal artillery tower to the fortifications of Mondavio as the town’s citadel.²⁸ Similar polygonal bastions appeared in the castles of Volterra and Ostia in the 1470s and 1480s, and Pope Alexander VI (1492–1503) engaged Antonio da Sangallo the Elder to build such bastions around the corner towers of the old Castel Sant’Angelo in Rome (Appendix, Figure 7).²⁹ Bramante built the central bastion of the fortress of Civitavecchia on a polygonal ground plan.

Taking Francesco di Giorgio’s ideas further, Giuliano da Sangallo of Florence made the first complete break with the round artillery tower system in the 1480s. His defensive system incorporated five-sided bastions that could be fully defended by enfilading fire from the neighbouring bastions, completely eliminating the dead ground. After 1500, his elder brother Antonio developed this further. Giulio built the first “Italian bastion” forts in Brolio (after 1484 –

18 Marconi (ed.), *I Castelli*, 349.

19 *Ibid.*, 340–344.

20 *Ibid.*, 484–486.

21 *Ibid.*, 397–400.

22 *Ibid.*, 194–196.

23 *Ibid.*, 196–199.

24 *Ibid.*, 401–408.

25 Florence, Biblioteca Nazionale Centrale, (Magliabechiano) II.I.141, fol. 60r; Francesco Paolo Fiore and Manfredo Tafuri, *Francesco di Giorgio architetto*. Milano, 1994, 145.

26 Marconi (ed.), *I Castelli*, 327–329.

27 *Ibid.*, 330–332.

28 *Ibid.*, 336–337.

29 *Ibid.*, 392–396.

Appendix, Figure 8),³⁰ Poggio Imperiale (1488–1511),³¹ Sansepolcro (1500–1504)³² and Arezzo (after 1503).³³ Poggio Imperiale was completed by Antonio, who started building the fortress of Civita Castellana in 1494, and that work was completed by his nephew Antonio da Sangallo the Younger in 1513.³⁴ Civita Castellana is a five-sided fort with three regular Italian bastions, one round artillery tower and a curved artillery tower with an edge. Between 1501 and 1503, Antonio the Elder was hired by the Borgias to build the citadel of Nettuno (Appendix, Figure 9).³⁵ This was the first fort to have the new kind of bastions with *orecchioni*, and it was followed by the citadels of Pisa (1510–1512)³⁶ and Livorno (1521–1534).³⁷ These were five-sided bastions with semicircular ends. They covered the short, concave wing walls, thus providing cover for the embrasures of the cannons that enfiladed the curtain walls and the faces of the neighbouring bastions.

The bastion developed by the Sangallo brothers also began to appear in large-scale urban fortifications in the 1520s: Urbino before 1525³⁸ and Siena between 1527 and 1530.³⁹ It also spread beyond Central Italy, for example to Bari (before 1524).⁴⁰

It was mostly in their ground plan that these early bastions differed from previous artillery towers and barbicans, round or polygonal. With relatively high walls, stone-corbelled machicolations and casemates set into the walls, they were very similar in their details to the kind of towers that emerged in the mid-fifteenth century. Thin-walled, battlemented machicolations resting on corbels only gradually gave way to thick parapets with embrasures. (The earliest example of this is the fortress of Civita Castellana, completed in 1513.)⁴¹ The next major change came around 1540, when large earth-filled bastions and curtain walls supported by earthworks appeared and were rapidly adopted throughout Europe.

Later in the century, the five-sided bastion was joined by several other Italian innovations that were to influence the future of fortifications. One was the triangular *rivellino*. Between 1498 and 1502 the round barbican of the Sarzanello citadel was replaced by a *rivellino* that extended beyond the gate to

³⁰ Perogalli, *Rocche e forti*, 71, Figs. 54–58.

³¹ Marconi (ed.), *I Castelli*, 200–204.

³² Domenico Taddei, *L'opera di Giuliano da Sangallo nella fortezza di Sansepolcro e l'architettura militare del periodo di transito*. Firenze, 1977.

³³ Marconi (ed.), *I Castelli*, 216–219.

³⁴ *Ibid.*, 411–413.

³⁵ *Ibid.*, 409–410.

³⁶ *Ibid.*, 189–193.

³⁷ *Ibid.*, 249–254.

³⁸ *Ibid.*, 318–322.

³⁹ Simon Pepper and Nicholas Adams, *Armi da fuoco e fortificazioni. Architettura militare e guerre d'assedio nella Siena del XVI secolo*. Siena, 1995, 34–61.

⁴⁰ Marconi (ed.), *I Castelli*, 448–450.

⁴¹ Konstantin Nossow and Brian Delf, *The Fortress of Rhodes 1309–1522*. Oxford, Long Island City, 2010, 15.

cover the entire length of wall between the corner towers (Appendix, Figure 10).⁴² The moat around the fort was defended by a *caponier* (or *capannati*), a semi-sunken casemate passageway with loopholes for hand-held firearms. The plans for this are preserved in a manuscript by Francesco di Giorgio Martini.⁴³

In the German, Bohemian and Polish lands of the northern half of Central Europe, the first round towers intended specifically for artillery were built in the 1440s. Forts and urban fortifications with artillery towers became widespread in the 1470s and proliferated on a mass scale around 1500. Barbicans and rondellas functioning as bastions and artillery batteries also became widespread during this period.⁴⁴

Several forts consisting fully of artillery towers and rondellas appeared in the decades between the 1480s and the 1520s. Examples are the forts of Švihov and Rábí in Bohemia, built by the Ryžemberk family of Švihov.⁴⁵ Important features of mountain forts, in addition to artillery towers and rondellas, were external towers and gun emplacements of stone or, more commonly, timber and earth, built on nearby heights.⁴⁶

At the turn of the fifteenth and sixteenth centuries, the most important war zone in Europe was the frontier with the Ottoman Empire in the Balkans and along the Adriatic, Aegean and Black Sea coasts. Sultan Mehmed II (the Conqueror, 1451–1481) used the most advanced military technology to further his ambitions. For the capture of Constantinople in 1453 and its subsequent retention, in addition to developing the artillery, he applied the most advanced military architecture for new Ottoman forts built along the straits.

Before the capture of Constantinople, the fortress of Rumeli Hisari was built with thick walls, curved and polygonal wall towers and three enormous round artillery towers.⁴⁷ The great cannons in these towers, made by the Hungarian-born gunner Orbán, had a field of fire that ensured control of the Bosphorus.⁴⁸ After the conquest, the city was defended by the five-pointed star shaped fortress of Yedikule, built in 1457–1458. Round artillery towers similar to those of Rumeli Hisari were built at the three points of the star facing the city (Appendix, Figure 11).⁴⁹ At Thessalonica, which the Ottomans held after 1430, they built a similar

42 Marconi (ed.), *I Castelli*, 196–199.

43 Pepper and Adams, *Armi da fuoco*, 19–21.

44 Thomas Biller, *Die mittelalterlichen Stadtbefestigungen. Vol. I.* Darmstadt, 2016, 277–294.

45 Dobroslava Menclová, *České hrady. Vol. II.* Praha, 1972, 393–413.

46 István Feld and Gábor András Szőrényi, 'Várak külső védművei és előművei Közép-Európában', *Castrum* 17:1–2 (2014) 17–40.

47 Zeynep Ahunbay, 'Fortress of Rumeli Hisar, Turkey', In: Slobodan Ćurčić and Evangelia Hadjistryphonos (eds.), *Secular Medieval Architecture in the Balkans 1300–1500 and Its Preservation*. Thessaloniki, 1997, 166–169.

48 László Veszprémy, 'Haditechnikai újítások és kéziratok Zsigmond környezetében', in Imre Takács (ed.), *Sigismundus. Rex et imperator. Művészet és kultúra Luxemburgi Zsigmond korában 1387–1437*. Budapest, 2006, 200–201.

49 Zeynep Ahunbay, 'Yedikule, Istanbul, Turkey', in Ćurčić and Hadjistryphonos (eds.), *Secular Medieval Architecture*, 196–199.

artillery tower on the corner of the city wall closest to the sea, providing defence for the harbour.⁵⁰

Mehmed II built the fortress of Kilidülbahr at the entrance to the Dardanelles.⁵¹ At its centre point is a high, thick-walled, three-lobed artillery tower surrounded by a very thick-walled three-lobed enceinte. (Later derivatives of this layout are three fortresses that Henry VIII built on the English Channel coast around 1540, at Walmer, Deal and Sandgate.)⁵² At the corners of the thin outer curtain walls was a thicker-walled rondella with a batter at its base, a vaulted casemate above, and an artillery terrace at the top.

In the middle of the fifteenth century, the Ottoman advance faltered at the Hungarian frontier along the Lower Danube and in Bosnia. The Ottomans were obliged to build new forts to defend this new frontier. In 1441, opposite Nándorfehérvár (Belgrade), the Hungarian fortress they had unsuccessfully laid siege to the year before, they built up the medieval castle of Zsarnó (Žrnov) into the fortress of Havala/Güzelcehisar.⁵³ The two corners of the elongated hexagonal interior castle were defended by thick-walled round towers, one of the short walls by a rondella, and the other by an ogee-plan shield wall.⁵⁴

A similarly small fort is Rama (Ram), built opposite the Hungarian border fort of Haram on the Lower Danube in the second half of the fifteenth century (Appendix, Figure 12). The D-shaped fort, with four- and five-sided towers arranged at short intervals along the castle wall, evokes the Serbian military architecture of the first half of the fifteenth century, rooted in the Byzantine tradition. The fort has relatively low towers and thick curtain walls, however, with embrasures for cannons. In front of the main defensive line was a masonry-lined moat, whose scarp was built up into a low rampart.⁵⁵

The castle of Galambóc (Golubac/Güğercinlik) fell to the Ottomans in 1427 and was constantly exposed to Hungarian attack for the rest of the fifteenth century. The Ottomans doubled the area of the castle by building a new outer rampart. Three high, thick-walled towers, U-shaped and polygonal, were placed along the walls, and a two-storey octagonal artillery tower was built at the Danube end, extending into the water to defend the harbour.⁵⁶

The most important Ottoman fortress on the Lower Danube border was Smederevo (Szendrő/Semendire), captured from the Serbs in 1459. This was a large fortified town built by the Serbian despot George Branković in the 1430s. There were embrasures in the low outer rampart of the double city wall and

50 Slobodan Ćurčić, *Architecture in the Balkans: From Diocletian to Süleyman the Magnificent*. New Haven, London, 2010, 749–750.

51 Burcu Özgüven, 'Fortress of Kilid-ül-Bahir, Turkey', in Ćurčić and Hadjitryphonos (eds.), *Secular Medieval Architecture*, 170–173.

52 Sydney Toy, *Castles*. London, 1939, 231–236.

53 Pál Szabó, 1440 – Nándorfehérvár első oszmán-török ostroma és előzményei. Szeged, 2015, 145.

54 Frigyes König, 'Zsarnó vára', in *Várak, Kastélyok, Templomok*, 28 October 2018.

55 Ćurčić, *Architecture in the Balkans*, 771.

56 Gordana Simić, 'Palace, Golubac, Yugoslavia', in Ćurčić and Hadjitryphonos (eds.), *Secular Medieval Architecture*, 274–275.

small citadel, and high square towers along the high internal wall. Around 1480, the Ottomans modernized the fortress with two-storey octagonal artillery towers – three at the corners of the outer rampart and one at the centre point of the Danube side.⁵⁷

The places most exposed to the Ottoman threat – the Italian and Dalmatian city states Venice, Genoa and Ragusa (Dubrovnik); the island of Rhodes, where the Knights Hospitaller had been based since the fourteenth century; and the states bordering the Ottoman Empire in the Balkans, the Principality of Moldavia and the Kingdom of Hungary – prepared their defences by building very large fortresses.

The first reinforcements on Rhodes consisted of towers and additional ramparts outside the moat, built between 1421 and 1434. Small polygonal bastions and barbicans were added to the outer wall in front of the towers between 1454 and 1467 (Appendix, Figure 13). This defensive system was severely damaged during the successful defence against the Ottoman siege of 1480 and deteriorated further in the earthquake of the following year. Construction and modernization of the fortress resumed in the 1480s and continued until the eventual surrender to the Ottomans in the siege of 1522. The internal wall was thickened from five to twelve metres in the 1480s and 1490s, and large but short bastions with casemates were built in front of the artillery towers. High, stone-walled, earth-filled outworks were built in front of the curtain walls, between the bastions, and in the moat. Further improvements took place between 1513 and 1522, with the addition of a large round bastion and a *caponier*, and the replacement of many of the battlements on walls and towers with thick embrasured parapets.⁵⁸

Between 1494 and 1523, the Hospitallers made somewhat simpler improvements to the much smaller medieval castles of Bodrum⁵⁹ and Chios,⁶⁰ surrounding them with thick stone walls and a combination of round and polygonal bastions. This provided a good field of fire for the old towers behind them.

In the first half of the 1460s, the wealthy Dalmatian trading city of Ragusa added modern fortifications to the mainland-facing stretches of the city wall (Appendix, Figure 14). The work was started by the Florentine architect Michelozzo di Bartolomeo Michelozzi. A broad moat was dug into the rock in front of the thick city walls with their square towers, and a parapet with embrasures was built on top of the sloping masonry scarp. This external wall was formed into rondellas around the towers. It was designed to defend the moat and does not rise above the moat level. Large artillery towers were built at the corners of the city. The Minceta Tower, built between 1461 and 1464, has a

57 Novak Jocić, 'Fortifications of Smederevo, Yugoslavia', in *ibid.*, 132–133.

58 Nossov and Delf, *The Fortress of Rhodes*, 9–12.

59 David Nicolle, *Crusader Castles in Cyprus, Greece and the Aegean 1191–1571*. Oxford, Long Island City, 2007, 21.

60 *Ibid.*, 31–32.

polygonal bottom storey, on which rests a rondella with seven metre thick walls and casemates, and an artillery tower in the centre. The Bokar Bastion, built between 1461 and 1463 on a location protected by a sea cove, is a round, multi-storey tower with a covered passage. Construction of the city's fortifications was taken over in 1466 by the local builder Pasqualis Michaelis, who directed the works until 1516. He designed the two rondellas guarding the entrance to the harbour.⁶¹

New fortifications in Famagusta, the main port of the then-Venetian island of Cyprus, were built after 1492. The citadel was modernized on Italian patterns: the walls were thickened and four squat round artillery towers were built on the corners. The city wall, with round and U-shaped towers, was surrounded by a wide moat. An octagonal tower was built above the most vulnerable corner of the city, the gate to the mainland, and it was surrounded by a U-shaped barbican. The latter had a triangular projection added later, probably in the sixteenth century.⁶²

Venice also had several important bases on the coasts of the Balkan Peninsula, and was obliged by the Ottoman threat to modernize them in the late fifteenth century. The fortress of Bashtovë in Albania was built between 1467 and 1479: it is square with towers – two round and two square – at the corners, and there is a small square tower projecting from the centre of each curtain wall.⁶³ Also in Albania, a round south west artillery tower was added to the triangular fort of Butrint around the turn of the fifteenth and sixteenth centuries.⁶⁴ Beside the medieval castle of Methoni (Modon) in the Peloponnese, the Venetians, between 1483 and 1500, built a small fort consisting of an octagonal tower surrounded by a battery terrace.⁶⁵

The fortress city of Moncastro (Dnyeszterfehérvár/Akkerman, now Bilhorod-Dnistrovskiy) at the Black Sea estuary of the Dniester was reinforced by Stephen the Great of Moldavia before the Ottoman conquest of 1484 (Appendix, Figure 15). Here, too, the citadel follows Italian patterns, a small square fort with round towers at its corners. The tower facing the city is slightly larger than the others. The city was surrounded by a double wall and a wide moat. There were small towers on the inner wall and there was an outer wall formed by the scarp of the moat and its parapet.⁶⁶ Stephen the Great also reinforced the forts of Neamț and Suceava in Moldavia in the 1470s and 1480s. The outer walls of these medieval castles were made into outer ramparts with thick-walled semicircular artillery towers.

61 Ćurčić, *Architecture in the Balkans*, 798–801.

62 Camille Enlart, *Gothic Art and the Renaissance in Cyprus*. London, 1987, 444–453, Plans IV–V.

63 Gjerak Karakaishai, 'Fortress of Bashtovë, Albania', in Ćurčić and Hadjitaryphonos (eds.), *Secular Medieval Architecture*, 154–155.

64 Gjerak Karakaishai, 'Triangular Fortress, Butrint, Albania', in *ibid.*, 152–153.

65 Nikolaos Lianos, '„Castello da Mare”, Methoni, Greece', in *ibid.*, 142–143.

66 Nicolle, *Crusader Castles*, 32.

MILITARY ARCHITECTURE OF THE SOUTH FRONTIER REGION OF HUNGARY IN THE SECOND HALF OF THE FIFTEENTH CENTURY

Facing the constant danger of an Ottoman invasion, Hungary started to build a line of defensive forts along its southern border in the first third of the fifteenth century. Firearms were already a prominent factor in border clashes at this time, such as in the unsuccessful siege of Galambóc in 1428.⁶⁷ The forts built at the key points were strong and of modern design: Szentlászlóvár (Cetatea Ladislau), built by King Sigismund of Luxembourg opposite the recently-lost Galambóc;⁶⁸ Belgrade, built by his vassal Stephen Lazarević;⁶⁹ Smederevo, built by Lazarević's son George Branković;⁷⁰ and Jajca (Jajce/Yayçe)⁷¹ and Srebernik, built by Matko Talovac.⁷² The influence of firearms, despite the importance they had gained by that time, was no more evident in the architecture of these forts than it was in other parts of Europe.

We know of only one fortress built in the territory of medieval Hungary in the 1420s that was specifically designed to accommodate firearms. This was Pozsony (Bratislava) Castle. The square internal fort, built after 1423, had a seven metre thick shield wall on the west, facing the neighbouring hills, the direction from which it was most exposed to attack. Incorporated into this wall were four six-gun casemates.⁷³ The motivation for building such a modern work of military architecture on the north-west frontier must have been fear of attack by the Hussite armies, who were very sophisticated in the use of firearms.

It was the successors to both the Hussites and the Catholic Czech mercenaries who fought them who subsequently brought innovations in military technology to Hungary in the 1440s and 1450s. During the Habsburg–Jagiellonian tussle for the crown, they added palisades, moats and timber-and-earth batteries to forts that had previously been abandoned. They also frequently built batteries outside the forts at points of the terrain that offered a good field of fire.⁷⁴

The civil war conditions of that time prompted a veritable boom in fort building. Most of the new forts in the interior were built by reinforcing old manor houses, as in Kiskápolna, Várpalota, Tapolca and Szászvár. None of them included fortifications specifically designed for firearms.

A state of war also developed along the southern border. In 1440, the country's most important defensive fort, Nándorfehérvár, came under Ottoman

67 László Veszprémy, 'Zsigmond Galambócnál 1428-ban', *Hadtörténelmi Közlemények* 121:2 (2008) 289–290.

68 *Ibid.*, 287–288.

69 Marko Popović, *Beogradska trvdjava/The Fortress of Belgrade*. Beograd, 2006, 85–131.

70 Marko Popović, *Smederevo Fortress*. Belgrade, 2013.

71 Mladen Ančić, *Jajce, Portret srednjovjekovnog grada*. Split, 1999, 99.

72 Salih Jaliman, *Srednjovjekovna historija Srebrenika*, <https://www.srebrenik.ba/historija/o-srebreniku-2/historija/srednjovjekovna-historija-srebrenika> (last accessed: 29.05.2019).

73 Andrej Fiala, 'A pozsonyi (Bratislava) vár', in László Beke, Ernő Marosi and Tünde Wehli (eds.), *Művészet Zsigmond király korában, 1387–1437. Vol. II*. Budapest, 1987, 257.

74 Gábor András Szörényi, 'Késő középkori fa- és földstruktúrájú erődítésepítészet nyomai a Sajó völgyében', *Castrum* 19:1–2 (2016) 47–61.

attack.⁷⁵ The siege was won, but it showed up the need to modernize the fortifications. The subsequent improvements enabled the fortress to withstand another siege, by Mehmed II, in 1456.⁷⁶ *Ban* Mihály Szilágyi embarked on another programme of reconstruction and addition in 1458–1459,⁷⁷ but we have no information about subsequent building works.

In a monograph on the fort of Nándorfehérvár, Marko Popović writes that the Serbian despot Stephen Lazarević built walls with square towers around a small irregularly-shaped twelfth-century castle and three districts of the city between 1404 and 1427.⁷⁸ Popović also dates the outer walls of the upper city to this period, and considers them to be contemporary with the inner wall. This is supported by Bertrandon de la Brocquière's description from 1433: "The castle, very strong by virtue of its situation, is surrounded by a moat and a double wall."⁷⁹ These external walls comprise the convex escarpments of the moat and the battlemented parapet above it.

Popović considers that the barbicans in front of the east gates of the upper and lower cities were built in the subsequent period, after the siege of 1440 but before that of 1456. Both of these were defended by semicircular towers. There were cannon embrasures in the walls of both the barbicans and the towers.⁸⁰ Finally, he dates the construction of two octagonal towers reinforcing the east side of the fort to the period after the 1456 siege – the 1460s and 1470s. Both towers could accommodate 10–20 cannons, on four levels. The top level, resting on stone consoles, provided positions for small-calibre firearms. The cannons in the south tower of the wall built between the two older barbicans had the whole approach to the east side of the fort within their field of fire. The Danube tower defended the east harbour and the defensive walls facing the river (Appendix, Figure 17).⁸¹

The constant improvements to the defensive system up to the 1480s incorporated the most advanced military architectural features and in a certain sense were ahead of their time (Appendix, Figure 16). As we have seen in the fortifications of Ragusa, Rhodes, Moncastro and Rama, external walls similar to those of the upper town – built before 1440 – did not become widespread in the region until after the middle of the century. Barbicans of the kind completed in Nándorfehérvár before 1456, designed to accommodate artillery, did not play a prominent role in military architecture until the second half of the century. The two octagonal artillery towers in Nándorfehérvár betray the influence of high round towers built by Mehmed II in the 1450s and 1460s, and in their details and

75 Szabó, 1440 – Nándorfehérvár.

76 Valentin Cseh, *Nándorfehérvár ostroma 1456*. Keszthely, 2007.

77 Jolán Balogh, *A művészet Mátyás király udvarában*. Vol. I. Budapest, 1966, 256.

78 Popović, *Beogradska tvrđjava*, 85–116.

79 István Szamota, *Régi utazások Magyarországon és a Balkán-félszigeten, 1054–1717*. Budapest, 1891, 79.

80 Popović, *Beogradska tvrđjava*, 137–142.

81 *Ibid.*, 149–157.

layout resemble the octagonal towers of Galambóc, Smederevo and Methoni (Modon), which were built in the 1480s.

There were other fortresses in the southern frontier region that underwent major development in the second half of the fifteenth century. A square outer wall with round and polygonal corner towers and a square gate tower was built around the castle of Kölpény (Kulpin), on the left bank of the Sava near Nándorfehérvár, at an unknown date, but certainly before the fort fell to the Ottomans in 1526 (Appendix, Figure 18).⁸²

A brick-built fort similar to that of Kölpény, but smaller, was built in Zimony (Zemun) in 1521, before the Ottoman conquest: it had a square ground plan, walls with gun ports, and round towers at its corners (Appendix, Figure 19).⁸³

The square external fort of Buzsim (Bužim, also called Csáva) in Zagreb county, with polygonal corner bastions, was built in 1495. The internal castle, also square and with round towers at its corners, must be somewhat earlier (Appendix, Figure 20).⁸⁴

Many other forts in the southern frontier region were strengthened with single towers in the decades up to 1526. Examples are the castles of Srebernik and Jajca, but they cannot be dated with precision.

King Matthias captured the Ottoman palisade fort of Szabács (Šabac/Böğürdelen) in 1476 and had it rebuilt in brick.⁸⁵ That was probably when the round brick towers on the corners were added. The woodcut of Szabács in Schedel's *World Chronicle*, published in 1493, shows only the towers as being built of masonry; the curtain walls are timber palisades. (The detailing of the remains show that the brick masonry of the inner curtain walls date from the Ottoman period.)

Matthias built or strengthened several other border forts in the south frontier region, but much of this work involved palisade forts or new fortifications of timber and earth.⁸⁶ However, fortifications of this kind were not only used for castles of minor importance. One of the central castles on the frontier line, Temesvár (Timișoara), was also essentially a fortification of timber and earth. Although the core of this fort was a small fourteenth-century brick castle, which was modernized to some extent during the fifteenth century with a new outer wall and four corner towers, this only constituted the citadel of the enormous town. The rest of the town's fortifications were largely built of timber and earth. We have no information on these from the fifteenth century, but surveys made

82 László Gere, 'Várak a Szerémségben', in Tibor Kollár (ed.), *A középkori Dél-Alföld és Szer. Szeged*, 2000, 366–368.

83 Gere, *Várak a Szerémségben*, 368–370.

84 Marko Popović, 'Srednjovekovne tvrdjave u Bosni i Hercegovini. Prilog proučavanju fortifikacionih struktura', *Zbornik za Istorii Bosne i Hercegovine* 1 (1995) 49, Fig. 8/1.

85 Matthias' building works are mentioned by Antonio Bonfini and Ferenc Zay: Balogh, *A művészet*, 157.

86 There are records of such works in Possasin, Szávaszentdemeter (Sremska Mitrovica), Haram (Stara Palanka), Keve (Kovin), the Smederevo (Szendrő) area, the Koluban estuary in Serbia and the Narenta estuary in Dalmatia: Balogh, *A művészet*, 256–259.

after the expulsion of the Ottomans in 1716 found a square citadel with four corner rondellas, and an irregular earth-filled palisade with eight bastions, mainly rondellas, around the town. On the north side, the palisade was defended by an earth parapet built inside the moat. At the time of the survey, the fort had probably not changed in form since the town fell to the Ottomans in 1551. Even the works in the previous period, and those subsequently carried out by the Ottomans, mainly involved refurbishment of the palisade and at most reconstruction of the bastions. The town was almost certainly already defended by earth-filled palisades in the fifteenth century.⁸⁷

FORTS BUILT IN THE SOUTH OF THE COUNTRY BEHIND THE DEFENSIVE LINE

In the southern areas behind the line of border fortresses but still exposed to the Ottoman threat, modern fortifications with artillery towers were built one after the other in the second half of the fifteenth century and the first half of the sixteenth.

After the Siege of Nándorfehérvár in 1456, Archbishop István Várday built a completely new fort in nearby Bács (Bač) between 1457 and 1467 and made it his archiepiscopal seat. It was a trapezoidal brick fort surrounded by a moat, probably built in the corner of the ramparts of what have been identified as an *ispán's* (*comes'*) castle of the Árpáadian age. It had a square gate tower and round towers at two corners. The palace occupied the short side opposite the gate and had square corner towers. There was a freestanding square donjon in the inner ward of the castle. The original layout and fortifications of Bács Castle have affinities with Castello Sforzesco in Milan, on which construction began under Francesco Sforza only a few years previously – in 1450 – and was completed in 1476.⁸⁸ Bács Castle was improved in the 1490s under Archbishop Péter Váradi.⁸⁹ One of the square corner towers was made round, and a barbican was built in front of the gate tower (Appendix, Figure 21). This gate fortification also had a gate tower, and its casemates were built outside the brick ramparts. This suggests that the brick walls were covered on the outside by an earth glacis into which the casemates were built. There are several contemporary depictions of such fortifications in Central Europe.⁹⁰

87 Ákos Karczag and Tibor Szabó, *Erdély, Partium és a Bánság erődített helyei*. Budapest, 2012, 453–457.

88 Marconi (ed.), *I Castelli*, 100–101.

89 Alice Horváth, 'Egy magyar humanista, Váradi Péter építkezései (15. századi építészeti központ Dél-Magyarországon)', *Művészettörténeti Értesítő* 36 (1987) 54–85.

90 A Polish manuscript from the turn of the fifteenth and sixteenth centuries, *Rei Tournamentariae*, shows such a square-plan fortification on which the cannon embrasures cut into the external glacis are clearly visible: Feld and Szörényi, *Várak külső védművei*, Fig. 14. A curved gate bastion or barbican protected by an external glacis can also be seen on a miniature of Stein Castle in Tyrol, made between 1505 and 1515: Gábor András Szörényi, 'Taborkogel. Egy középkori fa-földszerkezetű erődítés geoprospექciós kutatása Stájerországban', in István

Miklós Újlaki built his residence at Újlak (Ilok) in the north of Syrmia in the 1450s. The town lies on a long hill that rises steeply above the Danube and was probably already surrounded by a palisade with square brick towers. Újlaki built a square fortified palace, without a tower, on the corner. His son Lőrinc replaced the palisade with a brick town wall with horseshoe-shaped artillery towers of the same height. These walls certainly stood in 1494. The outer fort, which also enclosed the palace and had a rondella and a barbican, was probably built at the same time.⁹¹

In Zagreb, the danger of Ottoman attacks prompted the construction of a castle for the cathedral chapter in the corner of the fortified city, enclosing the cathedral and the episcopal centre, between 1469 and 1478. It had large round towers at the corners, smaller towers at the mid-points of the north and west sides (Appendix, Figure 22), and a large square gate tower on the east side.⁹² The irregularly-shaped castle of Tábor (Veliki Tabor) in Varasd county, with four semicircular towers of different sizes, was probably built before 1502, while in the possession of John Corvinus. It retains the same form today.⁹³

In Pécs, Bishop Zsigmond Ernuszt modernized the double-walled medieval bishop's castle at the end of the fifteenth century, probably also prompted by the threat from the south (Appendix, Figure 23). The work involved surrounding the castle by a dry moat with a masonry counterscarp. On the inner side of the moat, relatively small square towers were built on the outer castle wall with loopholes on the lower level to defend the moat. At three corners of the square fort were large round and U-shaped towers with very thin walls, and at the fourth, where the fort connected to the city wall, there was a simple gate opening to the outside. A new main gate with a large square gate tower was built on the south side, towards the town. According to an inscription built into the lintel of the gate, the works were completed in 1498.⁹⁴

Subsequently, probably during the tenure of Ernuszt's successor Bishop György Szatmári (1505–1524), the fortifications at the two south corners were rebuilt: the south-east rondella and south-west gate were demolished and each replaced with a round barbican connected to the gates of the outer castle wall by narrow covered passages and surrounded by moats lined with masonry. The south-west barbican has survived intact. It has thick round walls and a sloping batter at the base. The guns in the barbican may be seen to have covered the approach to the castle on the other side of the moat through large keyhole loops above the moat, at the external ground level. Inside the moat, for its own

Ringer (ed.), *Fiatal középkoros régészek VIII. konferenciájának tanulmánykötete*. Sátoraljaújhely, 2018, 167–179, Fig. 12.

91 Szabolcs Balázs Nagy, 'Az újlaki várkastély a 15. században', *Castrum* 21 (2018) 53–101.

92 Rudolf Horvat, *Utvrdživanje Kaptola 1469–1478*. (Naša Katedrala, 12.) Zagreb, 2008.

93 Gjuro Szabo, *Sredovječni Gradovi u Hrvatskoj i Slavoniji*. Zagreb, 1920, 74–77.

94 Gergely Buzás, 'A középkori pécsi püspökvár', in György Heidl, Endre Raffay and Anna Tüskés (eds.), *Echo simul una et quina. Tanulmányok a pécsi székesegyházról. Tóth Melinda emlékére*. [Pécs, 2016,] 97.

defence, was a covered passage with arquebus loopholes at two levels.⁹⁵ The south-east barbican is known only from archaeological excavations and seventeenth- and eighteenth-century drawings. It was built on the area of the widened moat, with a slightly larger ground plan but thinner walls than the south-west barbican, and the drawbridge giving axis to the external gate was approached by a masonry ramp.

The castle of nearby Siklós, the residence of Palatine Imre Perényi, had a similar barbican, built probably in the 1510s (Appendix, Figure 24).⁹⁶ It has thick, round walls and a batter at the base. There are large cannon embrasures on the bottom level; these openings were altered in the modern age. Here, too, the barbican is connected to the internal gate by a long thin covered passage. Instead of a moat lined with masonry, an external castle wall with a small horseshoe-shaped tower runs south-east from the barbican. At the end of the external wall, at the south-east corner of the castle, a pentagonal bastion was built in the 1510s. It is surrounded by the chancel of the castle chapel, built at the same time. The pentagonal bastion is similar to Italian bastions in form but not in function, because its walls cannot be enfiladed. The large round Gyűdy Tower at the north corner of the city wall around the castle was probably also built at this time.

In the second half of the fifteenth century, the only free royal town in the south of Hungary, Szeged, was one of the most important starting points for campaigns in the Balkans. Originally unfortified, the town had a royal castle that disappears from the sources in the fifteenth century, presumably having been demolished. A large square-plan brick fort, with substantial round towers at the corners and square gate towers at the mid points of the walls, was built around the Franciscan friary at one edge of the city. A building inscription of disputed authenticity dates these works to 1524.⁹⁷ The two round corner

95 Previously, Győző Gerő dated the construction of the barbican to 1491 on the basis of Pál Kinizsi's survey of Pécs Castle that year: Győző Gerő, 'A vár közép- és törökkori erődrendszere', in Kálmán Szijártó, Mária G. Sándor and Tamás Fejérdy (eds.), *Die Bischofsburg zu Pécs. Archäologie und Bauforschung – A pécsi püspökvár, régészet és épületkutatás*. (ICOMOS, Hefte des Deutschen Nationalkomitees, XXII.) 1999, 52–55. The castle survey, however, only concerned the equipment of the fort and did not mention any building works. Later, Balázs Bodó proposed that the barbican may be dated to the 1530s: Balázs Bodó, 'A pécsi barbakán. Adalékok a pécsi várkapuk történetéhez', in Gyöngyi Kovács and Zsuzsa Miklós (eds.), *„Gondolják, látják az várnak nagy voltát...” Tanulmányok a 80 éves Nováki Gyula tiszteletére*. Budapest, 2006, 40. This, however, was primarily based on the secondary use of a late Gothic gate as the external gate of the barbican and the parallels between the barbican and the south great rondella of Buda. The latter, however, is a different type of barbican, and so cannot be used to date the Pécs structure. In addition, the keyhole loops of the Pécs barbican were no longer in vogue in the 1530s.

96 György Bartos and Juan Cabello, 'A Perényiek és a siklósi reneszánsz', in Tamás Fedeles (ed.), *Emlékkötet Szatmári György tiszteletére*. (Egyháztörténeti Tanulmányok, III.) Budapest, Pécs, 2007, 87.

97 István Töröcsik, 'Városfalból várfal – a szegedi vár kialakulása', *Tisicum* 22 (2013) 451–465. The author's idea, as yet lacking proper supporting evidence, is that the fort was originally built as a city wall that would enclose the whole city centre, but the work was broken off, and the Ottomans separated the finished parts from the city with a new wall.

towers facing the city have an upper storey of smaller diameter (Appendix, Figures 29–30).⁹⁸

Single artillery towers were added to many fortifications in this southern region in the decades prior to 1526, but there are no records of construction by which they can be dated. The most intact example is the round tower of Erdőd (Erdut) in Syrmia, and its details suggest that it was built in the late fifteenth century.⁹⁹

MILITARY ARCHITECTURE IN THE INTERIOR OF THE COUNTRY

In contrast to the southern frontier region, integrated defence systems adapted to firearms started to be built in the interior of the kingdom in the 1470s and 1480s. Few of these followed the artillery-tower or bastion systems that were already widespread in Europe at the time. One of the earliest was the external curtain wall of the fortress of Diósgyőr, which lies along the principal route linking Hungary with Krakow in Poland, the Hernád valley. In 1471, Casimir Jagiellon, with the support of Hungarian rebels, marched into the country along this route and got as far as Nyitra (Nitra). The Hungarian–Polish conflict ended in autumn 1478, but despite the peace treaty, Matthias’ relations with Casimir IV remained hostile even in the 1480s. He rightly feared a repeat of the Polish invasion of 1471, and it was logical to modernize this important fortress, which lay along a possible attack route. There are surviving records of Matthias-era building works in Diósgyőr between 1476 and 1478,¹⁰⁰ but the external fortress may have been built somewhat later, in the 1480s (Appendix, Figure 25).

The inner castle of Diósgyőr was built in the middle of the fourteenth century. It had a rectangular plan, four corner towers and walls with rubble masonry and was a two-part external wall system of irregular shape and a moat. This was replaced by a system of defensive walls that surrounded the castle in a rounded deltoid figure. The outer rampart was the masonry counterscarp of the wide moat. A new thick outer wall, faced over its whole surface with large ashlar, was built on the inner side of the moat, in front of the old wall. Along the outer side of the wall, at the height of the courtyard, was a string course, behind which a vaulted casemate gallery was built into the wall with embrasures and vents cut into the vaulting.¹⁰¹ The presence of these vents shows that the

98 Ferenc Horváth, ‘A szegedi vár története,’ *Castrum* 4:2 (2006) 7. The form of the west corner towers is reminiscent of Ottoman artillery towers built in the mid-fifteenth century. So close was the similarity that in the seventeenth century, Evliya Çelebi considered the fort of Szeged to be an Ottoman construction, the work of the architect Grand Sinan, and this view has been repeated in modern literature; see József Molnár, *A török világ emlékei Magyarországon*. Budapest, 1976, 106–109.

99 Gere, *Várak a Szerémségben*, 361–366.

100 Balogh, *A művészet*, 154, 502.

101 The string course, casemate vault, embrasures and vents, now destroyed, are clearly shown on the 1758 survey drawing of the fort by Hugo Hazaël: Ilona Czeglédy, *A diósgyőri vár*. Budapest, 1988, Plate II.

casemate gallery in the walls was built for hand-held firearms. On the north side of the wall, facing the valley, was a rectangular artillery tower with rounded corners. In its surviving lower storey are six vaulted casemates opening from a shared gallery. It must have had at least one, and probably several, storeys above. The curtain walls on the other three sides each had a pair of three-storey towers, also square with rounded corners. On the ground floor of one of the two south towers, there survives an embrasure that enfiladed the neighbouring section of the wall, and its upper storeys had large windows.¹⁰² A great quantity of coloured glazed roof tiles have been found in the moat, dated to the late Matthias era, and at least some of them must have come from the roof of the external wall system. Between the west towers, the external gateway to the fortress opened on to the wooden bridge across the moat. Behind the gate, a grand stairway led up to the gate of the inner castle. A small tower was built beside the stairs, around which was a masonry ramp, also leading up to the inner castle gate.

The defensive system of the fortress of Diósgyőr was clearly built to accommodate firearms, but it did not employ the Italian-French system seen in the south of the country. There were no thick-walled round or polygonal artillery towers, bastions or barbicans or thick curtain walls with cannon embrasures. The architect was clearly not aiming to defend the fortification against siege guns, but to provide effective positions for defensive firearms, enabling arquebusiers and musketeers to keep the moat and the area in front of it under fire. The single artillery tower, of unique design, provided a field of fire only across the broad valley stretching in front of the castle.

We find no similar defensive system in contemporary European military architecture, and its closest analogues are found in the thirteenth-century Ayyubid forts in Syria: the twin gate towers are reminiscent of the gate to the citadel of Aleppo, built in 1211,¹⁰³ and the artillery tower resembles the early-thirteenth-century towers of the citadel formed out of the ancient theatre of Bosra¹⁰⁴ and the citadel of Damascus.¹⁰⁵ The latter also has an analogue of the casemate galleries running along the interior of the walls. The thirteenth-century Syrian fortifications were of course designed not for firearms but for crossbows and ballistas. In the late fifteenth century, however, Syria was an important province of the flourishing Mamluk Empire, which was at war with the Ottomans between 1485 and 1491. Matthias maintained constant diplomatic relations with the Mamluk sultan Kaitbay in the 1480s.¹⁰⁶ This may have given Matthias' architects the opportunity to study the Syrian fortifications, and the similarity between the Diósgyőr and Syrian fortifications might just be more than a coincidence.

102 Czeglédy, *A diósgyőri vár*, 58–59.

103 Ross Burns, *Monuments of Syria: An Historical Guide*. London, New York, 1999, 34.

104 *Ibid.*, 65.

105 *Ibid.*, 86.

106 László Fenyvesi, 'Magyar–török diplomáciai kapcsolatok Mátyás király haláláig', *Hadtörténelmi Közlemények* 103:1 (1990) 95.

At the same time as the alteration of Diósgyőr, or not long afterwards, a double wall and moat system was built – by István Szapolyai, according to Miklós Istvánffy – along the south side of the fortress of Trencsén (Trenčín), facing the mountain ridge (Appendix, Figure 26).¹⁰⁷ The castle was mortgaged to Szapolyai in 1477, and he was granted freehold in 1493. He took up residence there in the 1490s. The building works must have taken place before his death in 1499.¹⁰⁸ The Malom (Mill) Tower projecting out of the central axis of the fortification is a narrow, high-walled round barbican, open towards the interior and incorporating a small gate. Behind it is a broad moat with a masonry counterscarp. On its inner side is a high but relatively thin wall with embrasures. Behind it is the internal castle wall, supported by an earthwork and with the Jeremiah Tower in the centre. This was another defensive system not designed to withstand powerful siege artillery. The defenders could only cover the wide moat and its approach with arquebus fire. Only the internal Jeremiah Tower could have accommodated a few cannons with a long range.

In Eger, alterations to the east ramparts of the bishop's castle must have been connected with the construction of the new chancel of the cathedral after 1486 (Appendix, Figure 27).¹⁰⁹ The Old Gate of the new defensive system must have been standing in 1500, because the coat of arms of Bishop Ippolito d'Este was painted on the walled-up gate of the fourteenth century tower now known as the Hippolit Gate.¹¹⁰ On the most vulnerable – east – side of the castle, the original fourteenth-century castle wall was strengthened with semicircular towers and a wide masonry-lined dry moat. On the outer side of the moat, a U-shaped barbican with a gate tower was built in the middle of the south wall.¹¹¹

A similar defensive system was built in the fort of Nagyvázsony around 1500 (Appendix, Figure 28). This surrounded the old rectangular castle with a wide, deep masonry-lined dry moat, of which the scarp was built as a low outer rampart defended by small round corner towers. There are keyhole loops in the batter at the bottom of the corner towers. These loops defended the moat. On the outer side of the moat, in the middle of the side with the entrance, was a

107 István Kenyeres, 'A Szapolyai család és Trencsén', in József Bessenyei, Zita Horváth and Péter Tóth (eds.), *Tanulmányok Szapolyai Jánosról és a kora újkori Erdélyről*. (Studia Miskolcinsula, 5.) Miskolc, 2004, 142: note 45.

108 Kenyeres, 'A Szapolyai család', 136.

109 Károly Kozák, 'Eger', in László Gerő (ed.), *Váráépítészetiünk*. Budapest, 1975, 140. On the construction of the cathedral chancel: Mihály Détshy, 'Az egri várszékesegyház építéstörténetének okleveles adatai', *Művészettörténeti Értesítő* 13 (1964) 1–19.

110 The painting is mentioned in an entry of 12 August 1500 in the accounts book of Ippolito d'Este concerning the payment to a painter for the coat of arms on the newly-built tower: *Estei Hippolit püspök egri számadáskönyvei 1500–1508*. (A Heves Megyei Levéltár Forráskiadványai, 4.) Published by Péter E. Kovács. Eger, 1992, 33.

111 The outer fort was demolished after the expulsion of the Ottomans, and we know only its ground plan, from surveys of the mid-sixteenth century. The most detailed representation is from a survey by Pietro Ferrabosco of 1568: Mihály Détshy and Károly Kozák, 'Eger vára', in Dezső Dercsényi and Pál Voit (eds.), *Heves Megye Műemlékei. Vol. II*. Budapest, 1972, Fig. 17.

U-shaped barbican with several loopholes and a separate gate tower, surrounded by an external moat. In the interior of the castle, an upper storey with large artillery battlements at the top was added to the residential tower from an earlier period. These works may be clearly distinguished from the old because they involved the first use in the castle of red Balatonalmádi sandstone. The same stone was used for a wall fountain that bears the year 1500, which dates the works and identifies the lord responsible for them – Márk Horváth.¹¹²

Perhaps the only example of the classic square fifteenth-century fort with round towers in the interior of the country is Erdőd (Ardud) Castle in Szatmár county, built by the Drágffys before 1504, under a licence granted in 1481. This assumes that the towers, which only partially survive, date from this first period of construction.¹¹³

SUMMARY

The system of defensive forts built along Hungary's southern frontier during the fifteenth century kept pace with the development of European military technology and architecture. This consistent policy stopped after the death of King Matthias. We know of no major construction projects in the final decade of the fifteenth or the first two of the sixteenth centuries in either Nándorfehérvár or the other border forts that might have kept them up to date with the constant innovations in military technology.

In the south of the country, behind the chain of border fortresses, new fortifications continued to be built on private and church estates, but their main purpose was not military. They were intended to defend the noble residences against minor threats by bandits or by rival nobles. Consequently, they were not designed to withstand siege artillery or assaults by large armies. The number of fortifications built even for these private and church purposes, however, declined in the first two decades of the sixteenth century.

Overall, the fortifications of the south of the Kingdom of Hungary – both the border defence forts and the private castles of the region – were completely unprepared for the invasion by Sultan Süleyman I in 1521. The standards of military technology represented even in Nándorfehérvár, the central fortress of the defensive system, were fifty years out of date (Appendix, Figure 16).

We must bear in mind, however, that no fortress had put up effective resistance to the Ottoman onslaught in the Balkans, no matter how modern its fortifications. Even the fortified town of Rhodes, better equipped and rebuilt to more advanced standards than anything in the Balkan Peninsula, had fallen the year before. It should be noted, however, that Rhodes withstood the sultan's onslaught for 135 days (the siege started on 29 July and ended in surrender on 10

¹¹² Gergely Buzás, 'A nagyvázsonyi vár', in Gergely Buzás et al. (eds.), *Reneszánsz látványtár. Virtuális utazás a múltba*. Budapest, 2009, 392–393.

¹¹³ Karczag and Szabó, *Erdély, Partium és a Bánság*, 171.

December),¹¹⁴ while Nándorfehérvár held out for “only” fifty-two (9 July–29 August).

The enormous Ottoman army faced great difficulties in the cold and wet autumn and winter weather in Hungary, and because of the long distance from the imperial centre and the cost of supplies, it usually turned for home – at least in later campaigns – at the latest around the middle of October.¹¹⁵ If Nándorfehérvár had held out as long as Rhodes, or at least until the middle of November, then Süleyman would probably have withdrawn without a result. Nonetheless, the Nándorfehérvár garrison made a heroic stand, one of the longest defences in the history of Ottoman sieges in Hungary.¹¹⁶

The fall of Nándorfehérvár in 1521 left a breach in the middle of the Hungarian border defence system, and the country had no other fortresses capable of delaying the sultan’s main army for an extended period.¹¹⁷ Inland, there were only private forts and fortified towns, which – even if they had a few modern fortifications, such as Bács, Siklós and Pécs – were not prepared for a major siege. Most forts – including the capital city of Buda – were completely obsolete and could not be defended under real war conditions.

It was during the first quarter of the sixteenth century that these deficiencies accumulated, a period when the Kingdom of Hungary had fairly peaceful relations with the Ottoman Empire, with no more than some low-intensity conflicts on the southern border. In 1521, however, the Ottomans opened up a gap in Hungary’s defences that could not be filled in the few years left up to 1526, even though the country’s leaders were aware of what should be done. One unrealized plan, for example, was to rebuild the fort of Szalánkemén (Stari Slankamen). The acute shortage of funds and the failure of the Jagiellon–Habsburg alliance to mount a campaign hampered any effective action.¹¹⁸ Only the (presumed) construction of Szeged Castle in 1524 may be regarded as a partial implementation of the new strategy. The fortifications in Szeged, however, were no substitute for Nándorfehérvár.

¹¹⁴ Nossov and Delf, *The Fortress of Rhodes*, 53–60.

¹¹⁵ The theory of the radius of action of the Ottoman army was developed by Géza Perjés: Géza Perjés, *Mohács*. Budapest, 1979, 79–85.

¹¹⁶ Ferenc Szakály, ‘Nándorfehérvár, 1521: The Beginning of the End of the Medieval Hungarian Kingdom’, in Géza Dávid and Pál Fodor (eds.), *Hungarian–Ottoman Military and Diplomatic Relations in the Age of Süleyman the Magnificent*. Budapest, 1994, 47–76.

¹¹⁷ See János B. Szabó, ‘A déli végek védelme a késő középkorban: a modellező kutatói gondolkodás a földrajzi viszonyok tükrében’, in László Pósn, László Veszprémy, József Boda and János Isaszegi (eds.), *Őrzők vigyázatok a határra! Határvédelem, határörizet, határvadászok a középkortól napjainkig*. Budapest, 2017, 253–261.

¹¹⁸ András Kubinyi, ‘The Battle of Szávaszentdemeter–Nagyolaszi (1523): Ottoman Advance and Hungarian Defence on the Eve of Mohács’, in Géza Dávid and Pál Fodor (eds.), *Ottomans, Hungarians, and Habsburgs in Central Europe: The Military Confines in the Era of Ottoman Conquest*. (The Ottoman Empire and Its Heritage. Politics, Society and Economy, 20.) Leiden, Boston, Köln, 2000, 93–94; Tamás Pálosfalvi, *From Nicopolis to Mohács: A History of Ottoman–Hungarian Warfare, 1389–1526*. (The Ottoman Empire and Its Heritage. Politics, Society and Economy, 63.) Leiden, 2018, 289–308.

Buda might have been capable of assuming this role after the large-scale fortifications built by János Szapolyai in the 1530s.¹¹⁹ Indeed, work on relatively modern fortifications of various size began throughout the country after 1526.¹²⁰ These, however, did not constitute a new line of defensive forts or indeed any kind of defence against the Ottomans, because they were built for the civil war between the two kings. The most important forts modernized during these years – Buda, Esztergom¹²¹ and Székesfehérvár – became the principal bases of the Ottoman occupying power after the invasion of the 1540s.¹²² Only at the end of that decade, when the civil war ended and the Ottomans launched a new wave of conquest, was a new system of border fortresses established. These were built at the border with the occupied areas, and were under Habsburg control. The main forts were Komárom (Komarno) (after 1548), Eger (after 1548), Szolnok (1550–1552), Gyula (after 1552), Győr (after 1555) and Szigetvár (after 1556). These followed the *trace italienne* system and – for the first time in Hungary since the fifteenth century – kept up to date with the most advanced trends in European military architecture.¹²³ A further generation of forts incorporating the latest European developments were built in the period from the 1560s to the 1580s: Szatmár (Satu Mare; after 1565), Nagyvárad (Oradea; after 1568), Kanizsa (after 1569), Eger (after 1572), Károlyváros (Karlovac; after 1579) and Érsekújvár (Nové Zámky; after 1580). Despite many deficiencies and their incompleteness, the Habsburg border defence fortresses were instrumental in slowing and eventually stopping Ottoman expansion in Hungary in the second half of the sixteenth century.¹²⁴

The sieges of the Hungarian–Ottoman wars of the fifteenth century and the second half of the sixteenth century well illustrate the prominent role of forts in European warfare of that time. Looking from the perspective of military architecture, we might venture that the failure to develop the country's forts during the long “peace” of the Jagiellonian era, particularly along the southern border, was a major factor in the collapse of the medieval Kingdom of Hungary in 1526.

119 András Végh, ‘A középkori várostól a török erődig. A budai vár erősítéseinek változásai az alapítástól a tizenöt éves háborúig’, *Budapest Régiségei* 31 (1997) 297–299; János B. Szabó, ‘Buda elfeledett ostromai (1529–42): egy hadtörténeti „kakukktójás”, avagy a „Military Revolution” elmélet zátonya?’, *Tanulmányok Budapest Múltjából* 42 (2017) 121–140.

120 Gergely Buzás, ‘A tüzegyházak hatása a késő középkori várépítészetre Magyarországon’, *Archaeologia – Altum Castrum Online* (2014), <http://archeologia.hu/content/archeologia/228/tuzegyhazak-buzas.pdf> (last accessed: 29.05.2019).

121 Gergely Tolnai, ‘Reneszánsz erősítések Esztergomban (1476–1543)’, in Buzás et al. (eds.), *Reneszánsz látványtár*, 251–259.

122 In Székesfehérvár, two rondellas and a barbican with a gate tower were added to the city fortifications before the fall of the city in 1543, but their exact date of construction is not known.

123 Gergely Buzás and Olivér Kovács, *Középkori várak*. Visegrád, 2016², 103–130.

124 György Domokos, ‘Magyarországi erődök a 16. század második felében’, in Buzás et al. (eds.), *Reneszánsz látványtár*, 548–575.

PART II
THE ARMIES OF EUROPE
AT THE TIME OF THE BATTLE
OF MOHÁCS

THE MILITARY ORGANIZATION AND ARMY OF THE OTTOMAN EMPIRE (1500–1530)

TERRITORIAL EXPANSION AND POPULATION INCREASE

The Ottoman Empire was founded twice. In hardly more than a hundred years after it first emerged in the early fourteenth century, it became a true great power comparable with the old Eastern Roman Empire. Then, after the unexpected fall of 1402, the empire recovered and soon surpassed its first peak. A major part of the credit goes to Sultan Murad II (1421–1451), who carried through political and territorial consolidation and laid the intellectual foundation for the coming “classical age” of the empire (1451–1615).¹

This latter period is best described as an age of “dual expansion”. External expansion – the relentless wars of conquest and territorial additions – made the empire into one of the largest and most powerful in the world by the middle of the sixteenth century. Internal expansion – the gradual advance of state power – put society, the economy and property under dynastic control and converted a “state of alternatives” into a “patrimonial world empire”. In the core regions, autonomous or semi-autonomous systems were largely eliminated, and vassal states were put under tighter control.²

External conquests at first followed the “grand strategy” developed in the fourteenth century.³ The number one goal, the capture of Constantinople, was attained in 1453. For the Ottomans, this was more than the acquisition of a military, maritime, commercial, diplomatic and administrative centre from which they could control both halves of the empire. They also secured spiritual dominance of

1 On the period up to 1481: Colin Imber, *The Ottoman Empire, 1300–1481*. İstanbul, 1990. Other useful surveys, covering longer periods: Colin Imber, *The Ottoman Empire, 1300–1650. The Structure of Power*. Second Edition. Houndmills, New York, 2009, 1–45; Caroline Finkel, *Osman's Dream: The History of the Ottoman Empire*. New York, 2005, 1–151; Feridun M. Emecen, *Osmanlı İmparatorluğu'nun Kuruluş ve Yükseliş Tarihi (1300–1600)*. İstanbul, 2015, 1–178. On Murád II, see Halil İnalcık, *Kuruluş Dönemi Osmanlı Sultanları 1302–1481*. İstanbul, 2013³, 151–180.

2 Pál Fodor, ‘Osmanlı Tarihinde Süreklilik ve Değişim Üzerinde Düşünceler. In: Zeynep Tarım Ertuğ (ed.), *Prof. Dr. Mübahat S. Kütükoğlu'na Armağan*. İstanbul, 2006, 207–220.

3 Pál Fodor, *The Unbearable Weight of Empire: The Ottomans in Central Europe – A Failed Attempt at Universal Monarchy (1390–1566)*. Budapest, 2016², 30–34.

the Orthodox world, and Ottoman rulers were thereafter “Byzantine sultans”, combining the forces of Islamic and Orthodox commonwealths to pursue another goal: to revive Roman world domination. The remains of the Byzantine commonwealth fell soon after the imperial city: the Peloponnese between 1458 and 1460, and the little Empire of Trebizond in 1461.

At the same time, and for several more decades, the Ottomans pursued another strategic goal. This was to eliminate the small Balkan states and the Turkish principalities of Asia Minor and gradually displace the Latin powers from former Byzantine lands. The main acquisitions in the Balkans were Serbia (1454–1455, 1459), Bosnia (1463–1466), Herzegovina (1463–1483) and Albania (1468–1479). Two of the surviving *beyliks* in Central and Western Anatolia also fell at this time: Isfendiyar or Jandar on the Black Sea coast in 1461, and the defiantly resistant Karaman in 1474. The Ottomans were no kinder to their oldest and most loyal Latin ally, the state of Genoa, seizing its colonies (Pera 1453; New and Old Phokaia 1455; Ainos [Thrace] 1456; Amasra 1459) and the island of Lesbos (1462), and dealing the final blow with the invasion of Kaffa and Tana (Azov) on the Crimean Peninsula in 1475. They were then gradually able to take over control of Black Sea trade.⁴ It took much longer to weaken the Levantine positions of the other Latin great power, Venice. In the war fought between 1463 and 1479, Venice lost its main Aegean base, the island of Negroponte (Euboea) in 1470, and many of its bases in South Greece and Albania (including Kroia and Scutari, 1478). It was also forced to pay a tribute of 10,000 ducats for the peace. In his latter years, Sultan Mehmed (1451–1481) even prepared to invade the Kingdom of Naples by capturing the Ionian islands and Otranto (1479–1480). The empire fought another war with Venice between 1499 and 1503 and again came out victorious, taking further Venetian bases in South Greece and Albania (including Modon, Koron and Durrës). This war also demonstrated (in 1499) that the Ottomans had in the meantime built up a fleet capable of challenging the maritime strength of Venice. Learning from their failures, the Republic of Venice subsequently tried to retain its trading positions by cooperating with the Ottomans.

The small state of Ragusa was forced into Ottoman vassalage in 1458 and thereafter complied with the demand that it serve as the empire’s principal channel into Europe.⁵ The Tatar Khanate of Crimea received the same treatment in 1475, and its economic resources and military strength were to make a considerable contribution to the empire’s subsequent conquests.⁶ In 1455–1456,

4 Kate Fleet, *European and Islamic Trade in the Early Ottoman State: The Merchants of Genoa and Turkey*. (Cambridge Studies in Islamic Civilisation) Cambridge, 1999, 122–133.

5 Vesna Miović, *Dubrovačka Republika u spisima osmanskih sultana s analitičkim inventarom sultanskih spisa serije Acta Turcarum Državnog arhiva u Dubrovniku*. Dubrovnik, 2005, 33–135; Antal Molnár, *Confessionalization on the Frontier: The Balkan Catholics between Roman Reform and Ottoman Reality*. (Interadria. Culture dell’Adriatico, 22). Roma, 2019, 67–69.

6 Halil İncalcık, ‘Yeni Vesikalara Göre Kırım Hanlığının Osmanlı Tâbiliğine Girmesi ve Ahidname Meselesi’, *Belleten* 8:30 (1944) 185–229; Liviu Pilat and Ovidiu Cristea, *The Ottoman Threat and Crusading on the Eastern Border of Christendom during the 15th Century*. (East Central and Eastern Europe in the Middle Ages 450–1450, 48.) Leiden, Boston, 2018.

Moldavia also became a tributary to the Ottoman state, following Wallachia, which was first forced into tribute in 1394, and again in 1417. In 1484, the Ottomans annexed Moldavia's main Black Sea cities (Kilia and Akkerman), consolidating the ring of tributary states through which they were able to control the Black Sea region. This brought about the descent of the Wallachian and Moldavian principalities in the first third of the sixteenth century from a status of something like "tributary allies" to the level of the Christian subjects of the empire; most of their resources was placed in the service of imperial expansion and supplies for the imperial capital.⁷

By winning wars and expanding its territory (Table 1), the empire was constantly opening up new fronts and finding itself facing new (and stronger) enemies. Distant Hungary became a neighbouring state in the second half of the fifteenth century, and posed the main obstacle to further conquests. After an unsuccessful attack on Nándorfehérvár (Belgrade) in 1456, a formal peace reigned between two states for several decades, but it served as a veil for persistent advances in Dalmatia and the old Croatia by local – mainly Bosnian – Ottoman forces. Croatia was effectively conquered between 1476 and 1516.⁸ There were also constant incursions into Hungary and attempted sieges of major forts (such as Nándorfehérvár and Szabács). In 1512, the Ottomans conquered one of Hungary's direct Hungarian defensive zones, the Banate of Srebernik.⁹ Gaining suzerainty over Moldavia and Crimea brought the empire into conflict with Poland-Lithuania, and through a series of destructive incursions and persistent raids by their Tatar vassals, the Ottomans forced the Poles and Lithuanians to withdraw from the common European anti-Ottoman front.¹⁰

After 1501, when the Safavid dynasty came to power in Iran and revolts broke out in the Ottoman Empire, a complex of political events forced the Ottoman court to withdraw from Europe for a while and concentrate on Eastern questions. Sultan Selim's decisive victory over Shah Ismail at Chaldiran in 1514

7 Viorel Panaite, *The Ottoman Law of War and Peace: The Ottoman Empire and Tribute Payers*. (East European Monographs, DLXII.) New York, 2000, 133, 156–168, 220, 336, 344, 406–410, 464–465; see also Sándor Papp, 'Eflak ve Boğdan Voyvodalarının Ahidnameleri Üzerine Bir İnceleme: Osmanlı İmparatorluğunun Kuzeybatı Hududundaki Hristiyan Vassal Ülkeleri', in Hasan Celâl Güzel, Kemal Çiçek and Salim Koca (eds.), *Türkler. Vol. 10*. Ankara, 2002, 744–753.

8 Attila Bárány, 'A horvát végek és a török adriai partra szállásának kérdése', in Róbert Hermann (ed.), *Elfeledett háborúk. Középkori csaták és várostromok (6–16. század)*. Budapest, 2016, 331–362; Nenad Moacanin, 'The Ottoman Conquest and Establishment in Croatia and Slavonia', in Pál Fodor (ed.), *The Battle for Central Europe: The Siege of Szigetvár and the Death of Süleyman the Magnificent and Nicholas Zrinyi (1566)*. Budapest, Leiden, Boston, 2019, 277–286.

9 Tamás Pálosfalvi, *From Nicopolis to Mohács: A History of Ottoman–Hungarian Warfare, 1389–1526*. (The Ottoman Empire and Its Heritage. Politics, Society and Economy, 63.) Leiden, Boston, 2018, 335–338.

10 Dariusz Kołodziejczyk, *The Crimean Khanate and Poland–Lithuania: International Diplomacy on the European Periphery (15th–18th Century). A Study of Peace Treaties Followed by Annotated Documents*. (The Ottoman Empire and Its Heritage. Politics, Society and Economy, 47.) Leiden, Boston, 2011, 21–71.

put an end to Safavid expansion, and in the following two years, he expelled the Safavids from East and South-East Anatolia and gained supremacy over the Kurdish and Turcoman principalities in the region. The Ottoman advance shook the Mamluks of Egypt, who reacted by allying themselves with the Safavids. This provoked Selim into attacking the Mamluks, and he dealt them two decisive defeats, in 1516 and early 1517. This gave the Ottomans control of Syria, Palestine, Lebanon and Egypt, and shortly afterwards, Hijaz and the two holy cities of Mecca and Medina surrendered to Selim. As he and his army made their way back, in 1518, he planned an attack on Iran, but his exhausted soldiers refused to obey and forced him to return home.¹¹

The conquest of the Near East put the empire in a fundamentally new position, with new potential. As we will see in the next section, central treasury income increased steeply and Egypt became the main source of raw and military materials for the of Istanbul seraglio, army and shipyards. Additionally, for the first time in its history, Muslims made up a majority of the empire's population, deepening its Sunni identification and underpinning the dynasty's claim to lead the Islamic world.

TABLE 1: THE TERRITORIAL EXTENT OF THE EMPIRE UNDER SUCCESSIVE SULTANS
(ROUNDED, AT THE END OF THEIR REIGN)¹²

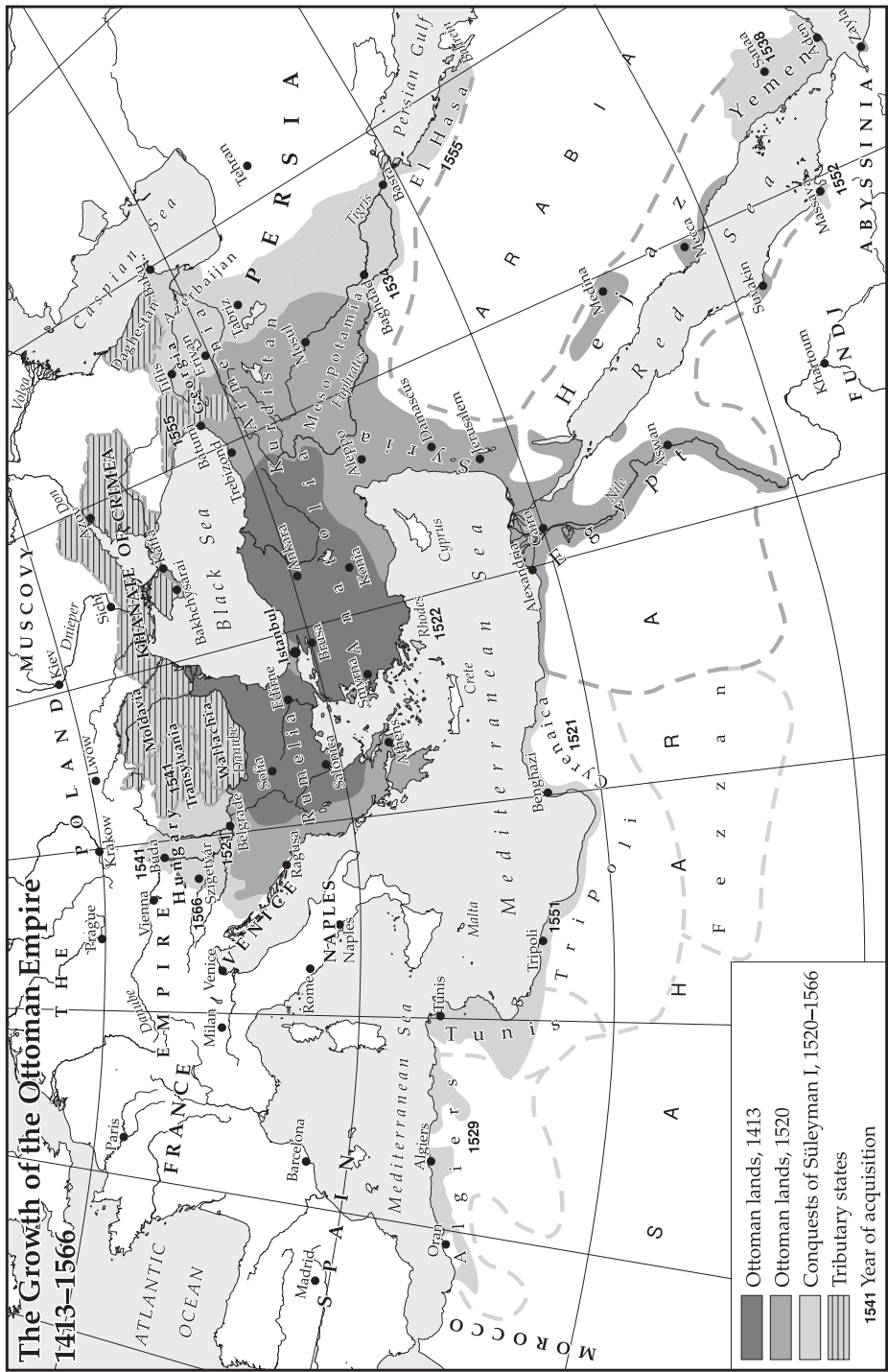
Sultan	Under direct control	Including tributary states
Murad I (1362–1389)	261,000 km ²	
Bayezid I (1389–1402)	693,000 km ²	
Murad II (1421–1451)	564,500 km ²	
Mehmed II (1451–1481)	867,600 km ²	997,150 km ²
Bayezid II (1481–1512)	883,400 km ²	
Selim I (1512–1520)	1.5 million km ²	2,012,430 km ²
Süleyman I (1520–1566)	2.5 million km ²	

Population around 1520–1535: 12–13 million.¹³

11 Feridun Emecen, *Zamanın İskenderi, Şarkın Fatihi Yavuz Sultan Selim*. İstanbul, 2010, 171–321.

12 Donald Edgar Pitcher, *An Historical Geography of the Ottoman Empire from Earliest Times to the End of the Sixteenth Century*. Leiden, 1972, 134–135; Josef Matuz, *Das Osmanische Reich. Grudlinien seiner Geschichte*. Darmstadt, 1985, 56, 68, 129, 164; Gábor Ágoston, 'Warfare', in Gábor Ágoston and Bruce Masters, *Encyclopedia of the Ottoman Empire*. New York, 2009, 593.

13 Ömer Lütfi Barkan, 'Essai sur les données statistiques des registres de recensement dans l'Empire ottoman aux XV^e et XVI^e siècles', *Journal of the Economic and Social History of the Orient* 1:1 (1957) 20–23; vö. Suraiya Faroqhi, 'Ottoman Population', in Suraiya Faroqhi and Kate Fleet (eds.), *The Cambridge History of Turkey. Vol. 2: The Ottoman Empire as a World Power, 1453–1603*. Cambridge, 2013, 356–403, especially 375.



STATE REVENUES

Recently published state budgets give us abundant data on state revenues. With one exception, these documents tell us “only” about the income and expenditure of sultans’ domains (*has-estates*) and other sources of revenue managed by the central treasury (by lunar year in the fifteenth century and by solar year after the start of the sixteenth century), but they give a good insight into state finances. Fortunately, the exceptional budget of 1527–1528 also tells us about the income assigned and used as revenue grants (prebends), giving us an almost complete picture of the empire’s economic and financial strength in the first third of the sixteenth century.

There are seven budgets from the period, the first from 1493–1494 and the last from 1527–1528.¹⁴ From the first three, which were produced for the lunar year (periods of 353–355 days), I have converted the figures, for the sake of comparability, to full (solar) years of 365 days. The main figures are given in the table below (ducat exchange rates: 1493–1496: 53 *akçes*; 1509: 55 *akçes*; 1523–1525: 55 *akçes*; 1527–1528: 57 *akçes*).¹⁵

TABLE 2: STATE INCOME AND EXPENDITURE

Year	Income (ducats and <i>akçes</i>)	Expenditure (ducats and <i>akçes</i>)	Budget surplus/ deficit (ducats and <i>akçes</i>)	Income in silver (tonnes)	Expenditure in silver (tonnes)
12 October 1493 – 11 October 1494	1,049,171.22 (55,606,074)	1,097,892.00 (58,188,285)	–48,720.78 (–2,582,210)	–	–
30 November 1494 – 29 November 1495	1,298,009.00 (68,794,479)	1,154,886.57 (61,208,988)	143,122.46 (7,585,490)	–	–
19 November 1495 – 18 November 1496	1,250,321.28 (66,267,028)	1,042,643.22 (55,260,091)	200,850.28 (10,645,065)	–	–
11 March 1509 – 10 March 1510	1,326,144.45 (72,937,945)	1,244,878.00 (68,468,298)	81,266.00 (4,469,647)	48.1	45.1

14 Baki Çakır, ‘Osmanlı Devleti’nin Bilinen En Eski (1495–1496) Bütçesi ve 1494–1495 Yılı İcmali’, *Osmanlı Araştırmaları* 47 (2016) 113–145; Mehmet Genç and Erol Özvar (eds.), *Osmanlı Maliyesi. Kurumlar ve Bütçeler. Vol. 2.* İstanbul, 2006, 22–30; Halil Sahillioğlu, ‘1524–1525 Osmanlı Bütçesi’, *İstanbul Üniversitesi İktisat Fakültesi Mecmuası* 41:1–4 (1985) 415–452; Ömer Lütfi Barkan, ‘H. 933–934 (M. 1527–1528) Mali Yılına Ait Bir Bütçe Örneği’, *İstanbul Üniversitesi İktisat Fakültesi Mecmuası* 15:1–4 (1953–1954) 251–329; Erol Özvar, ‘Osmanlı Devletinin Bütçe Harcamaları’, in Genç and Özvar (eds.), *Osmanlı Maliyesi. Kurumlar ve Bütçeler. Vol. 1.* İstanbul, 2006, 197–218 (I took the conversion to pure silver from this latter work.)

15 Özvar (‘Osmanlı Devletinin’, 204) puts the exchange rate at 57 *akçes* even for 1523–1524, rather than 55 *akçes*, the rate accepted by most authors.

Year	Income (ducats and <i>akçes</i>)	Expenditure (ducats and <i>akçes</i>)	Budget surplus/ deficit (ducats and <i>akçes</i>)	Income in silver (tonnes)	Expenditure in silver (tonnes)
11 March 1523 – 10 March 1524	2,125,243.36 (116,888,385)	2,159,706.34 (118,783,849)	34,462.98, (–1,895,464)	77.1	78.4
11 March 1524 – 10 March 1525	2,568,593.00 (141,272,658)	2,301,479.00 (126,581,347)	267,114.00 (14,691,311)	93.2	83.5
1527–1528 (central treasury without revenue grants)	4,863,943.57 (277,244,784) (58%)	3,256,501.00, (185,620,610)	1,607,441.60 (91,624,174)	182.9	122.5
1527–1528 (revenue grants)	3,512,042.00 (200,186,384) (42%)	–	–	–	–
1527–1528 (central treasury with revenue grants)	8,375,985.00 (477,431,168)	3,256,501.00 (185,620,610)	1,607,441.60 (91,624,174)	182.9	122.5

These figures (and details not shown on Table 2) give a good idea of how the Ottoman state grew from a regional great power concentrated in the Balkans into a world empire in a period of thirty or forty years. The proportion of total income provided by Rumelia fell from 85% in 1494–1496 (when it could have paid all expenditure) and 81% in 1509 to 62.9% in 1524–1525 and 34% in 1527–1528. By that time, Rumelia had relinquished first place to Egypt and the Syrian lands. The eastern expansion had almost doubled revenues even before the conquest of what may strictly be termed the Near East (from approximately 1.3 to 2.5 million ducats), but the conquest of Syria and Egypt brought the real breakthrough: the state then had a budget of nearly five million ducats. Just as noteworthy as the revenue is the budget balance: in every year but one, the treasury recorded a surplus, and it rose to 1.6 million ducats in 1527–1528. And that was not all. The state had further income of 3.5 million ducats, which it assigned to the provincial army and many other state officials in the form of prebends (*timar*, *ziamet*, *has*), and thus secured several tens of thousands of troops without spending a single *akçe*. When the yield of these estates is included, the state had a revenue of more than 8 million ducats at the end of the period (58% cash and 42% revenue grants). If we add to that the income of the sultan's "inner treasury", unknown at the time but estimated at 2 million ducats,¹⁶ then we can state that at the end of the first third of the sixteenth century, the Ottoman dynasty had 10 million ducats to spend every year on financing the state and its conquests.¹⁷

¹⁶ Özvar, 'Osmanlı Devletinin', 203.

¹⁷ Its financial resources were in fact even greater: these figures do not include sums that were spent locally and were thus not registered in the central budget (such as the salaries for some

We can hardly be surprised that all this new territory and the empire's apparently inexhaustible resources encouraged further expansion on a scale, and with an aggressiveness, that surpassed all that had gone before. Less obvious is why the eastern shift in economic and intellectual focus eventually oriented the empire towards the West. This also has an explanation, however. In the 1520s, when the imperial centre had established an Islamic hinterland that assured its security, Sultan Süleyman judged that the time had come to set out in pursuit of the dynasty's old dream: world dominion and possession of the Roman Empire. This is what lay behind the attack on the Western Christian world, above all Hungary and the Habsburg Empire, and the outbreak of the Mediterranean "world war".¹⁸

THE OTTOMAN MILITARY ORGANIZATION IN THE EARLY SIXTEENTH CENTURY

The backbone of the conquering forces was the provincial army of *sipahis*, armoured light cavalry who rendered military service in return for revenue grants (*dirlik*, *timar*) provided by the state. In addition to their military duties, they had to supervise the use of the land assigned to them, collect their dues from the peasants, and maintain public order as the local representative of central power.¹⁹

The main obligation of a *timar*-holding *sipahi* was to join the army each year with the prescribed equipment and the prescribed number of armed retainers (*cebelü*). His obligations were set in proportion to his income (Table 3), although it was only some time in the middle of the fifteenth century that the regulations became uniform throughout the empire. Until about 1520, an "ordinary" *sipahi* whose annual income was less than 3,000 *akçes* had to arrive for service on a horse, in coat of mail (*cebe*) and helmet, and with bow, arrows, shield, sabre and javelin. A *sipahi* whose annual revenue was 3,000 *akçe* or above had to come in

sections of fortress garrisons, fortress maintenance costs, etc.) On this, see Göksel Baş, 'XV. Yüzyılın İkinci Yarısında Balkanlarda Osmanlı Serhad Organizasyonunun Oluşumu: Kaleler Ağı, Askeri Personel, Finansman ve Mali Külfet', *Güney-Doğu Avrupa Araştırmaları Dergisi* 33:1 (2018) 166–167, 170.

¹⁸ Fodor, *The Unbearable Weight*, 56 ff.

¹⁹ The main surveys of the *sipahi* army and the *timar* system are Géza Dávid and Pál Fodor, 'Changes in the Structure and Strength of the Timariot Army from the Early Sixteenth to the End of the Seventeenth Century', *Eurasian Studies* 4:2 (2005) 157: note 1; more recently: Imber, *The Ottoman Empire, 1300–1650*, 164–192; Pál Fodor, 'Ottoman Warfare, 1300–1453', in Kate Fleet (ed.), *The Cambridge History of Turkey. Vol. I: Byzantium to Turkey, 1071–1453*. Cambridge, 2009, 195–205; Géza Dávid, 'Ottoman Armies and Warfare, 1453–1603', in Faroqi and Fleet (eds.), *The Cambridge History of Turkey*, II. 286–296; Gábor Ágoston, 'Mohács és Szulejmán szultán magyarországi hadjáratai', in Ildikó Horn et al. (eds.), *Művészet és mesterség. Tisztelegő kötet R. Várkonyi Ágnes emlékére. Vol. I*. Budapest, 2016, 64, 66–67; Gábor Ágoston, 'Ottoman and Habsburg Military Affairs in the Age of Süleyman the Magnificent', in Fodor (ed.), *The Battle for Central Europe*, 290–294; Nil Tekgul, 'Cash Loans to Ottoman Timariots during Military Campaigns (Sixteenth-Seventeenth Centuries): A Vulnerable Fiscal System?', *Journal of the Economic and Social History of the Orient* 59 (2016) 592–596.

bürüme rather than *cebe* armour, and he had to bring with him one mounted armed retainer for every 3,000 *akçes* of income, and a young servant boy (*gulam* or *nöker*) and various tents (*tenktür*, *çadır*) at other income levels. The *sipahis* who held estates on Aegean islands, in some parts of Greece, and on the western and southern coasts of Anatolia usually served in the Mediterranean naval fleet.

TABLE 3: THE OBLIGATIONS OF *TİMAR*-HOLDING *SİPAHİS* BY INCOME CATEGORY
IN THE LAW CODE OF CA. 1500²⁰

1,000 <i>akçes</i>	2,000 <i>akçes</i>	3,000 <i>akçes</i>	4,000, 4,500, 5,000 <i>akçes</i>	5,500, 6,000 <i>akçes</i>	7,500, 8,000 <i>akçes</i>	9,000 <i>akçes</i>
himself <i>cebelü</i>	himself <i>cebelü</i>	himself, in <i>bürüme</i> armour ^a	himself, in <i>bürüme</i> armour	himself, in <i>bürüme</i> armour	himself, in <i>bürüme</i> armour	himself, in <i>bürüme</i> armour
		[1 <i>cebelü</i>]	1 <i>cebelü</i>	2 <i>cebelü</i>	2 <i>cebelü</i>	3 <i>cebelü</i>
	1 <i>gulam</i> ^b	1 <i>gulam</i>	1 <i>gulam</i>		1 <i>gulam</i>	
			1 <i>tenktür</i> ^c	1 <i>tenktür</i>	1 <i>tenktür</i>	1 <i>çadır</i> ^d
10,000, 10,500, 11,000 <i>akçes</i>	12,000 <i>akçes</i>	[13,000, 14,000 <i>akçes</i>]	15,000 <i>akçes</i>	[16,500, 17,000 <i>akçes</i>]	[18,000 <i>akçes</i>]	[19,500, 20,000 <i>akçes</i>]
himself, in <i>bürüme</i> armour	himself, in <i>bürüme</i> armour	himself, in <i>bürüme</i> armour	himself, in <i>bürüme</i> armour	himself, in <i>bürüme</i> armour	himself, in <i>bürüme</i> armour	himself, in <i>bürüme</i> armour
3 <i>cebelü</i>	4 <i>cebelü</i>	4 <i>cebelü</i>	5 <i>cebelü</i>	5 <i>cebelü</i>	6 <i>cebelü</i>	6 <i>cebelü</i>
1 <i>gulam</i>		1 <i>gulam</i>		1 <i>gulam</i>		1 <i>gulam</i>
1 <i>çadır</i>	1 <i>çadır</i>	1 <i>çadır</i>	1 <i>çadır</i>	1 <i>çadır</i>	1 <i>çadır</i>	1 <i>çadır</i>

a A special mail-and-plate armour that was fixed on a leather garment or a dress of several layers of cloth.

b Servant.

c Tent.

d Another kind of tent.

The *sipahis* had to live in the administrative district where their revenue estates lay. Initially, the lowest territorial-organizational unit was the *nahiye*, headed by a *çeribaşı* or *serasker* holding a large service estate. The *nahiyes* were grouped into *vilayets* or *subaşılıks* under the command of a *subaşı* (later: *zaim*). A *subaşı*'s service estate was initially called *has*, but increasingly *ziamet* after the middle of the fifteenth century. The annual yield of a *ziamet*-estate in principle varied between 20,000 and 100,000 *akçes* but was usually considerably higher than the upper limit. When the army mustered, the *subaşı*s or *zaims* had to raise one armed retainer for every 4,000 *akçes* of income and one set of horse armour, three tents of different kinds and one servant boy for every 30,000 *akçes*.

20 Dávid and Fodor, 'Changes in the Structure', 185.

The superior of the *subaşı* or *zaim* was the district governor (*sancakbeği*), who (with his deputy, the *alaybeği*) led the main military-administrative division of the timariots, the *sancak* or *liva*. The district governors were remunerated with *has*-estates yielding annual revenues of between 150 and 600,000 *akçes* (there are examples of higher sums, and those in Rumelia were usually granted more than those in Asia Minor). The *sancakbeği* had to fit out an armed retainer for every 5,000 *akçes*, and bring one set of horse armour and several kinds of tents (for kitchen, saddle workshop, etc.) to camp for every 50,000 *akçes*.

More coordinated supervision of the military forces of the districts or sub-provinces came with the establishment of provinces called the *beğlerbeğilik*, later *vilayet*. The *sancaks* of the Balkans were under the authority of the Rumelian governor-general (*beğlerbeği*) and those in Central and Western Asia Minor were subordinated to the *beğlerbeği* of Anatolia. The number of *beğlerbeğilik*s rose to nine by the end of the 1520s.²¹ The *beğlerbeği* was the highest commander of all soldiers in the province, not only the *sipahis*, and it was effectively he who, until the early sixteenth century, granted new *sipahis* their initial estates (after which this power was reduced to a recommendation). Governor-generals possessed enormous prebends, with annual revenues of between 700,000 and 2,500,000 *akçes*, from which they maintained substantial household armies.

The majority of *sipahis* were always in the lowest income category (often jointly holding one prebend), and so the armed retainers raised by the district governors and governor-generals made up twenty to thirty per cent of the timariot army. The living conditions of timariots with modest livelihoods steadily deteriorated. An important change, probably made in the first third of the sixteenth century, says much about their hardships: the level of income above which a sipahi was obliged to equip a mounted armed retainer was raised from 3,000 to 6,000 *akçes*.²²

The 1527–1528 budget report is the usual source for determining the numbers of *sipahis* and their men-at arms. The figure it gives for the *timar*-holders is 27,868, and by applying various multipliers, researchers have estimated the total nominal strength, including armed retainers, at between 50,000 and 100,000.²³ The number of those who were actually mobilized was of course much smaller. By old tradition, the *sipahis* of lower standing (about ten per cent of the timariots) were left behind to defend the sub-provinces and the coastlines.

The other – increasingly significant – pillar of the army comprised salaried court or household troops (*kapukulu ocakları*).²⁴ The most important of these were the janissaries, established in the 1370s. They were originally intended as

21 İ. Metin Kunt, *Sancaktan Eyalete. 1550–1650 Arasında Osmanlı Ümerası ve İl İdaresi*. İstanbul, 1978, 125.

22 Dávid and Fodor, 'Changes in the Structure', 169–170.

23 Rhoads Murphey, *Ottoman Warfare, 1500–1700*. London, 1999, 37–38; see also Ágoston, 'Ottoman and Habsburg Military Affairs', 291; Feridun Emecen and Erhan Afyoncu, *Savaşın Sultanları-I. Osmanlı Padişahlarının Meydan Muharebeleri*. İstanbul, 2018, 38.

24 Fodor, 'Ottoman Warfare', 206–208; Dávid, 'Ottoman Armies', 282–286; Ágoston, 'Mohács és Szulejmán szultán', 67–70; Idem, 'Ottoman and Habsburg Military Affairs', 291–293.

guards, but eventually constituted one of the most important institutions of the empire. Their ranks were initially filled by prisoners of war and later by young captives obtained from the so-called “one fifth tax” (*pencik*) and trained for the sultan’s service. Finally, a completely new method was introduced in the 1380s in order to place recruitment on a more solid basis: the so-called *devşirme* (literally “collection”).²⁵ This was a forced levy of boys from among the Christian subjects of the empire at different intervals and at varying rates. Enlisted novices received special education and training. This initially took place in the courts of the sultan and the magnates, but a new system was introduced around the middle of the fifteenth century: new recruits were sold to Anatolian peasants for seven or eight years to learn Turkish, Islam, and the endurance of hardship. They were then collected and taken to the barracks of the janissary novices (*acemi oğlanları*) in Istanbul and Gallipoli, where they were put to work and drilled for several more long years, after which, by order of age, they were admitted into the janissary corps to replace deceased or disabled soldiers.²⁶

The numbers of janissaries and novices increased steadily over the years, and they were given more complex tasks. Most importantly, they were the elite infantry corps of the army, presenting an impenetrable wall in front of the sultan in the great battles. The select body of *solaks* (initially numbering 50–60, and later 400–500) were the sultan’s direct guards at every public appearance and every battle. Starting in the first half of the fifteenth century, janissary units were dispatched to the most important provincial forts (changed over every three years) to uphold the sultan’s will against any local interests. The janissaries also provided security in Istanbul and kept order in the camps. Janissaries were in the front line in the decisive assaults on forts.

The janissaries were organized into units of three kinds. The oldest and largest were the 101 *cemaats* or *ortas*. These originally comprised 100 soldiers commanded by a *yayabaşı*, but later formed regiments of widely varying sizes. The second main unit, organized within the *cemaats*, were composed of *sekbans*, who were originally the keeper of the sultans’ hounds. The third, established at the turn of the fifteenth and sixteenth centuries, were the sixty-one *ağa bölüğü*s, also of various strengths. The commander of the corps, the *ağa*, was always a graduate of the palace school during our period. The janissaries lived in their own barracks in Istanbul and were subject to the jurisdiction solely of their own officers. They received very low wages (3–7 *akçes*), an annual clothing allowance and some defrayal of the purchase of weapons and of mobilization expenses. The most distinctive item of their uniforms was headgear with a flap that hung down at the back. Their weaponry consisted mainly of bow-and-arrow, sabre, shield and light coats of-mail. Some units were equipped with crossbows and others with thrusting and cutting weapons (lance, halberd, battle-axe, club), and more and more janissaries carried small arms after the 1440s. During the reign

25 Vassilis Demetriades, ‘Some Thoughts on the Origins of the *devşirme*’, in Elizabeth Zachariadou (ed.), *The Ottoman Emirate (1300–1389)*. Rethymnon, 1993, 23–33.

26 Fodor, ‘Ottoman Warfare’, 207.

of Bayezid II (1481–1512), they are said to have been equipped with much more effective handguns. Heavy, long-barrelled arquebuses were used for sieges and lighter versions for open battle.²⁷

The following table shows the numbers of janissaries and janissary novices in the first third of the sixteenth century:²⁸

Year	Janissaries	Janissary novices	Total
1512	8,164	3,467	11,631
1514	10,065	–	?
1520a	7,780	2,668	10,448
1520b	8,361	3,190	11,551
1521	8,349	3,333	11,682
1522–1523	7,010	3,002	10,012
1523	7,164	4,107	11,271
1523–1524	8,641	3,514	12,155
1524–1525	9,390	4,961	14,351
1527–1528	7,886	3,553	11,439
1530	8,407	3,640	12,047

Supplementing the infantry janissaries were six household cavalry regiments (*sipahi oğlanları*, *silahdar*, two *garib* [“foreigner”] and two *ulufeci* [“salaried”] regiments).²⁹ The former two were probably organized in the 1370s, but we have no records of when the other four started. Their overall strengths were:³⁰

Year	<i>Sipahi oğlanları</i>	<i>Silahdar</i>	<i>Garibs and ulufecis of the right and the left wing</i>	Total
1512	1,059	1,338	1,499	3,896
1514	1,951	2,064	2,187	6,202
1520a	1,771	1,664	2,232	5,667
1520b	2,090	1,904	2,386	6,380
1521	2,133	1,848	2,211	6,192

27 Gábor Ágoston, *Guns for the Sultan: Military Power and the Weapons Industry in the Ottoman Empire*. (Cambridge Studies in Islamic Civilisation) Cambridge, 2005, 90. Two kinds of handguns were used in field battles, with barrels of different lengths but the same bore: Emecen and Afyoncu, *Savaşın Sultanları-I*, 56.

28 Based on the archival data collected and published by Gábor Ágoston (the aggregates are my own): Gábor Ágoston, *Osmanlı'da Strateji ve Askeri Güç*. İstanbul, 2012, 177–179; Idem, ‘Mohács és Szulejmán szultán’, 68; Idem, ‘Ottoman and Habsburg Military Affairs’, 292.

29 İsmail Hakkı Uzunçarşılı, *Osmanlı Devleti Teşkilâtından Kapukulu Ocakları*. Vol. II. Ankara, 1984; Idem, *Osmanlı Devletinin Merkez ve Bahriye Teşkilâtı*. Ankara, 1984.

30 Also after Ágoston: *Osmanlı'da Strateji*, 177–179; Idem, ‘Mohács és Szulejmán szultán’, 68; Idem, ‘Ottoman and Habsburg Military Affairs’, 292–293.

Year	<i>Sipahi oğlanları</i>	<i>Silahdar</i>	<i>Garibs and ulufecis of the right and the left wing</i>	Total
1522–1523	2,228	1,782	2,012	6,022
1523	2,358	1,798	1,962	6,118
1523–1524	2,274	1,734	1,874	5,882
1524–1525	2,278	1,779	1,940	5,997
1527–1528	1,993	1,593	1,502	5,088
1530	1,953	1,582	1,371	4,906

Each of these six regiments was commanded by an *ağa*, and the most esteemed were the *sipahi oğlanları* and *silahdars*, who were paid several times more than the janissaries. An important function of the court cavalry, in addition to guarding the sultan and fighting in battles, was to collect imperial taxes.

As firearms spread, squads of artillerymen (*topçı*), armourers (*cebeci*) and gun-carriage drivers (*top arabacıları*) became increasingly prominent. The armourers were mainly employed in the maintenance, repair, manufacture and field transport of weapons belonging to the court troops, above all the janissaries. Their commanders were obliged to recruit miners and other trades for the campaigns. The gun-carriage drivers made and maintained the gun carriages and wagons for transporting the artillery, and the artillerymen cast and operated the increasingly-important cannons. Members of these units also served in provincial castles, in a rotating system, like the janissaries. The growing significance of firearms is clearly apparent from changes in the strength of these three branches of service:³¹

Year	Artillerymen	Armourers	Gun-carriage drivers	Total
1512	331	401	346	1,078
1514	353	451	378	1,182
1520a	394	518	305	1,217
1520b	396	522	308	1,226
1521	560	504	544	1,608
1522–1523	688	484	543	1,715
1523	600	517	542	1,659
1523–1524	594	568	543	1,705
1524–1525	632	528	516	1,676
1527–1528	695	524	943	2,162
1530	687	528	1,168	2,383

In the early centuries of the empire, military formations of almost equal importance with those already discussed were the “marcher lords” (*akıncı beğleri*) and their “marauders” (*akıncı*). The commanders of the frontier districts were

³¹ Also from Ágoston, see the references in the previous footnote.

usually of old, empire-building families and inherited their offices from their fathers. They had thousands of slaves and private soldiers and enormous hereditary estates. They granted *timar*-estates at their own discretion and were vassals rather than subjects of the sultan. Their main tasks were to keep watch on the neighbouring lands and prepare for conquest through annual raids and ruthless pillaging. They were obliged to acquire booty and prisoners to contribute to maintaining the military and supply slaves. In war, their duties were to reconnoitre and harass the enemy, destroy territory, secure the marching route and guard supplies.

Their troops, in addition to *timar*-holders, were the frontier *sancaks*' great mass of *akıncıs*, descendants of nomadic tribal warriors. The *akıncıs* herded animals (breeding excellent horses) and lived by selling plunder from raids at good prices. In the second half of the fifteenth century, the state brought them under stricter control: they were forced to remain in the same place, where they were assigned peasant plots and required to take up farming. Their ranks were increasingly filled with peasant-born soldiers who were often not of the Islamic faith. The *akıncıs* were organized into squads, companies and regiments, and narrative sources put their overall strength at 10–20,000. Their weaponry was adapted to their special tactics: they usually carried only a sword, lance and shield, and were identifiable by their red caps.³²

Complementing the regular army were several paramilitary and peasant soldier formations after the middle of the fourteenth century. Some of these were Ottoman innovations, and others were military organizations that the Ottomans had found in the conquered countries and then adopted into their own system.³³ The former included the *azabs*, *yayas*, *müsellems*, *yürüks*, *tatars* and *cerehors*; and the latter, the originally Byzantine–South Slav *voynuks*, Vlachs (*eflaks*) and *martoloses*. Most of these forces shared some basic features. One was the assignment to “recruitment groups” (*ocak*) and that their members went to war in return of tax exemption (mostly from extraordinary war taxes) or tax reduction. In other words, they paid their war taxes by rendering military service and/or by paying the costs of soldiers going into service. Those who lived in this system usually inherited service from their fathers, and the state endeavoured to form them into increasingly closed groups by gradually raising them to military (*askeri*) status, although most of them lived a peasant life. Consequently, most components

32 Pál Fodor, 'Akıncı', in Kate Fleet, Gudrun Krämer, Denis Matringe, John Nawas and Everett Rowson (eds.), *The Encyclopaedia of Islam. Three*. Leiden, Boston, 2014, 14–16; Emine Erdoğan Özünlü and Ayşe Kayapınar, *1472 ve 1560 Tarihli Akıncı Defterleri*. Ankara, 2017; Adrian Gheorghe, 'Gewaltmonopolisierung und Konkurrenz im Osmanischen Reich. Systematisierung und Kontextualisierung der Militärinstitution der Akıncılar. Probleme und Perspektiven', *Muzeul național* 30 (2018) 17–46.

33 Gyula Káldy-Nagy, 'The Conscription of the *Müsellems* and *Yaya* Corps in 1540', in Gyula Káldy-Nagy (ed.), *Hungaro–Turcica: Studies in Honour of Julius Németh*. Budapest, 1976, 275–281; Klára Hegyi, *The Ottoman Military Organization in Hungary: Fortresses, Fortress Garrisons and Finances*. (Studien zur Sprache, Geschichte und Kultur der Türkvolker, 25.) Berlin, 2018, 269–329; Fodor, 'Ottoman Warfare', 211–217; Evgeni Radushev and Göksel Baş, *Early Ottoman Military and Administrative Order in the Balkans: A Muster Roll of the Voynuk Corps (Defter-i Esâmî-i Voynugân) in the Western Balkans from 1487*. (21st-Century Studies in Humanities) Budapest, 2020, 9–25.

of the Ottoman military peasant system belonged to the standing regular army. Through these organizations, broad masses of conquered people were involved in the wars of conquest and took a share of the gains. Their military significance gradually dwindled, however, and some of them had been abolished by the middle of the sixteenth century, remainder being mostly put to use for auxiliary work (towing boats, carriage, casting cannonballs, etc.). Nonetheless, the *akıncıs*, *voynuks* and *azabs* still contributed several tens of thousands of soldiers to the Ottoman military during our period. The *azabs* divided into three types. Some were infantry soldiers in fortress garrisons and others served on river and sea fleets. The third – and oldest – category consisted of infantry archers provided jointly by varying numbers of peasant households, whose ten-thousand strong formation were usually set in front of the battle lines of household troops (often the artillery). Many soldiers in these categories, such as the *voynuks*, often marched with very poor weaponry (such as cudgels), although there were also some well-equipped units.

Permanent garrisons made up a substantial part of the Ottoman military. The border defence organization in the Balkans that formed up in the second half of the fifteenth century and had its centre of gravity along the 800 km long border with Hungary consisted of between thirty and forty forts in the 1470s, about sixty in the 1490s, and more than seventy in the first decade of the sixteenth century. The number of salaried garrison troops rose accordingly, from an initial 5,500 to 10–12,000. In the empire as a whole, there were 41,026 troops registered as serving in fortresses in 1525–1528, of which 24,107 were stationed in the European half of the empire (Rumelia), 11,308 in Anatolia and Syria, and 5,611 in Egypt.³⁴ The state took complete control of the conquered fortresses and fortified towns, seeing this as essential to consolidate the territorial unity of the empire and the power of the sultan. The janissaries and other court salaried troops made up an increasingly substantial minority of garrison troops, and they, as we have seen, served in rotation in provincial forts. The remainder comprise provincial soldiers, a great many of whom – particularly in the Balkans – were Christians and renegades. The garrison commander was called *dizdar*, and his deputy, *kethüda*. The main branches of arms in the garrisons were: infantry *hisar eri* (also known as *müstahfız/merd-i kale*), *azab*, *topçı* (artillery) and *martolos*; and cavalry *gönüllü* and *faris* (also known as *beşlül/ulufeciyan-i süvari*). In addition to the combat troops, there were many service units: sentries, storemen, musicians, armourers and other artisans. The main riverside fortresses had naval units under captains (*kapudan*). They pay of garrison troops took a variety of forms. Some of them were given *timar*-estates, others were paid salaries, and there were combinations of the two. (There was a striking preference for cash payment in the strategically important

34 For the data from the late fifteenth and early sixteenth century, see Baş, 'XV. Yüzyılın İkinci Yarısında', 157–159, 179. For the 1520s, see Barkan, 'H. 933–934 (M. 1527–1528) Mali Yılına', 282, 284–285, 292, 294–295; see also Gyula Káldy-Nagy, 'The First Centuries of the Ottoman Military Organization', *Acta Orientalia Academiae Scientiarum Hungaricae* 31:2 (1977) 170; Dávid, 'Ottoman Armies', 297–302.

fortresses.) The subordinate units were often granted a collective *timar* and many of the garrison troops served on rotation. Many peasants provided service or worked in a nearby fort against full or partial exemption from tax. The fortresses always accumulated large stocks of weapons and food, but the food was only used in time of siege. At other times, every soldier had to buy rations and horse feed from his own pay. The Ottoman state placed a high priority on the maintenance and modernization of fortresses. The most advanced methods of fortification were applied in the improvement old forts and the construction of new ones, to render them capable of defence against artillery and other firearms.³⁵

After the middle of the fourteenth century, the Ottomans made regular use of military forces provided by vassal states. These were mainly Serbian and other Balkan troops in the first two centuries, but after the 1520s, Crimean Tatar auxiliaries were required to march on the Ottoman side. Later, they were joined by Moldavian and Wallachian contingents.

These figures permit us to estimate the Ottoman military potential in terms of theoretically mobilizable strength, a worthwhile exercise here, because compilations to date have always left out various units for various reasons.³⁶ The results are shown on Table 4. The troop numbers overall reflect the 1527–1528 situation, rounded in some cases. Where there are no figures for the year, I have used the number for the closest year, and where there is no reliable data, I have made an estimate.

TABLE 4: OTTOMAN TURKISH MILITARY POTENTIAL IN THE SECOND HALF OF THE 1520S³⁷

Timar-holding <i>sipahis</i>	
Rumelia	10,668
Anatolia, etc.	17,200
Armed retainers raised by <i>sipahis</i>	42,000
	69,868

35 See Baş, 'XV. Yüzyılın İkinci Yarısında', 173–173, and Gergely Buzás' study in the present volume.

36 İnalcık omits the *timar*-holding *sipahis* and Ágoston omits the peasant soldier organizations, resulting in figures of 118,000 and 125,000 respectively for the overall strength: Halil İnalcık, 'The Ottoman State', in Halil İnalcık and Donald Quataert (eds.), *An Economic and Social History of the Ottoman Empire, 1300–1914*. Cambridge, 1994, 89; Ágoston, 'Mohács és Szulejmán szultán', 64; Idem, 'Ottoman and Habsburg Military Affairs', 294.

37 On the *timar*-holding *sipahis*, the household units and the garrisons, see the above tables and references. On the peasant soldiers and other units: a) *Yaya* and *müsellem* (Anatolia): Káldy-Nagy, 'The First Centuries', 172–173 (1521: 10,252 *ocaks*/warriors); Idem, 'The Conscriptio', 277 (1540: 3,212 *ocaks*/warriors). b) *Yürük*, *müsellem*, *tatar* (Rumelia): Mehmed İnbaşı, 'Rumeli Yörükleri', in Tufan Gündüz (ed.), *Anadolu'da ve Rumeli'de Yörükler ve Türkmenler Sempozyumu Bildirileri*. Ankara, 2000, 178–181 (1544: 1,257 *ocaks*/conscripts) and Káldy-Nagy, *ibid.*, (1552: 2,187 *ocak*/conscripts). c) *Voynuk*, *eflak*: estimate based on Barkan, 'Essai', 34; Baş, 'XV. Yüzyıl İkinci Yarısında', 165–166 and 166: note 54; Radushev and Baş, *Early Ottoman*. d) *Akıncı*: estimate based on Franz Babinger, *Die Aufzeichnungen des Genuesen Iacopo de Promontorio-de Campis über den Osmanenstaat um 1475*. München, 1957, 54–55, 60–61, 68–69. e) *Azab*: estimate based on narrative sources. f) *Cerehor*: estimate based on earlier and later data: Pál Fodor, 'The Way of a Seljuq Institution to Hungary: the *cerehor*', *Acta Orientalia Academiae Scientiarum Hungaricae* 38:3 (1984) 367–399.

Household troops	
Janissaries	8,000
Janissary novices	3,500
The six cavalry regiments	5,100
Artillerymen, armourers and gun-carriage drivers	2,200
	18,800
Garrison troops	
Rumelia	24,107
Anatolia	11,308
Egypt	5,611
	41,026
Peasant soldiers and auxiliary troops	
<i>Yaya</i> and <i>müsellem</i> (Anatolia)	10,000
<i>Yürük</i> , <i>müsellem</i> , <i>tatar</i> (Rumelia)	2,500
<i>Voynuk</i> , <i>eflak</i> (Rumelia)	7,000
<i>Akıncı</i>	12,000
<i>Azab</i>	10,000
<i>Cerehor</i>	2,000
	43,500
Vassal forces	
Crimean Tatars	2,000?
Romanian principalities	1,000?
	3,000
Total	176,194

With this enormous potential, the Ottoman military command had little difficulty in mobilizing 50–70,000 troops for the sultan's great campaigns. They were also capable of making orderly manoeuvres and deployments of formations of a size unparalleled at that time.

MILITARY SUPPLIES AND WEAPONRY

The Ottoman army had a well-organized supply system.³⁸ The marching army was accompanied by a carefully-selected troop of artisans (*orducu*) that included all kinds of tradesmen, from grocers to farriers.³⁹ Much of the food, animal feed and war material was provided by subjects in return for tax abatement or

38 On this, with much new information, see Emecen and Afyoncu, *Savaşın Sultanları-I*, 82–91.

39 Gilles Veinstein, 'Du marché urbain au marché du camp: l'institution ottoman des *orducu*', in *Mélanges Professeur Robert Mantran. Études réunies et présentées par Abdeljelil Temimi*. Zaghouan, 1988, 299–327; Bülent Çelik, 'Osmanlı Sefer Organizasyonlarında Kentli Esnafın Getirdiği Çözümler: *Orducular* Esnafı', *EJOS* 7:11 (2004) 1–163.

exemption or in lieu of extraordinary war taxes (*avarız, nüzüül*). The latter was imposed in the form of a quantity of barley and flour to be delivered jointly by a group of households numbering between ten and forty. The peasants were also required to bring their surpluses to camp and offer them for sale to the soldiers at fixed prices. This system of forced sale (*sürsat*) was used to obtain food and animal feed other than flour and barley (meat, honey, fat, hay, etc.) The meat eaten by soldiers was mainly mutton, obtained from two principal sources: the Balkan sheep drovers (*celeb*) and – increasingly – the Wallachian and Moldavian principalities. During eastern campaigns, it was provided by the Anatolian nomads.⁴⁰ Food was stored in depots that were built at stations (*menzilhane*) spaced out at regular distances along the military roads and in large distribution centres (Sofia, Belgrade, Aleppo, Amasya, etc.), so that there was always food for the troops and their animals as they arrived.⁴¹ The central treasury and apparatus provided for the sultan's entourage and the household troops. The *timar*-holding *sipahis* were allowed to use the equipment brought by their officers (kitchen, saddlery, etc.), and although they also received a share of the barley and flour collected as *nüzüül* tax, they had to find most of their supplies themselves. The most common arrangement involved *harclıkçıs*, whom the *sipahis* of a district elected from among themselves and who was sent home for money, food or animal feed as the need arose. Since the *sipahis* usually had to go on campaign before the harvest, and thus several months before they received their income, they were often obliged to take out bridging loans from the state to cover the campaign costs.⁴² The auxiliary troops were left entirely to themselves and those who helped them from home. The camps were set up with extreme care, and the attention paid to preventing the spread of sickness by keeping the latrines clean and in proper order was exceptional at the time. The sultan's tent complex even included a bath tent.⁴³

The supply of weapons and war material was similarly well-organized. The empire had all the strategic raw materials it needed, except for tin, and faced no problems in making either traditional or new weapons. The cannon became a basic, indispensable weapon of the Ottoman army in the mid-1440s. The experience of the series of battles with the Hungarians prompted the Ottomans to adopt field artillery, and they already deployed it effectively in the Battle of Kosovo in 1448.⁴⁴ It was also from the Hungarians that they learned the originally Hussite tactic of the Wagenburg/wagon fort (*tabur cengi*). This consisted of

40 Káldy-Nagy, 'The First Centuries', 173–174; Gilles Veinstein, 'Some Views on Provisioning in the Hungarian Campaigns of Süleyman the Magnificent', in Hans Georg Majer (ed.), *Osmanistische Studien zur Wirtschafts- und Sozialgeschichte. In Memoriam Vančo Boškov*. Wiesbaden, 1986, 177–185; Dávid, 'Ottoman Armies', 310–312.

41 Yusuf Halaçoğlu, *Osmanlılarda Ulaşım ve Haberleşme (Menziller)*. Ankara, 2002.

42 Gilles Veinstein, 'L'hivernage en campagne: Talon d'Achille du système militaire ottoman classique. A propos des *sipāhī* de Roumélie en 1559–1560', *Studia Islamica* 58 (1983) 109–148; Tekgul, 'Cash Loans', 597–613.

43 Dávid, 'Ottoman Armies', 313–315; Emecen and Afyoncu, *Savaşın Sultanları-I*, 90.

44 Ağoston, *Guns for the Sultan*, 17–18.

mounting crossbows, handguns and light cannons on to hundreds of wagons, which were bound together with chains through the wheels to make up a kind of fortification. This mode of combat also had internal precedents that can be traced back to the steppe.⁴⁵ In 1444, the Ottoman artillery proved it could be effective against moving targets: as the army crossed the Bosphorus, it was covered by guns on the shore firing on enemy ships. During the reign of Murad II (1421–1451), guns also began to appear on the river fleets.⁴⁶

The first Ottoman guns were enormous wrought-iron constructions, but there was a gradual changeover to bronze guns of smaller bore in the middle of the fifteenth century. Ottoman guns in the early sixteenth century were comparable in composition to the artillery of the most modern European armies, consisting overwhelmingly of small and medium-sized cannons. The most important gun workshop, the “imperial cannon foundry” (*tophane-i amire*) was in Istanbul, and there were others in many cities (Bursa, Edirne, Rudnik, Novobrd, Belgrade, Avlonya, Cairo, Diyarbakir, etc.).⁴⁷ Between 1522 and 1528, 1,117 cannons were cast in Istanbul, the vast majority *zarbzen* (*zarbuzan*), small- or medium-calibre field guns.⁴⁸ Hand-held firearms kept pace with artillery weapons and also became an indispensable part of the Ottoman arsenal. Firearm units appeared in castle garrisons in the mid-1440s. The central government made great efforts to encourage the use of small arms and to organize their manufacture. By the early sixteenth century, the Ottomans seem to have developed their own types of handgun that were lighter, of smaller calibre and easier use than those of their enemies.⁴⁹ Nonetheless, there is much evidence that Ottoman hand-held firearms – in contrast with their cannons – were generally of poorer quality than Western counterparts, and the arms trade – legal and illegal – remained an important source of these weapons in the sixteenth and seventeenth centuries. The empire was self-sufficient in gunpowder supply, however, and demand was easily satisfied by gunpowder mills in Istanbul, Egypt, Belgrade, Buda and elsewhere.⁵⁰

Surviving early-sixteenth-century lists of weapons and war material for the household troops give us some outline of the equipment that sultan’s army took to war. The force that went to lay siege to the island of Rhodes in 1522 took with it 1,839 coats of mail, 1,000 sets of janissary armour, 1,100 helmets, 1,130 arm guards, 2,025 heel guards, 840 forked halberds, 3,188 standing shields, 4,000 compound recurve bows, 40 steel crossbows, 1,910,000 arrows (18,000 for crossbows), 1,000 long-barrelled handguns (with 1,000 stands and 150,000 balls), 4,500 short-barrelled handguns (with 4,800,000 balls), powder horns for 2,160 short-barrelled and 1,008 long-barrelled handguns, 959 kg of match cord, 3,020 kg of steel, 1,693 kg

45 Pál Fodor, ‘Tabur’, in *Türkiye Diyanet Vakfı İslâm Ansiklopedisi*. Vol. 39. İstanbul, 2010, 335–336.

46 Ágoston, *Guns for the Sultan*, 18.

47 *Ibid.*, 178–182; Salim Ayduz, *XV ve XVI. Yüzyılda Tophâne-i Âmire ve Top Döküm Teknolojisi*. (Türk Tarih Kurumu Yayınları, VII/215.) Ankara, 2006, 37–73.

48 Ágoston, *Guns for the Sultan*, 83, 180.

49 Emecen and Afyoncu, *Savaşın Sultanları-I*, particularly 55–56.

50 Ágoston, *Guns for the Sultan*, 96–164.

of tin, 10,301 kg of pig iron, 2,822 kg of lead, 1,496 kg of naphtha (mineral oil), 198 kg of olive oil, 931 kg of sulphur, 593 kg of tar, 1,129 kg of saltpetre, 282 kg of kindling, 4,580 bombshells, etc.⁵¹ The material taken along with army that set out for the Battle of Mohács included: 4,111 coats of mail, 3,763 assorted sets of armour (378 being janissary armour), 3,016 helmets, 720 forked halberds, 867 hand-held thrusting and cutting weapons, 4,145 assorted shields (including 3,084 standing shields), 5,000 lance tips, 5,200 compound recurve bows (with 1,400,000 arrows), 42 crossbows (with 10,000 arrows), 4,000 handguns (only 1,000 of good quality), 60 long-barrelled handgun, 3,000,000 balls for handguns, 4,000 powder horns, 105.8 tonnes of gunpowder for cannons, 7.7 tonnes of gunpowder for matchlock guns, 30,000 field cannonballs, 500 bombshells, 1,129 kg of sulphur, 1,580 kg of saltpetre, 790 kg of steel, 3,330 kg of pig iron, about 500 kg of tin and the same amount of naphtha.⁵²

TRANSPORT

At first, the Ottomans used few if any wagons to transport war material, weapons and food. By the middle of the fifteenth century, however, ox carts to carry siege guns had taken their place in the baggage train. The main pack animals were the camel, the mule and the horse, some provided by subjects and magnates, others being rented from traders. The sultan's treasury, the military band, and the food and weapons of the court salaried troops were loaded on to several hundred camels and mules kept in the imperial stables.⁵³ River and sea transport gradually increased in importance. The food and war material for the Hungarian theatre, for example, was taken by the Black Sea fleet to the Danube estuary, where it was transferred to ships of the Danube fleet and taken up the river to where it was needed, or to the Belgrade distribution centre.

MILITARY TACTICS

By the late fourteenth century, the Ottomans had developed a distinctive set of tactics based on coordinating traditional nomadic light armoured cavalry with infantry of then unparalleled discipline. The use of firearms caused little change to this until the late seventeenth century. It was essentially a defensive mode of

51 Nicolas Vatin, *L'Ordre de Saint-Jean-de-Jerusalem, l'Empire ottoman et la Méditerranée orientale entre les deux sièges de Rhodes 1480–1522*. (Collection Turcica, 7.) Louvain, Paris, 1994, 481–491.

52 Feridun M. Emecen, 'Mohaç 1526: Osmanlılara Orta Avrupa'nın Kapılarını Acan Savaş', in İdem, *Osmanlı Klasik Çağında Savaş*. İstanbul, 2010, 213–216; see also János B. Szabó and Gábor Farkas Farkas (eds.), *Örök Mohács: Szövegek és értelmezések*. (Mohács 1526–2026: Reconstruction and Remembrance) Budapest, 2020, 231–235, and Emecen and Afyoncu, *Savaşın Sultanları-II*, 60–63. When the sultan departed for the East in 1534, he again took 4,000 handguns for the use of the janissaries in his entourage (of which 1,000 were long-barrelled): Emecen and Afyoncu, *Savaşın Sultanları-I*, 56.

53 Fodor, 'Ottoman Warfare', 220; Emecen and Afyoncu, *Savaşın Sultanları-I*, 89–90.

battle, primarily designed to guarantee the personal safety of the sultan. The ruler was always located in the centre, in front of the encampment, flanked to the left and right by (partly heavily-armoured) household cavalry. Set in front of him were the infantry janissaries, *yayas* and *azabs* in several columns (seven in the 1444 Battle of Varna) to render the ranks impenetrable. When field artillery was adopted, it was placed here, in front of the janissaries and behind the *azabs*. Starting in 1396, entrenchments were made around the centre, topped by closely-packed stakes and high standing shields. The janissaries used these as cover to fire with bows and arrows, and later with muskets. Entrenchments were rarely used by the sixteenth century, and instead, the janissaries set up barriers out of pavise shields. In the 1448 Battle of Kosovo and many later battles, the entrenchment was reinforced by the wagon fort. The right and left flanks advanced in a crescent formation where the *sipahi* cavalry of the Rumelian and Anatolian provinces and (until the middle of the sixteenth century) the army of *akıncıs* lined up, sometimes reinforced by *azab* and militia infantry.

Battle usually commenced with feigned attacks and retreats by the *sipahi* cavalry to break up the enemy cavalry and leading them towards the Ottoman infantry. Then, camels frightened by a constant shower of arrows and burning arrows were used to put them into confusion. The Ottoman infantry, when the attackers reached them, suddenly split in two, opening up a passage, and then closed ranks. Having thus trapped the attacking cavalry, they then set about methodically slaughtering the horses with thrusting and cutting weapons, and subsequently overcame the immobilized soldiers in close combat. By that time, the Ottoman cavalry had returned and re-formed its ranks to deal with the enemy troops left outside.⁵⁴

The main factors in the Ottoman army's consistent success were the infantry and court salaried troops, the good coordination of various units and – after the adoption of modern artillery – the effectiveness of its cannon fire. Communication was provided by sophisticated military music and highly-trained heralds (*çavuşes*) who swiftly forwarded the sultan's commands to the units. The best Christian commanders soon recognized the crucial role of the infantry and the household troops in the Ottoman army, but in general, until the empire's enemies abandoned tactics based on charges of heavily armoured knights (in the West) or light cavalry (in the East) and assembled similarly strong infantry forces, they were regularly defeated in battle.

The situation changed radically in the sixteenth century, when western armies started to adopt large numbers of infantry armed with pikes and small arms and made great progress in coordinating different branches of arms and increasing infantry firepower.⁵⁵ Although the Ottoman command clung to the

54 Fodor, 'Ottoman Warfare', 220–221; Imber, *The Ottoman Empire*, 284–289; Pálosfalvi, *From Nicopolis to Mohács*, 446–451; Emecen and Afyoncu, *Savaşın Sultanları-I*, 23–37, 69–81, 96–102.

55 John F. Guilmartin, Jr., 'Ideology and Conflict: The Wars of the Ottoman Empire, 1453–1606', *Journal of Interdisciplinary History* 18:4 (1988) 735–736; see also the various studies in the present volume.

crescent battle formation and traditional tactics, they were obliged to make some changes. Firstly, the janissaries, who carried handguns, were gradually trained in volley fire, and later, step by step and with great effort, the proportion of the infantry in the army was considerably increased. There is a (somewhat overstated) view that volley fire, one of the main innovations of the “Military Revolution”, was “invented” by the Ottomans and that they regularly applied it in their battles of the early sixteenth century (including Mohács).⁵⁶

In the second half of the fourteenth century, together with the progress they were making in field battle, the Ottomans also adopted advanced siege tactics. They were using various siege machines by the turn of the century, and one or two decades later (certainly by 1422), employed mining to weaken the walls and defend the besiegers. It was at that time that cannons were first used to break down castle walls. In 1453, they deployed the most up-to-date siege techniques of the time (such as gun batteries) against Constantinople.⁵⁷ In the sixteenth century, they put the expertise they accumulated over several centuries to good use in attacking Hungarian fortresses. Most of these sieges ended in outright victory (even the most modern fortifications were unable to block their way). In addition to the gunners and the janissaries, the principal factors in their success were the bombardiers (*humbaracı*) and the sappers (*lağımıcı*) serving with the central salaried army and the provincial garrisons.⁵⁸

The Battle of Chaldiran, 23 August 1514

We can get a good insight into the Ottoman military arts during our period through the Battle of Chaldiran. As mentioned in the introduction, the battle was decisive for the Ottomans’ supremacy in the Near East and the future of the Ottoman state. It was also fateful for the future of Central Europe.⁵⁹

After an exhausting four-month march with many privations, the 40–50,000-strong Ottoman army was arrayed on the Chaldiran plain in its customary battle order: the sultan in the centre with the court cavalry directly in front of and beside him, chained guns, gun carriages and camels on the left and right of the centre, behind them janissaries in three ranks, and behind the camp, chained wagons and pack animals. The centre thus constituted a veritable, and impenetrable, fort. The Anatolian and Karamanian cavalry were placed on the right flank of the army and the Rumelian cavalry on the left, and to the right and left of the centre, in front of the guns, the *azab* infantry bowmen and spearmen were arranged as advance guard and cannon fodder. The Iranian

56 Emecen and Afyoncu, *Savaşın Sultanları-I*, 69–81.

57 Feridun M. Emecen, *İstanbul’un Fethi Olayı ve Meseleleri*. İstanbul, 2003, 14, 37–38.

58 Ágoston, *Guns for the Sultan*, 39–42.

59 I summarize the events based on two other accounts of the battle and my own previous description: Emecen, *Zamanın İskenderi*, 100–145; Emecen and Afyoncu, *Savaşın Sultanları-I*, 338–373; Pál Fodor, ‘Királynék fogságban – Tinódi egy félreértett históriás énekéről’, in Magdolna Baráth and Antal Molnár (eds.), *A történettudomány szolgálatában. Tanulmányok a 70 éves Gecsényi Lajos tiszteletére*. Budapest, Győr, 2012, 127–129.

army consisted exclusively of an estimated 50-60,000 armoured cavalry troops and had no small arms or artillery. Shah Ismail could rely on only one tactic: to defeat the Ottoman flanks one by one, get behind the centre and penetrate the “fort” defending the sultan from behind, forcing his guard into close combat. The shah thus began by appearing with his elite troops wherever there was the greatest need. The Ottomans endeavoured to lure the enemy on to their cannons and arquebuses and deal them a lethal blow. In the first phase of the battle (which bears an extraordinary resemblance to the later Battle of Mohács in terms of its course, the arrangement of the armies, the timing of attacks and the tactics employed), the Safavids made repeated attacks which the Ottomans desperately repulsed. At first, these unusually bloody clashes brought mixed results for the shah’s army. The Anatolian flank stood up well, but the *azab* infantry and the Rumelian cavalry – attacked by Iranian forces redeployed from the other flank, and by the shah himself – suffered a defeat (leading to the death of the commander of the left wing, the governor-general Hasan Pasha). The sultan immediately sent janissaries equipped with handguns to stabilize the troubled left flank, and although the Ottoman firearms were thoroughly reducing the Iranian soldiers, the shah resolved to find a gap towards the centre, and the sultan. It seems that he managed to get behind the Ottoman camp, but the chained-up pack animals prevented him from penetrating. The janissaries’ fire twice repulsed the Safavid attackers. At that stage, the shah displayed extraordinary personal courage: he changed horses and returned to the attack seven times, but was unable to force a victory. He received two arquebus balls in his arm, and was surrounded by the Ottoman forces. With great difficulty, he broke out, but as he fled, his horse sank into the nearby marsh and he was thrown to the ground. One of his loyal officers saved him by crying out that he was the shah, distracting the attention of the Ottoman lancers galloping towards the real shah. Ismail, while his remaining soldiers held down the Ottomans on the battlefield, succeeded with great effort to escape to his capital, Tebriz. It was an exceptionally bloody battle, with at least two or three thousand casualties on each side.⁶⁰ The Ottoman command possibly suffered greater losses than ever before. Contemporary and subsequent Ottoman authors report the deaths of more than ten district commanders (*sancakbeği*), one governor-general (*beğlerbeği*) and many of other ranks. On the Safavid side, tens of high-ranking commanders were lost.

MARITIME AND RIVER FLEETS

Extending over three continents, the Ottoman Empire was obliged to develop, in a relatively short time, a powerful maritime force to protect communication and supply and defend the capital city, the long coastlines and the North African vassal states. By the early the sixteenth century, the Mediterranean fleet compared well with the Venetian and Spanish navies, partly due to the Ottoman

⁶⁰ Emecen, *Zamanın İskenderi*, 144.

practice of taking experienced pirates into service.⁶¹ There were major shipbuilding and repair docks, including the “imperial arsenal” (*tersane-i amire*), built in Galata, Istanbul in the 1510s and 1520s.⁶² By the middle third of the century, the command system had also been consolidated: the Archipelago province (*Eyalet-i Cezayir-i Bahr-i Sefid*) was established in 1534, under the control of the grand admiral of the fleet (*kapudan paşa/kapudan-i derya*), who also governed the maritime *sancaks* belonging to him.⁶³ The basic warship of the Ottoman navy was initially the light oared galley *kalyata* (the Venetian *galeotta*), which in the middle third of the century gradually gave way to the *kadırga* (the Venetian *galea*), an oared galley with one or two masts and lateen sails.⁶⁴ In the 1530s, the navy had more than 200 ships.⁶⁵ Each carried the officers (captain and *azabs*), a crew of 20–30, and 50–100 soldiers (mostly *timar*-holding *sipahis* from coastal *sancaks* and court janissaries, who were equipped with muskets in the final third of the sixteenth century) and 150–200 oarsmen. Some of the latter were prisoners of war and convicts, and the remainder peasants serving in lieu of extraordinary war taxes. The number of ships in a fleet depended on the extent of deployment (from twenty or thirty up to two hundred). The navigation season lasted from March to October, and the tactics were based on raids, harassment of enemy coasts and forts, and defence of Ottoman lands and shipping routes. Major naval battles were undertaken only as a last resort, but usually ended in Ottoman victory. Local naval captaincies were set up to defend the Aegean, Greek, Syrian and Egyptian coastlines and the Red Sea and Indian Ocean trade. Independent naval commands were also set up on the navigable rivers such as the Morava, the Sava and the Danube, etc., sometimes with surprisingly large fleets: in 1491, for example, there were 200 ships in service on the Serbian Morava.⁶⁶ The main river ship was the *şayka*; 13–25 metres long, it carried three guns and crewed by the captain, the gunner, the helmsman, 20 oarsmen and 20 soldiers. A medium-sized (23-metre) *şayka* could carry a cargo of about 350 kg.⁶⁷ Lost warships could be replaced quickly, because the raw materials, craftsmen and money for shipbuilding were always available.

61 Emrah Safa Gürkan, ‘The Centre and the Frontier: Ottoman Cooperation with the North African Corsairs in the Sixteenth Century’, *Turkish Historical Review* 1 (2010) 125–163.

62 İdris Bostan, *Osmanlı Bahriye Teşkilâtı: XVII. Yüzyılda Tersâne-i Âmire*. Ankara, 1992, 3–7.

63 İdris Bostan, ‘The Establishment of the Province of Cezayir-i Bahr-i Sefid’, in Elizabeth Zachariadou (ed.), *The Kapudan Pasha: His Office and His Domain*. Rethymnon, 2002, 244–245.

64 İdris Bostan, *Kürekli ve Yelkenli Osmanlı Gemileri*. İstanbul, 2005.

65 Dávid, ‘Ottoman Armies’, 306.

66 Baş, ‘XV. Yüzyılın İkinci Yarısında’, 171: note 80.

67 Bostan, *Osmanlı Bahriye Teşkilâtı*, 88–89; Idem, *Kürekli ve Yelkenli*, 236–242.

SUMMARY

The Ottomans gradually developed military organization and tactics that made their army one of the most effective forces in the world in the sixteenth century. The main components of their success in war were:

1. A considerable lead over its opponents (especially the Europeans) in creating a large, well-structured regular army, and the ability to mobilize and march it to the theatres of war much more quickly than was customary at the time.
2. A permanent, well-trained officer corps who gained a high level of combat command experience in the constant wars. Their advice was constantly heeded by the supreme command, and they passed on their knowledge to future generations through well-organized training.
3. A continuously-assured numerical superiority. The inexhaustible sources of recruits enabled empire to make up for human losses much faster than other powers.
4. An abundance of all important raw materials and food, enabling supply and equipment of the army at a high standard without difficulty.
5. The ability and determination to adopt the latest military technologies and hire foreign experts, through which the empire was, right from the beginning, able to tap into the international transfer of knowledge and weapons.
6. As a result of all this, the ability to develop tactics that for a long time secured Ottoman victory in decisive battles.

Endre Sashalmi

THE MILITARY ORGANIZATION AND ARMY OF THE GRAND PRINCIPALITY OF MOSCOW (1462–1533)

TERRITORIAL EXPANSION AND ITS CONSEQUENCES (1462–1533)

During the reign of Ivan III (1462–1505), named the “gatherer of the Russian lands” in the later Russian chronicles, the East European plain underwent a fundamental political rearrangement. Upon his accession in 1462, he broke from the tradition of petitioning the Tatars for the *iarlyk*, the document that granted recognition of the rulers of principalities on the territory of former Kievan Rus', which had all been subservient to the Tatars since 1240 and were obliged to pay an annual tribute.

The princes of Moscow thus ruled by grace of the Tatar khans, and since 1328 they bore the title “Grand Prince of Vladimir” (the legacy of Rus'), symbolizing their leading role in the region. Another inestimable contribution to their prestige was the presence in Moscow of the metropolitans of Rus', who had continuously maintained their seat there since 1326–28 and backed the grand princes' claims to power. Both of these advantages had been gained during the reign of Ivan I Kalita (“the Moneybag”, 1325–1341), who laid the groundwork for the rise of the Grand Principality of Moscow.

Ivan I immediately extended his newly-won title of “Grand Prince of Vladimir”, taking his cue from the heads of the Orthodox Church, who until the middle of the fifteenth century held the title “Metropolitan of Kiev and all Rus'” (even though they already resided in Moscow), and following the example of Prince Mikhail of Tver', (1305–1317), by styling himself “Grand Prince of Vladimir and All Rus'” (*Velikii Kniaz' Vladimirskii Vseia Rusi*). This very likely reflected an aspiration to rule the entire former territory of Rus'. Several factors, however, thwarted him and his successors in their ambitions. One was their subservience to the Tatars, and another was the existence of other subservient principalities. Additionally, the Grand Duchy of Lithuania had established suzerainty over much of the former territory of Rus' in the fourteenth century. By 1462, however, the princes of Muscovy had – by adept political manoeuvring and pragmatic handling of relations with the Tatars – considerably expanded their territory and their prestige.

The lands possessed by Muscovy, having covered about 47,000 km² in 1300, expanded more than ninefold to 430,000 km² in 1462.¹ By then, as the empire of the Golden Horde divided into khanates of various sizes between 1431 and 1466, subservience to the Tatars was also loosening. The grand prince at that time was Ivan III's father Vasilii II (1425–1462), and some historians claim that when Vasilii declared the eight-year-old Ivan to be his co-ruler and heir in 1448, he did so without requesting Tatar approval. Ivan III thus may have been the first prince not to have requested or received confirmation in his position from the Tatar khan. (The demand for tribute ended the same time as Tatar suzerainty, although Moscow had probably not paid its dues since the 1450s.)

The Orthodox world reacted to the Ottoman capture of Constantinople in 1453 by regarding the ruler of Rus' as the successor to the Byzantine emperor, and so the power of the grand prince had greatly increased in ideological as well as political terms by the end of Vasilii's reign. Following the conquests of his son, Ivan III, the Grand Principality of Moscow was certainly the largest polity in Europe in the early sixteenth century, although the fluctuating southern-steppe borders permit only an approximate estimation of its actual extent.

Having inherited a territory approximately equivalent to the France of his contemporary Louis XI (1461–1483), Ivan III expanded his empire to about 1.7 million km² by the end of his reign.² His son Vasilii III (1505–1533), who completed what the chronicles euphemistically termed the process of "gathering the Russian lands", in fact the annexation of rival principalities, left to his child heir, later to be known as Ivan the Terrible (1533–1584), a country that extended over about 2.5 million km². The main conquests by which Ivan III and Vasilii III increased their territory were: Iaroslavl' (1471), Perm (1472), Rostov (1473), Novgorod (1478), Tver' (1485), Viatka (1489), Pskov (1510), Smolensk (1514) and Riazan' (1521). The most important was the annexation of Novgorod, and shortly afterwards, following the defeat and annexation of Moscow's ancient rival Tver', Ivan III assumed the title "Master of all Rus'" (*Gospodar' Vseia Rusi*) in 1486.³

A development that took place at the same time and was of equal significance to the territorial expansion was the political and administrative restructuring of the whole complex ruled by Moscow. What had been "a loosely organized confederation, roughly equivalent in structure to any of the neighbouring steppe khanates," became "a monarch-in-council form of government", with a nascent bureaucratic structure.⁴

This restructuring was to have far-reaching effects on military potential and organization in three main respects. One was the relocation of the local dignitaries of annexed lands to Moscow, creating a new power elite that supported the expansive policy of the grand prince.⁵ That new elite was made up

1 Endre Sashalmi, *Oroszország gazdasága a 15–18. században*. Pécs, 1995, 4.

2 *Ibid.*

3 Donald Ostrowsky, 'The Growth of Muscovy (1462–1533)', in Maureen Perrie (ed.), *The New Cambridge History of Russia*. Vol. 1. Cambridge, 2006, 213.

4 *Ibid.*

5 *Ibid.*

of old and new clans, and these had to be ordered into a hierarchy. This resulted in the *metnichestvo* system for assigning posts in the administration and, of course, in the military. A key development during the reign of Ivan III was the formation of the first bodies of central administration (*izby*), the predecessors of the chancelleries (*prikazy*) set up under Ivan IV. Also of fundamental importance was that the character of ruling power transformed into what historians now term “autocracy”.

The Grand Principality of Moscow finally became Russia through the conquests of Ivan IV.⁶ The gigantic growth of territory was expressed in new self-designations: in the sixteenth century besides the name *Moskovskoe gosudarstvo* (translated, for want of better, as *Moscovia*, the name used in the West at that time), *Rossiia* (Russia) and *Rossiiskoe Tsarstvo* (Russian Tsardom) came into use, the latter through the coronation of Ivan IV as tsar in 1547.

The number of inhabitants in the lands that made up Russia is as difficult to determine as its area.⁷ Historians are mostly constrained to make estimates, and these vary over quite a wide range. Kopanév, for example, puts the population at 6–7 million in 1500 and, boosted by the substantial acquisitions of Kazan and Astrakhan, 9–10 million by mid-century.⁸ By contrast, Vodarskii claims that Ivan IV had no more than 6–6.5 million subjects in the second half of the sixteenth century, and Western authors also find this figure more realistic.⁹

STATE REVENUES

It is just as difficult to determine the sources and composition of government income (the proportions of direct and indirect taxes) and even more difficult to estimate its magnitude.¹⁰ What lay behind the changes in taxation in the late fifteenth and early sixteenth centuries, however, is quite clear. The need for them stemmed from the demands of raising the army, and the prince's burgeoning power rendered him able to put them into effect. One indication of the growth of material resources is the scale of building in the Kremlin in the 1480s and 1490s, and particularly the fortifications. The availability of finance for this may have been connected to the termination of Tatar tribute.

Fundamental to the management of resources in the Muscovite system was the demand imposed on the people to render their services. This had a far-reaching effect on both warfare and the political apparatus. The prevailing social ethos was clearly a crucial question for the army, determining the extent to

6 The stages of this were: the annexation of the Khanate of Kazan (1552) and the Khanate of Astrakhan (1556), and the initial expansion into Siberia (1581).

7 Summary of previous Soviet research: Robert E. F. Smith, *Peasant Farming in Muscovy*. Cambridge, London, 1977, 103.

8 *Ibid.*, 103.

9 Iaroslav E. Vodarskii, *Naselenie Rossii za 400 let (XVI–XXvv)*. Moscow, 1973, 27; Robert Crummey, *The Formation of Muscovy*. New York, London, 1987, 2.

10 Brian Davies, ‘The Foundation of Muscovite Military Power 1453–1613’, in Frederick W. Kagan and Robin Higham (eds.), *The Military History of Tsarist Russia*. New York, 2005, 16.

which various sections of society could be called upon for military mobilization in the broad sense. An assessment of resources must therefore not concentrate solely on taxes, direct or indirect.

The power of the ruler in Russia rested on solid patrimonial and theocratic foundations.¹¹ The prince derived many advantages from the conception of patrimony by grace of God, which corresponded in political terms to the system of autocracy, in which executive power was unhampered by legal or other institutions.¹² The belief that the country and – in principle – everything within it belonged to the prince (or tsar, his official title after 1547) and the absence of restricting institutions implied that the ruler could use the resources of society and impose taxes “almost as he pleased”.¹³ He was also able to make extensive use of service rendered by his subjects. This went far beyond those landowners (*pomeshchiki*) who expressly held their lands in exchange for military service.¹⁴ Everyone in the country held this obligation, because “Muscovites believed that all men, regardless of station, were bound to serve the tsar in some capacity”.¹⁵ In the first half of the sixteenth century, service rendered to the ruler was already interpreted as service rendered, indirectly, to God.¹⁶ This mentality was an essential resource for the princes and – while more difficult to quantify than taxes – is the key to understanding the operation of the system and the ability to raise and supply the army.

ESTIMATED MILITARY POTENTIAL AND ACTUAL FORCES RAISED

Although the closer period of study falls almost completely within the reign of Vasili III, the military potential at that time was effectively established during the reign of his father, Ivan III. The increase in Muscovy's military potential was a direct function of its territorial growth. The *pomeste* system, built up mostly after the annexation of Novgorod in 1478, remained the basis of the Muscovite military organization throughout the sixteenth century and into the seventeenth.

When Ivan III captured Novgorod and ended its self-government, he more than doubled the territory of the Grand Principality, but much more significantly, he acquired areas that were, in Russian terms, densely populated. This provided Ivan III with the opportunity to extend the existing institution of land granted for military service (*pomeste*). Ivan seized the lands of the Novgorod boyars and

11 James Cracraft, *The Petrine Revolution in Russian Culture*. Cambridge, Mass., 2004, 153; Endre Sashalmi, 'A Moszkvai Oroszország, 1453–1569', in Idem (ed.), „Kelet-Európa” és a „Balkán”, 1000–1800: Intellektuális-történelmi konstrukciók vagy valós történelmi régiók? Pécs, 2007, 198–200.

12 On this question in detail: Sashalmi, 'A Moszkvai Oroszország', 196–204.

13 Marshall Poe, *A People Born to Slavery: Russia in Early Modern European Ethnography 1476–1748*. Ithaca, 2000, 222.

14 Sashalmi, 'A Moszkvai Oroszország', 200–201.

15 Poe, *A People Born to Slavery*, 223.

16 *Ibid.*, 218–219.

the valuable parts of the lands held by the archbishopric of Novgorod and many Novgorod monasteries, turning them into princely estates.¹⁷ He thus accumulated land holdings on which he could grant a large number of plots to men who undertook to serve in the cavalry.¹⁸ They were the *pomeshchiki*, whose service estates were heritable, subject to princely consent, if they had an adult (over-15) male heir capable of serving in the cavalry.¹⁹ The spread of the *pomeste* system in the fifteenth century as more and more land was granted in return for military service had political and social consequences beyond the burgeoning of state power: even during the reign of Ivan III, the logic of the system required that peasants living on the *pomeste* estates be tied to the land to prevent them from moving away. A law of 1497 therefore restricted free movement of the peasant population to the week before and the week after St George's Day.

The rising number of *pomeshchiki* opened up new opportunities for continuing territorial expansion. We have no truly reliable figures, but there must have been 30–35,000 *pomeshchiki* by the 1530s. Since they made up the majority of the army, this figure probably represents the total available military strength.²⁰

Over the last eleven years, there has been a lively debate in Russian historiography about the military potential and the actual strength of the forces raised. Lobin claims that no more than 10–12,000 troops marched on the campaigns of the 1510s and 1530s (such as the 1514 siege of Smolensk and the defeat at Orsha the same year) and that the total strength at a time of greatest mobilization was less than 20,000, the maximum military potential being about 40,000.²¹ By contrast, Krom states that we cannot think in terms of “some kind of ‘linear progression’ for the organization and strength of the Russian army in the period from the early sixteenth to the early seventeenth centuries,” and he puts the strength of the army in the Starodub War of 1534–1537 at 55–60,000, estimating the maximum mobilizable forces at 70,000.²² Western researchers tend to take a position closer to Lobin's.²³

MILITARY COMMAND

Essential to a discussion of the composition of the military command is the principle of *mestnichestvo*, which determined the allocation of offices in the army as well as in administration. The term derives from the words *mesto* (place) and *chest'* (honour, esteem, respect), and originally denoted the order of seating at ceremonies involving the prince: attendees were conferred rank and dignity

17 Ruszlan Szkrinnyikov [Ruslan Skrynnikov], *Az Orosz Birodalom születése*. Budapest, 1997, 61.

18 *Ibid.*, 61–62.

19 *Ibid.*

20 Davies, ‘The Foundation’, 17.

21 Aleksei Nikolaevich Lobin, ‘K voprosu o chislennosti vooruzhennykh sil Moskovskogo gosudarstva v 16 veke’, *Studia Slavica et Balcanica Petropolitana* 3:1–2 (2009) 76.

22 Mikhail M. Krom, ‘Eshche raz o chislennosti russkogo voiska v XVI v. (po povodu stat'i A. N. Lobina)’, *Studia Slavica et Balcanica Petropolitana* 3:1–2 (2009) 80, 87.

23 For further bibliography on the subject, see the essay in this book by László Szokola.

through the distance they were placed from the prince.²⁴ Later, *mestnichestvo* came to mean the order of filling high posts based on the ranking of clans and position within clans conferred by age. The ranking of a clan depended on the earliest date that one of its members had entered the service of the grand prince. The system thus rested on service and lineage, but service held priority: origins that could be traced back to the Kiev period were of no avail if a clan had not performed service to the grand princes of Moscow. Although the clans were ranked by length and level of service (members of clan A were in principle eligible for a higher positions than those of clan B if in the past some member of clan A had held a higher position than any member of clan B), ranking within clans was by seniority.

The *mestnichestvo* system was in its heyday in the sixteenth century, although its drawbacks for both state administration and military command were already manifest. There was understandable conflict between the principle of social rank and that of suitability for the post,²⁵ exacerbated by the complexity of social ranking and the associated disputes. Registering the documents that recorded who had held which position and retrieving them in order to resolve such disputes was a major task of one of the central chancelleries, the *Razriadnyi prikaz*, while the boyar clans defended their positions by keeping their own registers.²⁶ Disputes were arbitrated by the boyar committees or by the prince.²⁷ Since arguments over social position also caused problems during campaigns, sometimes endangering their outcome, the principle had to be bypassed to some extent when making military appointments. This eventually caused Ivan IV, in 1550, to pass a law making *mestnichestvo* inapplicable for the highest military positions during campaigns. He ordered that the prince could appoint persons without the appropriate social ranking (*bez mest*) to high military offices, but stipulated that such an appointment had no effect on the person's *mestnichestvo* status.²⁸ *Mestnichestvo* nonetheless became an increasing burden for princes, and in 1682, citing the “common good”, it was finally abandoned: all documents of registration were thrown on to Red Square and publicly burned.

MUSCOVY'S WARS IN THE FIRST THIRD OF THE SIXTEENTH CENTURY

The principal enemies of Muscovy during our period were Lithuania and the Tatars. The conflict with the former was over “borders” and with the latter, over “frontiers”. These concepts have special definitions in the context, and are

24 Janet Martin, *Medieval Russia 980–1598*. Cambridge, 1995, 203. On the legal aspects of this question and a critical treatment of the associated bibliography, see Ferdinand Feldbrugge, *A History of Russian Law: From Ancient Times to the Council Code (Ulozhenie) of Tsar Aleksei Mikhailovich*. Leiden, Boston, 2017, 383–387.

25 Feldbrugge, *A History*, 386.

26 *Ibid.*

27 *Ibid.*, 385.

28 *Ibid.*, 386.

denoted by different words in Russian.²⁹ The words *rubezh* and *granitsa* were used, particularly after the start of the seventeenth century, to denote Muscovy's borders with countries to its west, the territorially sovereign states of the Polish-Lithuanian Commonwealth and Sweden.³⁰ The words denoted clearly demarcated borders, negotiated and "agreed upon in written treaties."³¹ The southern frontier lands, the steppe, were the opposite in every respect, as shows up in the terminology: the words applied for the southern and eastern neighbours were diverse and ambiguous, such as *krai* and *ukraina*, meaning outer, peripheral or border lands; these were the "frontiers".³²

To the west, Moscow's main enemy was Lithuania, as is clear from the chronology of wars fought between the two: 1492–1494, 1500–1503 (in which Lithuania was allied with the Livonian Order), 1507–1508, 1512–1522 and 1534–1537.³³ The king of Poland was also grand duke of Lithuania after 1505, and so these five wars laid the way for the true merger of Poland and Lithuania during the sixth, the Livonian War (1558–1582); they became a single state, known as the Polish-Lithuanian Commonwealth, through the Union of Lublin of 1569.³⁴ Two developments during our period serve as signals of Muscovite intent in the conflict with Lithuania. Firstly, Ivan III started to use the title "Master of All Rus'" (*Gospodar' Vseia Rusi*) in his diplomacy with Lithuania in 1493 (although he had adopted the title some time previously), "thus asserting that the Orthodox Rurikids, not the Catholic Jagiellons, were the true inheritors of the political tradition of Kievan Rus'".³⁵ Secondly, the weight attached to this claim may in my opinion explain the fact, mentioned by Volkov, that the treaties "ending important wars" with Lithuania were not peace treaties but truces: the war of 1500–1503 was followed by a truce signed for six years, and that of 1512–1522 by a five-year truce, renewed for six years in 1526 and extended upon its expiry for a further year.³⁶ The later wars of the sixteenth century were ended by the same arrangement.³⁷ In the war of 1500–1503, Lithuania suffered considerable territorial losses, ceding about a third of its area to the Grand Principality of Moscow.³⁸ According to Krom, Moscow until 1500 "to a certain extent relied on the support of the 'Ukrainian' princes, but from the beginning of the sixteenth

29 Michael Khodarkovsky, *Russia's Steppe Frontier: The Making of a Colonial Empire, 1500–1800*. Bloomington, 2002, 48.

30 *Ibid.*

31 *Ibid.*, 48, 50.

32 *Ibid.*, 48.

33 Vladimir A. Volkov, *Voiny i voiska Moskovskogo gosudarstva*. Moscow, 2004, 44.

34 Robert I. Frost, *The Oxford History of Poland–Lithuania: The Making of the Polish–Lithuanian Union 1385–1569*. Vol. 1. Oxford, 2018, 285.

35 *Ibid.*, 285; cf. the use of titles implying the claim to the whole of the former territory of Rus' starting from the time of Ivan Kalita.

36 Volkov, *Voiny i voiska*, 41.

37 *Ibid.*

38 *Ibid.*, 65.

century purely on its own military strength”.³⁹ The military policy for retaining these areas thus included the appointment of lieutenants (*namestniki*) and an almost permanent military presence in the main towns of the threatened border zones, in times of both war and peace.⁴⁰ Another important device in retaining these areas was the relocation of *pomeshchiki* from the central region.⁴¹

The other “seasonally permanent” threat faced by the grand princes came from the various Tatar khanates that ruled the steppe. Most troublesome were the constant pillaging raids by the Crimean Khanate, which had accepted the suzerainty of the Ottoman Empire in 1475. Its armies reached the city of Moscow itself on several occasions during the sixteenth century. There was also unceasing danger from the other khanates. Among the raids that got further than the frontier regions were those of 1507, 1512, 1521 (when the Tatars burned down the outskirts of Moscow) and 1531.⁴² Making things even more difficult for the Muscovite rulers was the repeated collaboration between Lithuania and the Crimean Khanate after 1512. To defend the frontiers, minor forts were built at the main points of incursion in the second half of the fifteenth century, and fortifications went into a new phase in the early 1500s: the Moscow government started to build up a chains of forts into defensive lines in the threatened regions.⁴³ This process accelerated with the deterioration of what had been good relations with the Crimean Khanate: after 1512, forces had to be stationed along the rivers Oka and Ugra throughout spring and summer every year.⁴⁴ In 1521–1522, the garrison of about 1500 troops manning the defensive line along the Oka, armed with handguns, consisted mainly of German and Lithuanian mercenaries.⁴⁵

MUSCOVITE WEAPONRY – THE ADOPTION OF FIREARMS AND ITS CONSEQUENCES

As we have seen, the main branch of arms was the cavalry, most of which was made up of units of military servitors. We know from foreign descriptions and engravings that the *pomeshchiki* light cavalry in the sixteenth century had similar weaponry as the Tatar warriors of the steppe: they carried bow and sword, and are difficult to distinguish from the Tatars even in their dress.⁴⁶ Body armour was worn mainly by the wealthier warriors, and the others were “clad in thickly padded hemp *tegilai* coats”, while their mounts were the medium-sized

39 Mikhail M. Krom, *Mezh Rusiu i Litvoi. Pogranichnye zemlii v sisteme russko-litovskikh otnoshenii kontsa XV – pervoi treti XVI v.* Moscow, 2010, 250.

40 *Ibid.*, 250–251.

41 *Ibid.*, 251.

42 Carol B. Stevens, *Russia's Wars of Emergence 1460–1730*. London, 2007, 42.

43 *Ibid.*, 46.

44 Davies, ‘The Foundation’, 18.

45 *Ibid.*, 17.

46 See, for example, the depictions published by Alexander Filjushkin, *Ivan the Terrible: A Military History*. London, 2008, 27, 31.

horses common among the Nogay Tatars.⁴⁷ (Contingents of Tatar nobles, who entered Muscovite service while retaining their Islamic faith, made up a substantial part of the Russian army, particularly after our period.)⁴⁸

The use of firearms in the Grand Principality, usually considered to have started in the 1380s, did not result in any rapid changes to this equipment. They were probably first deployed in the unsuccessful defence of Moscow during the Tatar attack of 1382. There is a mention of a device called a *tiufiak* (small cannon or mortar), which was fired against the army of Toktamish besieging the town.⁴⁹ This name probably derived from the Turkish word *tüfeng*, but according to Davies, despite this seeming indication of Turkish-Tatar influence, the first primitive cannons in the Grand Principality of Moscow are more likely to have come through Lithuania and the Livonian Order.⁵⁰

The earliest recorded date of substantial deployment of hand-held firearms was 1480, when they contributed to stopping the Tatars crossing the river Ugra: the army of Ivan III fired on the fords with bows and arrows and handguns.⁵¹ In the early sixteenth century, there was a special firearms unit, the *pishchalniki*, with a few hundred or at most a thousand troops.⁵² It was not a permanent unit: the troops that served in it were recruited from various towns, and after the fighting, returned to their homes and were not allowed to take their weapons with them.⁵³

It is difficult to identify the categories of firearm, particularly in this initial period. There was obviously a need to find or adapt names for the new equipment. The word *pishchal* originally meant a firearm in general, whether a light cannon or hand-held matchlock arquebus or musket,⁵⁴ and only later did it narrow down to a hand-held firearm. Since both *pishchal* and *pushka* (cannon) are both words of Czech origin, we may infer that Moscow initially imported light firearms and cannons from Bohemia.⁵⁵ Some guns were cast in Moscow in the fifteenth century, but only small-calibre iron cannons.⁵⁶ Substantial progress only came when Ivan III brought in gun founders from Italy.

This qualitative change was connected to Ivan III's second marriage. In 1472, he married Sophia Paleologos, niece of the last Byzantine emperor, whose family had fled to the pope after the fall of Constantinople in 1453. It was through Sophia's connections that the military engineer Aristotele Fioravanti was invited to Moscow in the 1470s.⁵⁷ It was under his supervision that the casting of large-

47 Davies, 'The Foundation', 19.

48 Tatiana A. Oparina, *Inozemtsy v Rossii XVI–XVII vv.* Moscow, 2007, 6.

49 Davies, 'The Foundation', 17.

50 *Ibid.*

51 Filjushkin, *Ivan the Terrible*, 32.

52 *Ibid.*

53 Stevens, *Russia's Wars*, 49.

54 Filjushkin, *Ivan the Terrible*, 31.

55 David Christian, *A History of Russia, Central Asia and Mongolia: Inner Eurasia from the Mongol Empire to Today, 1260–2000*. Vol. 2. Hoboken, 2018, 88.

56 Davies, 'The Foundation', 17.

57 *Ibid.*; Stevens, *Russia's Wars*, 47.

calibre bronze cannons began. Fioravanti took a direct part in the sieges of Novgorod (1478) and Tver' (1485), where the army of Ivan III certainly used cannons.⁵⁸ (The earliest surviving guns of this type date from 1485.)⁵⁹ By 1494, Moscow had a dedicated gun foundry and gunpowder mill.

Fioravanti introduced several new techniques and military engineering innovations to the Muscovites, in addition to the modern gun-founding techniques. One of these was the technique of firing dense bricks, which served both civilian and military purposes.⁶⁰ Fioravanti and the Italian architects who came after his death (around 1486) – many Italian master craftsmen worked in Moscow between 1474 and 1539 – left a lasting influence on civilian and ecclesiastical architecture,⁶¹ but more important for us is that they brought the new geometrical principles of fortification, developed in Italy, to the Grand Principality.⁶² The walls and bastions of the Moscow Kremlin still bear their marks.⁶³

Sigismund von Herberstein, an envoy of the Holy Roman Emperor who came to Moscow in 1516, particularly mentioned the great dimensions of the Kremlin, and wrote that the “the walls and towers of this citadel and the royal palace are built of brick in the Italian style by Italian masters.”⁶⁴ “The building of the fortifications of the Kremlin was one of the most important events in Russian architectural history.”⁶⁵ It was the prototype for forts subsequently built in Novgorod, Pskov and elsewhere.⁶⁶ Through them, fifteenth-century Italian fort culture was transplanted to Russian land.⁶⁷ Moreover, the springing up of identical, new-style forts in places newly annexed by the Muscovite rulers was a reminder to subjects that a new polity had been established, with Moscow at its centre.⁶⁸

Artillery was at first used mainly for defensive purposes, and sometimes in sieges (notably at Smolensk in 1514), but rarely in open battle. An exception was the Battle of Orsha (1514) where Muscovy suffered a defeat by the Polish-Lithuanian armies.⁶⁹ The appearance of gun carriages in the 1520s was a major step forward in the mobility of cannons, which had previously mainly been carried by water.⁷⁰ It was at the same time that the manufacture of gunpowder and iron cannonballs was put on a sound footing.⁷¹

58 Stevens, *Russia's Wars*, 47.

59 Kenneth Warren Chase, *Firearms: A Global History to 1700*. Cambridge, 2003, 78.

60 Stevens, *Russia's Wars*, 47.

61 Dmitry Shvidkovsky, *Russian Architecture and the West*. New Haven, London, 2007, 78.

62 *Ibid.*, 92.

63 Crummey, *The Formation of Muscovy*, 196.

64 Quoted in: Shvidkovsky, *Russian Architecture*, 78.

65 *Ibid.*, 92.

66 Stevens, *Russia's Wars*, 47.

67 Shvidkovsky, *Russian Architecture*, 92.

68 Stevens, *Russia's Wars*, 47–48.

69 *Ibid.*, 47.

70 Davies, ‘The Foundation’, 17.

71 *Ibid.*

Muscovy was thus not left entirely untouched by technical innovations at the turn of the fifteenth and sixteenth centuries. The adoption of artillery and hand-held firearms demanded some tactical changes in open battle, where troops armed with arquebuses and artillerymen had to be protected in the intervals between firing.⁷² These were much more limited, however, than the innovations employed in Western European armies. One of the problems was that the Muscovite army did not have troops armed with other kinds of weapons, particularly pikes, and the cavalry did not use long lances.⁷³ In the fourteenth century, the Muscovite princes still had some household cavalry with armour and lances on the Byzantine model, but “by the 1530s, the lance had largely disappeared along with the shield”.⁷⁴ Another problem was that it was not until the seventeenth century that the use of firearms became widespread in the Russian cavalry.⁷⁵

The new tactic employed by the Muscovite army to protect the artillery and handgunners was the *guliai gorod*, i.e. “mobile fort” consisting of long, wooden boards linked up to form a wall: this first appeared in 1522 and was particularly effective against Tatar arrows.⁷⁶ It was akin to the wagon fort (*Wagenburg*) and enabled the cavalry to regroup during the battle. It did not, however, fundamentally change the army’s formation or tactics.⁷⁷

BATTLEFIELD TACTICS

In its battle tactics, the Muscovite army in the early sixteenth century still employed the old formation based on the *polk*,⁷⁸ a word that today means “regiment”, but went through several meanings between the fifteenth and seventeenth centuries, changing with the size and organizational structure of the Russian army. An indication of the range of these meanings is that in the seventeenth century it was used to mean an army in Biblical references, but as a military unit, it could mean a formation several thousand strong or a troop numbering a few hundred.⁷⁹

Until the first major moves were made towards modernizing tactics in the early seventeenth century, the Muscovite army in open battle used a five-division formation.⁸⁰ The main body of the army had at its core (*polk bol'shoi*, *polk velikii*) the prince’s household (*dvor*), which meant the broad retinue and the prince’s

⁷² Stevens, *Russia's Wars*, 49.

⁷³ *Ibid.*

⁷⁴ Davies, ‘The Foundation’, 19.

⁷⁵ Filjushkin, *Ivan the Terrible*, 19.

⁷⁶ Stevens, *Russia's Wars*, 49.

⁷⁷ *Ibid.*

⁷⁸ Filjushkin, *Ivan the Terrible*, 22.

⁷⁹ Peter Brown, ‘Command and Control in the Seventeenth-Century Russian Army’, in Brian Davies (ed.), *Warfare in Eastern Europe 1500–1800*. Leiden, 2012, 258.

⁸⁰ *Ibid.*, 258.

guard. Together these numbered about 2,700 in the early sixteenth century.⁸¹ In front of them was the vanguard (*peredovoi polk*), behind them the rearguard (*storozhevoi polk*), and alongside them the right- (*polk pravye ruki*) and left-flank (*polk levye ruki*) regiments.⁸²

The vanguard, rearguard and two flanks consisted of *pomeshchiki* cavalry.⁸³ The very small number of infantry troops – if there were any at all in the army – and the artillery were placed among the cavalry units and not under separate command.⁸⁴ This continued until the introduction of the mobile fort (*guliai gorod*), when the hangunners and the artillery were concentrated in the main body.⁸⁵

There were no special service units (medical or military engineer corps), but only universal support units (*posokha*) assigned to ad hoc tasks and made up of rural and urban civilians.⁸⁶ Their duties covered a wide range from transport to erecting fortifications and even fighting in sieges, sometimes imposing a considerable burden in an area, with every third or fourth male being conscripted for service.⁸⁷ These units were naturally allowed to dissolve at the end of each campaign.⁸⁸ The resulting strain on the population grew perceptibly during the rule of Vasilii III, largely in consequence of the increasing adoption of firearms.

FIREARMS IN THE MOST SIGNIFICANT CLASHES OF THE PERIOD: THE SIEGE OF SMOLENSK AND THE BATTLE OF ORSHA, 1514

In the capture of Smolensk in 1514, the Muscovite army displayed its ability to make effective use of innovations in tactics and the use of firearms. Lobin stresses that it was the combination of complete encirclement and efficient deployment of artillery that brought the desired result.⁸⁹ Shortly afterwards, the Muscovites suffered a defeat in open battle at Orsha, the main cause of which Lobin identifies as differences in weaponry and tactics.⁹⁰ He estimates the strength of the Muscovite army at 11,000, and that of the Polish-Lithuanian army at no more than 12–13,000.⁹¹ The Polish-Lithuanian superiority in firearms is confirmed by visual sources (as Lobin has pointed out).⁹²

The Russian chronicles make much of the cannons and arquebuses in the 1514 siege of Smolensk, and one even records the name of the Russian gunner

81 Davies, 'The Foundation', 18.

82 Brown, 'Command and Control', 258.

83 Davies, 'The Foundation', 18.

84 *Ibid.*

85 *Ibid.*

86 Filjushkin, *Ivan the Terrible*, 20.

87 *Ibid.*

88 *Ibid.*

89 Aleksei Nikolaevich Lobin, *Vzятие Смоленска и битва под Оршей*. Moscow, 2015, 8–9, http://loveread.ec/read_book.php?id=73445&p=13 (downloaded: 24.10.2018).

90 *Ibid.*, 18–20.

91 *Ibid.*, 13, 16.

92 *Ibid.*, 16, 18.

who greatly contributed to the victory: “And the grand prince ordered gunner Stepan to fire the cannons on the town on Saturday 29 July at three o’clock, from the Dnieper. And the big gun fired on the town. And so it happened that the shot struck the cannon on the opposing side in the town and broke apart that cannon, and many people died in the town of Smolensk. In the sixth hour of the day, Stepan fired from the same cannon, many small balls gathered together, the size of pig’s eyes, and struck [on the town] again. And from that, many people in the town died... And then the grand prince ordered him to strike a third time, and from that, many people died in the town.”⁹³ The *Voskresenskii Chronicle* records that the town was surrounded by “cannons and big guns (*pushki i pishchali bol’shie*)”.⁹⁴

A remarkable source on both the siege of Smolensk and the Battle of Orsha is the *Illustrated Chronicle* (*Litsevoi letopisnyi svod*). Although most of its text follows the older *Nikon Chronicle*, it contains illustrations of both events among its more than 17,000 (!) miniatures. The depiction of the siege of Smolensk clearly shows that the Muscovite armies almost completely sealed off the town, and we can also make out large-calibre cannons. This is consistent with the few lines of text under the miniature (not quoted in full): “The cannons and big guns were set up around the town and [the grand prince] commanded that they fire on the town from all sides, and carry out great sieges without pause, and to fire on the town from fiery cannons.”⁹⁵

The miniature of the Battle of Orsha is particularly interesting because of a surviving visual source of the battle from the Polish side. It is a large, near-contemporary painting that depicts the various phases of the battle with considerable precision.⁹⁶ The artist was presumably present at the event (see Appendix, Figure 2).⁹⁷ Comparison of these two sources may be highly informative, particularly because, as stated by Martin’iuk, the Russian “miniature could be said to be one of the most lucid and interesting battle scenes in the whole *Illustrated Chronicle*”.⁹⁸ The text under the picture relates how the enemy, equipped with firearms, hid in the forest and launched a surprise attack in a confined space, in which the use of arquebuses and cannons was decisive.⁹⁹ Both

93 Quoted by Volkov, *Voiny i voiska*, 70.

94 *Ibid.*

95 Quoted in Aleksei Martin’iuk, ‘Istoriia Velikogo Knazhestva Litovskogo v miniaturakh Litsevoogo letopisnogo svoda XVI veka’, *Lietuvos pilys* 6 (2010) 159.

96 Lobin, *Vzятие Smolenska*, 18. For a reproduction of the battle scene and details of the picture showing the distinctive Central European equipment and weaponry of the time, see László Veszprémy (ed.), *Magyarország hadtörténete. Vol. 1: A kezdetektől 1526-ig*. Budapest, 2017, 334–335.

97 One figure in battle scene is not carrying a weapon, and his dress, and particularly the position of his hand (apparently measuring linear perspective), are characteristic of painters of the time. On this, and for a thorough analysis of the picture, see Volodymyr Hucul, ‘The Battle at Orsha – Court Propaganda or Chivalric Epic?’, *RIHA Journal* July–September (2014), <https://www.riha-journal.org/articles/2014/2014-jul-sep/hucul-orsha-en> (accessed: 24.10.2018).

98 Martin’iuk, ‘Istoriia’, 159.

99 *Ibid.*

visual sources of the Battle of Orsha, despite the difference in size and form, strikingly convey the differences in type and number of firearms in favour of the Polish-Lithuanian army (see Appendix, Figure 1).

SUMMARY

It is important to make a proper evaluation of the changes brought by the first three decades of the sixteenth century. Besides the changes themselves, we must take account of the nature of the Muscovite state and the geopolitical conditions under which the central government was facing up to its challenges. For as long as the main enemies were the Tatars of the steppe, the Muscovites were slow to adopt firearms, which diminished “the speed of manoeuvre”.¹⁰⁰ Muscovy’s military progress up to 1530 has been summed up by Stevens as the capability to wage repeated campaigns with large armies in which the dominant light cavalry was aided by artillery and small, temporary infantry contingents.¹⁰¹ This, however, did not lead to substantial tactical or strategic changes.¹⁰²

¹⁰⁰ Filjushkin, *Ivan the Terrible*, 17.

¹⁰¹ Stevens, *Russia’s Wars*, 59.

¹⁰² Filjushkin, *Ivan the Terrible*, 17.

THE MILITARY ORGANIZATION AND ARMY OF THE POLISH- LITHUANIAN COMMONWEALTH (1501–1531)

TERRITORY AND POPULATION

The Polish-Lithuanian Commonwealth was one of the largest countries in Europe in the first half of the sixteenth century.¹ The lands of the Polish crown remained constant during this period (at most 290,000 km²), but the Grand Duchy of Lithuania was not so fortunate. During the wars with the Grand Duchy of Moscow (1500–1503, 1507–1508, 1512–1522 and 1534–1537), the Lithuanians became increasingly dependent on Polish assistance and lost much of their territory. The Grand Duchy extended over 900,000 km² at the end of the fifteenth century, but the losses incurred during these wars reduced this area to 700,000 km² by 1514 and about 600,000 km² by 1537.²

The total population of the Commonwealth in 1500 has been estimated at 7.5 million–3.5 million in Polish lands and 4 million in the Grand Duchy of Lithuania. According to some estimates, the Lithuanian figure, by consequence of the wars, shrank to 2.7 million in 1528, although it rose thereafter, and reached 3.5 million again by 1569.³

1 We should note at the outset that Polish historians give widely varying figures for the area and population of the country around 1500. This seems to derive largely from historians taking into account areas that are disputed or belonged to the country under different rights, and it is thus difficult to aggregate the figures. There is no space here to cover these problems in detail, and for the Poles, I have confined myself to one possible model. The figure of 3.5 million for the population has been chosen partly because of its use in Marek Plewczyński's calculation of military strength. The differences explain why different publications give the area of the country as somewhere between 216,000 and 290,000 km², and its population between 2.9 and 3.5 million. On this problem, see Beatrix F. Romhányi, 'Kolostorhálózat – településhálózat – népesség: A középkori Magyar Királyság demográfiai helyzetének változásaihoz', *Történelmi Szemle* 57:1 (2015) 29–30: note 31. Further data in: *Historia Polski w liczbach. / History of Poland in Numbers. Vol. 3.* Warszawa, 2014, 48; Marek Plewczyński, *Obertyn 1531.* Warszawa, 1994, 36.

2 Robert I. Frost, *The Oxford History of Poland–Lithuania.* Oxford, 2015, 291; Urszula Borkowska, *Dynastia Jagiellonów w Polsce.* Warszawa, 2011, 27–33.

3 Frost, *The Oxford History of Poland–Lithuania*, 291.

STATE REVENUES

The Polish rulers needed enormous sums to finance their wars,⁴ above all because the defence of the country increasingly relied on a professional army as the levy-en-masse became unreliable, and standing forces had to be stationed on the borders to meet the mounting threat of Tatar intrusions. This led to severe financial difficulties during the rule of Alexander I (1501–1506), and although Sigismund I (the Old, 1506–1548) managed to improve the situation through his reforms, even he proved unable to reorganize the levy.

Kings covered their military expenditure by taxing the population and through revenue from their regalian rights taxes, such as salt mining, minting and customs duties, and the revenue of crown estates. They also had occasional recourse to loans and grants of tax.

The main salt mines in Wieliczka and Bochnia yielded annual revenue of 10,000 marks (16,000 florins) and 5,000 marks (8,000 florins) respectively.

We have no accurate data on the revenue from minting money, but it was undoubtedly an important component of royal revenue during our period. The rate at which coins were issued increased substantially under Alexander, and Polish florins were first minted in 1528.

There was also a great increase in customs duties on goods, and tolls for the use of roads and bridges. These yielded annual income of up to 60,000 Polish florins under Sigismund I and Sigismund II Augustus (1548–1572). The expansion of the grain trade and the imposition of special duties on cattle and cowhide in 1507 accounted for much of the increase.

On several occasions when they felt the need, Polish kings took out – usually quite small – loans from Polish or Lithuanian Jews or wealthy commoners or nobles. Some families, like the Boners, were also creditors to the king. More common than loans were mortgages, although the nobility took several measures to impede this and to ensure that the income of royal estates was the primary

4 On the subject of this chapter in general, and for the sources on the amounts of money, see Krzysztof Boroda and Piotr Guzowski, 'From King's Finance to Public Finance: Different Strategies of Fighting Financial Crisis in the Kingdom of Poland under Jagiellonian Rule (1386–1572)', in Giampiero Nigro (ed.), *Le crisi finanziarie. Gestione, implicazioni sociali e conseguenze nell'età preindustriale / The Financial Crises. Their Management, Their Social Implications and Their Consequences in Pre-Industrial Times*. Firenze, 2016, 451–470. Unfortunately, the figures from before 1528 – although the authors do not mention this specifically – should probably be taken as accounting florins, and thereafter as Polish florins. I have taken only the amounts given in marks and converted them by the exchange rate they also use. On this question, see István Draskóczy, 'A lengyel só a magyar királyságban a 15. század második felében és a 16. század elején. Szempontok a magyar forint lengyelországi terjedéséhez', in József Bessenyei and István Draskóczy (eds.), *Pénztörténet, gazdaságtörténet: tanulmányok Buza János 70. születésnapjára*. Budapest, Miskolc, 2009, 118: note 36; Anna Filipczak-Kocur, 'Poland–Lithuania before Partition', in Richard Bonney (ed.), *The Rise of the Fiscal State in Europe c. 1200–1815*. Oxford, 1991, 444–449. An overview of the subject of the chapter: Filipczak-Kocur, 'Poland–Lithuania', 443–479. A review of the literature on different aspects of the subject is: Tadeusz Szulc, 'Skarbowość polska lat 1492–1587 w historiografii', *Studia z Dziejów Państwa i Prawa Polskiego* 8 (2003) 19–30.

source of funds for defending the country. Nonetheless, Alexander secured revenue of 107,000 marks (171,200 florins), Sigismund I 83,000 marks (132,800 florins) and Sigismund II Augustus 260,000 marks (416,400 florins) from mortgaging royal revenues and estates.

The king could also raise state revenue from extraordinary taxes, of which there were three kinds: land tax, urban property tax (*szos*) and tax on the production and sale of alcohol (*czopowe*). The first two of these were based on the principle of subjects' *consilium et auxilium*. Land tax was paid by the lord's "subordinates" (thus directly affecting the peasants in some form and naturally requiring the consent of the nobles; the tax-payer base was eventually broadened) and property tax by the towns. These two extraordinary taxes were imposed nineteen times between 1493 and 1525, usually simultaneously. The alcohol tax always had regional variations, and was collected more often. In addition, the Polish church granted the *subsidium charitativum*, which in the first half of the sixteenth century ranged between 7,000 and 14,000 Polish florins. The single tax qualifying as "regular", the plough tax, made up only three per cent of state income.

The setting up of a permanent force to defend the south-eastern borders, mainly against Tatar intrusions, had serious financial repercussions. Sigismund I intended to maintain the border force by reforming the levy. He attempted various schemes, including the replacement of the levy with a financial contribution from the nobles, but these mostly failed, and he tried to make up for the lost income by increasing extraordinary taxes and reorganizing the tax collection bureaucracy. For example, tax collectors had to keep separate accounts of the areas they were responsible for, and their records were aggregated into national tax accounts. The nine national tax account books that survive show an increase in the revenue from extraordinary taxes by a factor of three between 1533 and 1569, from 80,000 to 240,000 Polish florins. A process of recovering the mortgage royal estates also took place during the period, beginning under Sigismund, when revenue from royal estates, customs duties and tolls also began to rise.

The total income of the Kingdom of Poland under Casimir IV (the Great, 1447–1492) has been estimated at 90,000 marks (140,000 florins), falling to 60,000 marks (96,000 florins) under Alexander I.

We must keep in mind that the first tax accounts from Lithuanian lands date from the 1560s.⁵ Another problem arises from the existence of both a "public" and a "private" treasury in both Lithuanian and Polish territories. The public treasury derived its income from royal estates and the revenues from regalian rights. The private treasury, which belonged directly to the sovereign – originally the king of Poland and the grand duke of Lithuania – received the extraordinary taxes. It was supposed to cover the king's household expenses, but the two treasuries were not at that time completely separate. The Lithuanian public

5 Gediminas Lesmiatis, *Wojsko zaciężne w Wielkim Księstwie Litewskim: w końcu XV–drugiej połowie XVI wieku*. Warszawa, 2013, 131–137.

treasury had income of 435,000 Polish florins in 1565, while the annual income of the Polish treasuries in the 1560s is estimated at 445,000 Polish florins (240,000 in taxes, 48,000 in salt revenue, 67,000 in duties and tolls and 90,000 from the royal estates). The flow of money between the public and private treasuries and between Polish and Lithuanian treasuries in the Polish-Lithuanian Commonwealth before the Union of Lublin of 1569 is an area that requires further research.⁶

ESTIMATED MILITARY POTENTIAL

We have seen that finance for the army imposed a heavy burden on the Polish-Lithuanian Commonwealth in the early sixteenth century. Polish historians divide the military into two main categories according to how they were maintained: the “paid” and “unpaid” troops.⁷ The paid troops consisted of:

1. the “state” mercenary army paid from taxes voted by the sejm;
2. the professional army paid from the king’s private treasury (effectively corresponding to the frontier defence forces);
3. the household troops paid from the king’s private treasury;
4. the various forces from specific areas, such as counties and voivodeships, recruited by the local sejms, and the town militias;
5. the private armies of the magnates.

The military forces of the Grand Duchy of Lithuania may be divided in the same way. The unpaid troops included landowners called up by the king with the consent of the sejm, in the levy system. (They were not unpaid if they had to fight abroad). Voluntary soldiers who joined the army primarily in return for war booty were also in the unpaid category. There are sources (registers and account books) that provide extensive information on the king’s paid troops (the first three in the above list), but we must rely on estimates of the numbers of troops in private forces and the levy.⁸

One component of the king’s mercenary army was the permanent defence (*obrona potoczna*) of the south-eastern border of the Polish lands against Moldavian, Ottoman and Tatar intrusions. Its strength increased from a few

6 After the Union of Lublin, income from Poland was 2.5 times greater than that from Lithuania. See Filipczak-Kocur, ‘Poland–Lithuania’, 472. A major factor was the incorporation of much Lithuanian territory into Poland.

7 For a comprehensive view of the subject, see Marek Plewczyński, *Wojny i wojskowość polska XVI wieku. Tom I. Lata 1500–1548*. Oświęcim, 2017, 21, 27–32, 66–68; Idem, ‘Liczebność wojska polskiego za ostatnich Jagiellonów (1506–1572)’, *Studia i Materiały do Historii Wojskowości* 31 (1988) 27–60.

8 On the sources, see Tadeusz Grabarczyk, *Piechota zaciężna Królestwa Polskiego w XV wieku*. Łódź, 2000, 15–38; Aleksander Bołdyrew, *Piechota zaciężna w Polsce w pierwszej połowie XVI wieku*. Warszawa, 2011, 13–41. A good indication of the abundance of sources is that Bołdyrew has written a study of the Polish infantry of the first half of the sixteenth century that covers 119 *rotas* (about 12,000 troops).

hundred cavalry in the late fifteenth century to 2,150 in 1501. During our period, this figure normally fluctuated between 1,000 and 3,000, depending – as did the other components of the professional army – on the economic and military situation. Sometimes, however, the defence force took a sudden jump in strength, usually because of fighting with Moldavia: it consisted of 4,452 cavalry and 1,167 infantry in 1531, and 12,300 cavalry and 7,200 infantry in 1538, when the quarterly pay of the soldiers amounted to 150,000 Polish florins. A force of this size could obviously not be maintained in the long term. Although the Krakow sejm voted taxes sufficient for 10,000 troops on 30 November 1538, collection of the tax failed, and the standing army was gradually cut back. Its cavalry numbered only 2,490 in 1540 and reached the low point of 1,000 in 1541, after which it once again started to increase.

As with the border forces, the whole the mercenary army grew bigger during the period. The number of paid troops who fought against the Moldavians went up from 3,300 in 1506 to 8,700 in 1509, and the armies that fought Grand Duchy of Moscow had 5,000 professional troops in 1508 and 17,000 in 1514. The mercenary army was of course also susceptible to changes in the military and economic situation. 16,000 fought against the Teutonic Order in 1520, but only 6,000 against the Moldavians in 1531 and 6,500 against Muscovy in 1535. In campaigns to the south and east, the standing army took part in offensive operations together with the mercenary army, bringing the estimated number of Polish paid troops to about 20,000.⁹

Another standing army of professional soldiers, comparable to the border defence force, was the royal household cavalry (*curienses*), which was present in every major clash starting from the reign of Casimir the Great. Six hundred household troops fought against the Muscovites in 1508, and 229 were present at the Battle of Obertyn in 1531. In total, they usually numbered around 1,000. They primarily served as the king's retinue, but often performed other military duties. There were also about sixty infantry guards in the royal household.

The magnates' forces are much more difficult to estimate. They numbered from a few dozen to a few hundred. Although they were in service to magnates rather than to the king, there are records of them taking part in several campaigns. One of the few items of information on their strength is that about 1500 of them took part in the Battle of Orsha in 1514.

It is just as difficult to assess the strength of the levy-en-masse (*pospolite ruszenie*). There are two categories to consider: the general (*expeditio generalis*) and the local levy (*expeditio particularis*). The former affected all men obliged to give military service, although they were rarely called up in the late medieval period, and never between 1537 and 1621. Their total number, based on entries in

9 The data on the strength and the *rota* masters of the mercenary army and the standing defence force up to 1547 in an annual breakdown is given in: Marek Plewczyński, 'Materiały do zagadnienia liczebności i organizacji wojska polskiego w latach 1506–1572', *Studia i Materiały do Historii Wojskowości* 31 (1988) 305–324; Idem, 'Materiały do zagadnienia liczebności i organizacji wojska polskiego w latach 1526–1547', *Studia i Materiały do Historii Wojskowości* 32 (1989) 249–270.

the chronicles and the estimates of historians, was 50–60,000. The local levy, as its name implies, affected specific areas, mainly the Ruthenian and Podolian regions, where it provided troops to defend against Tatar attacks. The overall strength of forces raised in this way usually ranged between 1,300 and 3,000.¹⁰

These estimates leave out the various local (e.g. town) and volunteer forces, and all other people who could be called to arms. Polish historians estimate the number of the latter at 10% of the total population, which would put the military potential of the Polish lands at about 350,000. Calculating from the proportions of social classes in the population, this number was made up of 35,000 nobles (10%), 70,000 townsmen (20%) and 245,000 peasants (70%) during the period. Naturally, this distribution of the population cannot be directly mapped on to the social composition of the army. In the first half of the sixteenth century, 61% of the professional infantry of the Polish royal household were from urban and 26% from peasant families.¹¹ Unfortunately, the calculations of the deployable strength of the Polish army made by Marek Plewczyński give only percentages,¹² but these enable us to estimate the maximum strength of the Polish army at 85,000. Foreign troops must also be considered in assessing the country's military strength. Although the presence of foreign auxiliary forces, according to Polish historians, was very rare in the sixteenth century, a substantial number of foreign soldiers fought in the Polish army. Foreign soldiers made up 16.7% (15) of the senior officers of the Polish mercenary army, 9.5% (2) in 1514, 21% (21) in 1520 and 4.5% (5) in 1538. The composition of the army was most diverse when it fought the Teutonic Order between 1519 and 1521. Then, 7,000 foreign mercenaries (about one third of the professional army) fought on the Polish side. In 1520, Bohemians and Moravians made up 18% of the army (3,360 troops), and Silesians, 10.7% (2,000). The figures for 1519 show that 8% of the army were Ruthenes (1,000 troops), 4% Lithuanians (700), 2.4% Hungarians (460) and 1.8% Tatars (330).¹³

The direct involvement of the Lithuanian army during the period, despite the union with Poland, was confined to wars fought in the east and to border defence. The professional troops of the Lithuanian army numbered about 8,000, consisting of border defence cavalry and infantry stationed in the forts and

10 Subsequently, the defensive duties of nobles absent on service was taken over by other units (urban militia, mercenary troops), but examples of these in the literature are mainly to be found from the seventeenth century. There were times when some nobles stayed at home; see Kazimierz Hahn, *Pospolite ruszenie wedle uchwał sejmikowych ruskich od XVI do XVIII wieku*. Lwów, 1928, 66–75.

11 Bóldyrew, *Piechota zaciężna*, 152.

12 The levy-en-masse made up at most 2% of the population, the mercenary army 0.4% and the standing defence force 0.07%. It should be noted that his calculations assume a uniform social basis of different forms of military service (e.g. levy-en-masse and professional); see Plewczyński, 'Liczebność wojska', 58.

13 For more on the ethnic composition of troops in the Polish mercenary army: Marek Plewczyński, *W służbie polskiego króla: Z zagadnień struktury narodowościowej Armii Koronnej w latach 1500–1574*. Oświęcim, 2015, 25–319.

towns along the border.¹⁴ The Lithuanians also relied on the noble levy, part of which was made up of the troops of Lithuanian magnates. According to a register of 1528, they contributed 7,757 cavalry troops to the line of battle. The levy itself provided an estimated 15,000 troops for the fighting in 1514 and 30,000 in 1534–1535. We must also include the mobilizable population liable to military service in the border area, of which the Cossacks gradually became a force of equal value to the mercenary troops. Overall, the total population who could be called to arms in Lithuanian lands is estimated by historians at 200–300,000, of which 70–100,000 could actually be mobilized.

MILITARY ORGANIZATION

Changes in the army had a far-reaching effect on the command. In principle, the army was led by the sovereign (who in almost the whole of our period was both king of Poland and grand prince of Lithuania) and, where necessary, the king's war council, but in practice, military affairs increasingly came under control of the *hetmans*. This process is reflected in the emergence of two hetmans with well-defined titles and powers in the first half of the sixteenth century: the "grand hetman" and "field hetman".¹⁵ There was one of each appointed in both the Polish and the Lithuanian lands. The grand hetman (*hetman wielki, supremus campiductor, capitaneus generalis*) was effectively the king's deputy in military command, and there were three in Poland during the period: Mikołaj Kamieniecki (1503–1515), Mikołaj Firlej (1515–1527) and Jan Tarnowski (1527–1561). It was only upon Tarnowski's appointment, however, that the powers and obligations of the grand hetman were precisely specified. He had many administrative as well as military duties, such as hiring and firing soldiers, maintaining forts, presiding over trials and deciding the price of food sold to the troops. Although the post had not yet become a noble dignity, it was held for life. This shows up well in Tarnowski's case, whose several attempts to resign were not accepted by the king. By contrast, the field hetman (*hetman polny*) could resign his office citing age or ill health. He had the duty of organizing and leading the standing border force, and he was also responsible for intelligence. We know of several other offices that bore the title "hetman", but they were not permanent. Such was the temporary hetman, the hetman of the mercenaries and the hetman of the foreign mercenaries. The hetman of the mercenaries was hired specifically to lead various professional units. For example, he led the Polish auxiliaries sent to the Lithuanians, but then handed over command to the Lithuanian grand hetman. There were also other permanent hetmans, such as the court hetman, who took over command of the household forces from the court marshal, and the Prussian hetman, who because of the special position of

¹⁴ More on this: Lesmiatis, *Wojsko zaciężne*, 42–52.

¹⁵ There is a dispute concerning their origin, however; see Katarzyna Niemczyk, 'Kilka uwag do genezy i początków hetmaństwa w Polsce', *Średniowiecze Polskie i Powszechne* 6 (2014) 319–333.

the Prussian lands, became overall commander of the local military units. We also find various subordinate positions, such as the grand hetman's field scribe and the field hetman's field guardian, and others were the commander of the artillery, the field surgeons, the quartermaster and the lieutenants (*poruczniks*) who were aides to the hetmans.¹⁶

The army was organized into infantry *rotas* and cavalry *rotas* or squadrons (*chorągiew*). Each was led by a *rota* master who was also responsible for recruitment. His letter of commission specified the number of troops and horses in the *rota*, the troops' quarterly pay, the soldiers' weaponry and the amount of compensation payable for losses. The fulfilment of the commission was inspected after the *rota* was assembled, and service began when the troops took the oath and received their first pay. Among the *rota* master's continuing administrative duties were training, paying and victualling the troops and maintaining order. The strength of one *rota* varied considerably. For infantry, the average during the period was 200 troops, but could be as much as 600. For cavalry, *rotas* varied in strength between 50 and 600. Polish historians distinguish theoretical and actual numbers, mostly of infantry, because the number specified for recruitment of professional soldiers related to the money provided for their pay rather than the number of actual soldiers. In some units, however, such as the shield-bearers and the spearmen, the troops received double pay, and so for a "100-strength" *rota* with ten shield-bearers and ten spearmen, only eighty soldiers had to be recruited. The *rotas* divided into subunits led by corporals in the infantry and "comrades" (*towarzysz*) in the cavalry. In addition to these administrative units, the cavalry was merged on the battlefield into larger units, the cavalry regiments (*huf* or *hufiec*).¹⁷

The levy-en-masse was another major component of the armed forces of both Poland and Lithuania, but had a different structure in each, and changed over time. This is reflected in the many forms identified by historians. In some cases, the nobleman had to go to war in person or send a deputy, in others, he had to raise a number of troops depending on the extent of his land but did not have to go himself, and in yet others, both he and his men had to go to war. Men from other sections of society also held such obligations, such as heads of settler communities, village heads and even some townsmen. These units were led by local leaders (castellans or *starostas*) and were called up by sending three differently-worded summons (*wici*).¹⁸

16 Plewczyński, *Wojny i wojskowość*, 32–38; Marek Plewczyński, 'Naczelne dowództwo armii koronnej w latach 1501–1572', *Studia i Materiały do Historii Wojskowości* 34 (1991) 34–64; Bołdyrew, *Piechota zaciężna*, 42–52.

17 Plewczyński, *Wojny i wojskowość*, 38–42; Bołdyrew, *Piechota zaciężna*, 56–64, 65–87.

18 Plewczyński, *Wojny i wojskowość*, 24–25, 34, 74–75; Karol Łopatecki, *Organizacja, prawo i dyscyplina w polskim i litewskim pospolitym ruszeniu (do połowy XVII wieku)*. Białystok, 2013, 22–23; and a detailed account of the levy during the period: *ibid.*, 63–102, 147–188.

STRENGTH OF ARMIES IN THE FIELD

How much of the military potential of the Polish-Lithuanian Commonwealth could actually be called up for service is a question that may be approached via the army's two most significant engagements during the period: the battle against the Grand Duchy of Moscow at Orsha in 1514, and the Battle of Obertyn against the Principality of Moldavia in 1531. The surviving sources for the latter give very precise figures for the strength of the Polish army: about 6,000 men (including 4,452 cavalry and 1,136 infantry) marched under the leadership of hetman Jan Tarnowski.¹⁹ It is much more difficult to assess the strength of the Polish-Lithuanian army at the Battle of Orsha. Historians of the battle have estimated it as 30,000, but a more likely figure is 35,000. There was a break from the accepted view in the middle of the twentieth century, when Stanisław Herbst put the likely number of troops at 25,000, but recently Marek Plewczyński has again proposed the figure of 35,000. He claims that the army consisted of 15,000 from the Lithuanian levy, 17,000 Polish mercenaries, 2,500 private troops of the Polish magnates, and volunteers, although only about 30,000 of them were engaged in combat.²⁰ Russian historiography, having long neglected the defeat, for understandable ideological reasons, eventually accepted the figure of 35,000 for the strength of the Polish-Lithuanian army. Aleksei Lobin, however, estimated the number at 12–13,000, of which 8,000–9,000 were Polish and about 4,000 Lithuanian troops. He in turn has been challenged by Aliaksandr Kazakou, who considers Lobin's work to be a good starting point, but points out several errors in his methodology and finds his figures for the strength of the army unacceptably low. He suggests that a reconstruction of the battle using modern methods could be a useful addition to the study of sources as a means of obtaining more accurate figures for the sizes of the armies in the battle.²¹

There is a means of estimating the maximum mobilized armed forces of Poland and Lithuania independently of the narrative sources and historians' estimates for individual battles. This involves the military registers, from which we arrive at a figure of about 20,000 for each half of the commonwealth. In 1538, almost the whole 19,500-strong defence force took part in the Chocim campaign (making it the largest Polish mercenary army mobilized under the Jagiellonians),²² and a surviving register of the Lithuanian levy from 1528 gives a similar number, although it omits some areas.²³ We can thus put the maximum mobilized military strength of each of the two states at about 20,000. The maximum strength of the combined army – as established by research on the Battle of

19 Plewczyński, *Obertyn*, 118–145.

20 Plewczyński, *Wojny i wojskowość*, 165, 168.

21 Aliaksandr Kazakou, 'Histariia hrafia Arsanskai bitvi 1514 h.: dasiahnienni i prabliemi', *Biela-ruski historichni ahliad* 22 (2015) 3–28.

22 Plewczyński, 'Materiały w latach 1526–1547', 254; Aleksander Bołdyrew, 'Hand Fire-arms of the Polish Mercenary Infantry during the Moldavian Campaign of 1538', *Fasciculi Arhaeologiae Historicae* 25 (2012) 60.

23 Frost, *The Oxford History of Poland-Lithuania*, 300–301.

Orsha – may be estimated at 35,000, although in the light of the above, the figure of 25,000 proposed by Herbst seems more realistic.

WEAPONRY

The weaponry and tactics of the Polish army underwent substantial changes in the first half of the sixteenth century. To understand this process, we must bear in mind that it was not facing the same enemies it had in the preceding period. Apart from the 1519–1521 war against the Teutonic Order, it principally had to contend with the armies of the Tatars and the Grand Duchy of Moscow.

The change is manifest in the appearance and growth of new branches of arms within the cavalry. When the sixteenth century opened, the Polish cavalry had two branches: heavy lancers (*kopijnik*) and medium-heavy crossbowmen (referred to in Polish as “shooters” [*strzelec*]). Their relative proportions defined the type of a cavalry unit: if half of the unit’s troops were lancers, it was a “lancer banner”; if only a quarter, it was a “crossbowmen banner”. A lancer ideally fought in whole-body armour and rode an armoured horse, and his attacking weapons were the lance, the sword and the dagger. A less well equipped soldier wore a skull cap rather than a full helmet, and his armour consisted only of a breastplate or a mail shirt, sometimes supplemented with a shield. By contrast, a mounted crossbowman usually wore a brigandine (a coat lined with metal plates), sometimes on top of a mail shirt. He also sometimes carried a shield and wore leg and arm armour. In addition to the crossbow, he carried a sword (later a sabre). By 1500, however, there were some true light cavalry among the household troops, fighting in the “Tatar mode”.²⁴ They wore a thick buffalo-hide kaftan that covered their bodies, and their weapons were the sabre and the oriental bow. Most of these units were made up of Lithuanian Tatars, although we also know of two Moldavian banners of light mounted archers between 1501 and 1506, and the small number of so-called Cossack units also come under this category, although they did not have a substantial presence in the Polish army until the 1540s. Also appearing at the turn of the century were the lightly-armed Rascians (Serbians) and medium-heavy Hungarian hussars, primarily as the result of the Jagiellonian rule of Hungary.²⁵ Although the Rascians were equipped similarly to the Hungarians, with lance, rounded shield and sabre, the greater number of Hungarians and the effectiveness of their armour caused hussar weaponry to spread widely in both Poland and Lithuania (see Appendix,

²⁴ The Lithuanian Tatars had already appeared in the Polish mercenary army in the past, but took on a distinctive presence only in the first half of the sixteenth century: Plewczyński, *W służbie polskiego króla*, 153.

²⁵ On the appearance of Rascian, Hungarian and Tatar modes of combat, see Tadeusz Grabarczyk, „Po racku, po husarsku, z przyprawą tatarską” – początki przemian wojskowości polskiej u schyłku XV w., in Tadeusz Grabarczyk, Anna Kowalska-Pietrzak and Tadeusz Nowak (eds.), *In tempore belli et pacis. Ludzie – Miejsca – Przedmioty*. Warszawa, 2011, 117–128; János B. Szabó, *A középkor magyarországi könnyűlovassága X–XVI. század*. (Studia Militaria Hungarica, 12.) Máriabesnyő, 2017, 186–213.

Figure 1).²⁶ These types of cavalry later lost their ethnic connections and became very widespread, especially among the border defence forces.²⁷ In 1514, according to some estimates, the Polish cavalry comprised 40% hussars, 25% lancers, 15% mounted crossbowmen, 15% mounted archers and 5% armed solely with cutting arms.

The period following the war with the Teutonic Order brought major changes in the composition of the army. Its opponents, rather than the Western heavy cavalry they had been used to, were mainly Eastern light cavalry. This caused mounted crossbowmen to disappear entirely, their places being taken by mounted archers, who could shoot at a higher rate. Cavalry troops bearing firearms also became more prominent during the period, although the growth was not steady, and mounted archers again made up about 90% of the shooters in the 1540s. The other great change was the decline of heavily-armoured lancers in favour of fast-maneuvring hussars and more lightly-armed lancers, and there was also an increase in the proportion of units armed only with cutting arms. There is unfortunately insufficient space in this chapter for a detailed discussion of these processes, but we get a good impression of the changes from the make-up of the cavalry at Obertyn in 1531: 48% hussars, 18% lancers, 17% shooters and 17% horsemen with cutting arms. The shooters divided into 64% archers and 36% firearm-bearers.²⁸

The infantry followed completely different trends. It consisted basically of three branches: pavise-bearers, spearmen and shooters (hand-gunners/crossbowmen). The best equipped were the spearmen, who made up the overwhelming majority of corporals. They had armour covering their whole body and were armed with a thrusting/striking weapon of varying type, and a sword. A pavise-bearer wore a (usually salade-type) helmet, breastplate and arm guard, and held an enormous standing shield to protect the troops behind him. In the third rank were the numerous infantry troops equipped with small arms, who also carried defensive arms of a wide variety. The proportion of infantry shooters carrying firearms, according to the sources, increased from 1–2% in the 1470s to 27.1–82.9% between 1496 and 1500,²⁹ and to 100% by 1530 (8–10% of

²⁶ Lesmiatis, *Wojsko zaciężne*, 91–98.

²⁷ On the role of these ethnic groups in the Polish army, see Plewczyński, *W służbie polskiego króla*, 121–145, 181–251.

²⁸ Artur Gruntman, *Jazda polska 1450–1550*. Warszawa, 1997, 8–28; Tadeusz Grabarczyk, *Jazda zaciężna Królestwa Polskiego w XV wieku*. Łódź, 2015, 77–127. On the sources for these proportions, see Plewczyński, *Wojny i wojskowość*, 47–59. On armour in general, see László Töll, *A harci vértetetek története. (A nyugat-európai hadviselésben alkalmazott testvédelmi rendszerek fejlődéstörténete a 10. századtól a 16. század első harmadáig)*. PhD Dissertation, https://dea.lib.unideb.hu/dea/bitstream/handle/2437/93683/Phd_Toll_Laszlo_vedett.pdf (accessed: 07.01.2019).

²⁹ The registers from these years show very rapid growth. Of course, the extent to which the troops registered in these sources, each listing of quite substantial numbers (the smallest lists 817 troops), can be regarded as typical of the whole army remains uncertain, but the proportions are certainly remarkable. See Tadeusz Grabarczyk, 'Firearms in the Equipment of

them armed with the arquebus à croc or “hook-gun”).³⁰ Another remarkable development is that about 30% of the shooters were also equipped with polearms by the 1530s, making them more flexible in deployment, but their proportion decreased from about 80% to 70%.³¹ Nonetheless, the firepower of the Polish infantry remained outstandingly high by European comparison, and combined with artillery of 24- and 40-pound cannons, they made up a formidable force on the battlefield. The cannons were usually provided by the towns.³²

BATTLEFIELD TACTICS

As in previous centuries, the Polish-Lithuanian army was built on the cavalry, with diverse weaponry and a high degree of coordination among the various branches of arms, making it fast and highly manoeuvrable. These characteristics were strengthened by the appearance of new branches of arms and the growth of combat in the East. The fast-moving cavalry enabled frequent use of diversion, raids, feints, ambush and pursuit. The predominance of cavalry also meant that armies could march for several hundred kilometres without being exhausted. These new components were also behind the development, in the first half of the sixteenth century, of a battle order that is known to historians as the “old Polish order” (*stare urządzenie polskie*). The centre of this battle order consisted of two cavalry regiments standing behind each other (*huf czelny* and *huf walny*). The front regiment had the task of breaking through the enemy lines. The rear regiment stood in reserve, and was responsible for finally breaking the enemy if the occasion arose; otherwise, it was capable of defending the rear of the army. On each flank there were three smaller cavalry regiments (*huf posilkowy*, *huf czarny* and *straceńcy*) one in front of the other, consisting of more lightly-armed, mobile units. The third of these regiments (*huf straceńcy*) was also a reserve and rearguard. The first regiment (*huf posilkowy*) charged together with the front central regiment and – depending on the combat situation – encircled the enemy, defended or aided the centre, or supported the retreat. Also in support was the regiment behind (*huf czarny*), and so Polish charges were performed in waves. Light mounted archers were positioned on the flanks as skirmishers, and were also used to encircle the enemy. The cavalry banners of each type had specified positions within a regiment. The front line consisted of lancers, ready to break through the enemy lines. They were followed by the hussars and the shooters. It should be noted that the width and not the depth of a regiment was the decisive consideration, and this took effect on its structure.³³

Mercenary Troops of the Kingdom of Poland in 1471–1500’, *Fasciculi Archaeologiae Historicae* 25 (2012) 54–57.

30 Grabarczyk, ‘Firearms’, 54–57.

31 Plewczyński, *Wojny i wojskowość*, 60–64; on weapons, by type, see Bołdyrew, *Piechota zaciężna*, 195–279.

32 Plewczyński, *Wojny i wojskowość*, 64–65; on archaeological findings, see Piotr Strzyż, *Średniowieczna broń palna w Polsce*. Łódź, 2011.

33 Plewczyński, *Wojny i wojskowość*, 393–399.

This battle order, although several of its elements had been in place in the fifteenth century,³⁴ took its classic form in the first half of the sixteenth century. It did not enjoy a complete monopoly, however. A good example is the Battle of Łopuszno in 1512, where the Poles wanted to face the Tatars in a compact battle order, but the Lithuanian grand hetman, citing the Battle of Kleck of 1506, persuaded them to take up the “classic” order, and this brought them victory. It was particularly preferred against an enemy of superior strength, but the details of the battle order depended on many factors, such as the terrain, the composition of the army, and the enemy army and its objectives. As for the terrain, Polish-Lithuanian armies tended to choose a battlefield where one of their flanks was defended by a natural obstacle (river, lake, forest, etc.) and they also tried to lure their enemies to such an obstacle.³⁵ If this was not possible, they used the infantry as the “natural obstacle”. This was only one of several different ways the infantry was used during battles, although it may be regarded as tactically secondary to the cavalry, its duties in open battle being fundamentally defensive. In combination with concentrated artillery fire, infantry units were often sent to break the first enemy charge, positioned either in front of the cavalry or on the flanks. On other occasions, they were positioned between or behind the cavalry regiments to enable the cavalry to withdraw behind them and regroup.

There are still some historians who criticize these defensive tactics as showing a lack of attacking capability. They neglect the fact, however, that the Polish-Lithuanian infantry had little choice when faced with mobile mounted archers, against whom they stood up well in combat, using their substantial firepower. A good example is the Battle of Orsha of 1514, when the cavalry lured the Muscovites towards the forest, where the concealed artillery and infantry opened fire and inflicted heavy losses on the Muscovite left flank. Although several hypotheses have been put forward, there is still no convincing reconstruction of how the shooters, standing in six to eight lines under the protection of pavise-bearers and spearmen, fired their weapons in open battle (see Appendix, Figure 2).³⁶ In several cases, wagons supported the infantry on the march and provided defence, enabling them, when required, to set up a wagon fort covering a large area. In addition to protecting the infantry and the artillery, these wagon forts were effective as bases for the cavalry.³⁷ The best example of the latter is the Battle of Obertyn, 1531.

34 Marek Plewczyński, *Wojny Jagiellonów z wschodnimi i południowymi sąsiadami Królestwa Polskiego w XV wieku*. Oświęcim, 2014, 237–240.

35 Zdzisław Spieralski, ‘Wojskowość polska w okresie Odrodzenia (1454–1576)’, in Janusz Sikorski (ed.), *Zarys dziejów wojskowości polskiej do roku 1864. Tom 1. Do roku 1648*. Warszawa, 1965, 316–320.

36 Bołdyrew, *Piechota zaciężna*, 343–347; Aleksander Bołdyrew, ‘The Armament of Polish Mercenary Infantry in the First Part of the 16th Century’, *Fasciculi Archaeologiae Historicae* 27 (2014) 84.

37 Plewczyński, *Wojny i wojskowość*, 401–403; János B. Szabó, ‘A huszita hadviselés hatása és adaptációja Kelet-Közép-Európában’, in Attila Bárány and László Pósán (eds.), *„Causa unionis, causa fidei, causa reformationis in capite et membris”. Tanulmányok a konstanzi zsinat 600. évfordulójának alkalmából*. Debrecen, 2014, 434–437. On the place of origin of the wagons, see

THE BATTLE OF OBERTYN (22 AUGUST 1531)

The main determining factors in this battle were the strength of the enemy and the surrounding terrain. Polish historians estimate the strength of the Polish army at 6,000 troops and thirteen guns, and that of the Moldavian army – perhaps with some exaggeration – at 17,000 troops and fifty guns. As well as being heavily outnumbered, the Poles found themselves in an area of uneven relief, preventing them from employing the broad battle order we have described. The approximately 10,000-strong Moldavian cavalry vanguard was too near for them to make an ordered retreat. The commander, Hetman Jan Tarnowski, thus ordered a tabor of 300 wagons to be prepared on a carefully-chosen height of the right size. To enable lateral fire, the wagons were linked up in the Hussite arrangement, set off from each other rather than standing side by side in a straight line, the left wheel chained to the right wheel of the next wagon, or vice versa. There were soldiers with arquebuses positioned on the wagons, 800 infantry held in reserve, and the tabor was surrounded by a trench and other obstacles. The guns were set up in the south-east corner, from where the enemy was expected. An important circumstance facilitating defence was the thick forest behind the tabor, and the road in front of the forest was easy to keep under fire. The tabor initially had only one gateway, the “front gate” on the south-east side. In the meantime, the straggling 7000-strong Moldavian army arrived together with fifty guns, and the attack on the wagon fort started on 22 August. The Polish artillery repulsed the first Moldavian cavalry charge, inflicting heavy losses. Tarnowski intended to force similar charges and thus wear down the Moldavian army, but the Moldavian commander, Voivode Peter IV (1527–1538), since he had more cannons, aimed instead to bombard the wagon fort and “smoke out” the Polish forces. The ensuing two-hour exchange of fire caused severe losses to both sides. The elevated position of the tabor prevented the Moldavians from deploying their guns to full effect. Eventually, Tarnowski broke the deadlock by taking out a few wagons at the other end of the tabor to open up another gate (back gate), through which he sent out a small detachment of infantry. Their arquebus fire repulsed the Moldavian cavalry sent to attack them.³⁸ The little troop could not have held out for long, however, and soon retreated. On the Moldavian side, Peter was afraid that the Poles were planning to escape through the back gate, and positioned his forces in a semicircle around the tabor. The forest prevented him from completely surrounding it, and Tarnowski changed tactics when he saw what was happening.

He realized that the enemy was set on cutting off his line of retreat, and ordered several cavalry charges through the back gate, in the Polish wave

Spieralski, ‘Wojskowość polska’, 321–324; more particularly on the types and numbers of wagons, see Aleksander Bołdyrew, ‘Sprzęt taborowy (wozy) w przemieszczeniu armii zaciężnej w Polsce ostatnich Jagiellonów’, *Acta Universitatis Lodzensis. Folia Historica* 99 (2017) 113–121.

³⁸ This battle is thus the exception to the rule that the infantry was confined to defensive functions.

formation. These were of insufficient strength to force the enemy to flee, but obliged the Moldavians to make up their losses by reallocating troops from the right flank. When Tarnowski saw this development, he sent other cavalry units through the front gate, and their superbly executed charge destroyed the – now weakened – Moldavian right flank and got as far as the enemy artillery. An infantry unit was sent to capture the guns and turn them against the Moldavians. In the meantime, the surprised Moldavian centre was tied down by the concentrated Polish artillery opposite. A charge by the 1,600 reserve cavalry delivered the final blow, forcing both the left flank and the centre of the Moldavian army into flight. Tarnowski thus brought off one of the greatest Polish victories of the period, and the battle is a fine example of the use of the wagon fort and the coordination of branches of arms.³⁹

SUMMARY

The internal problems of the army became manifest to Polish kings following the failure of the Moldavian campaign of 1497, and the establishment of a permanent border force to defend against Tatar incursions imposed a severe financial strain on military operations. This prompted attempts in the first half of the sixteenth century to reorganize the levy-en-masse and increase royal revenue. The financial position of the crown improved after the king of Poland became the grand duke of Lithuania in 1501, easing the transfer of money between treasuries.

There were also major changes in the organization of the army. The duties of the grand hetman, the actual leader of the army, and the field hetman, were clearly defined, and new branches of arms were established, notably the Rascians, the Hungarian hussars and mounted archers fighting in the Tatar mode. These new units became the basis for the battle order that took shape in the first half of the sixteenth century, the “old Polish order”, prompted by the need to face enemies of superior numbers fighting mainly with light cavalry. The Polish-Lithuanian army of the time was based primarily on the cavalry but coordinated various weapons and branches of arms, and was fast and manoeuvrable. It provided an effective response to the challenges of the time.

39 Plewczyński, *Wojny i wojskowość*, 328–350; Idem, *Obertyn*, 169–218; Spieralski, ‘*Wojskowość polska*’, 337–340.

THE MILITARY ORGANIZATION AND ARMY OF THE KINGDOM OF HUNGARY (1490–1526)

HUNGARIAN-BOHEMIAN PERSONAL UNION

At the turn of the fifteenth and sixteenth centuries, Hungary was one of the oldest and most respected Christian kingdoms in Central Europe. On the Vatican precedence list of 1504, the king of Hungary was in ninth place – below the kings of France, Spain, Portugal, England, Naples and Scotland, but above those of Navarre, Cyprus, Bohemia, Poland and Denmark. Some lists from the late medieval period other than those of the Roman Curia put the Hungarian king in fourth or fifth place, and Hungarian envoys in Rome were given the same ranking as their Portuguese and Scottish counterparts at the end of the fifteenth century.¹

Based on the real union of Hungary and Croatia, the medieval Kingdom of Hungary extended over the Carpathian Basin and to the Adriatic coast and had exceptionally stable boundaries. Between the eleventh and thirteenth centuries, its kings from time to time attempted to extend their rule to many other areas beyond the country's eastern and southern borders, from Galicia to Bosnia. This sometimes resulted in no more than titles of pretension, passed down over the centuries, but also in somewhat uncertain control over several voivodates and banates in a North Balkan frontier zone that was severely exposed to attack by Ottoman conquerors from the fourteenth century onwards.²

A more solid development was the personal union of the lands of the Hungarian and Czech crowns for several periods over the course of the fifteenth century. Sigismund of Luxemburg (1387–1437) engaged in several decades of bitter struggle against his rebellious Hussite subjects before he could take up his family inheritance in Prague, but his (at least nominal) successor Albert of

1 Bálint Lakatos, 'Ordo regum. Precedencialisták a pápai udvarban és a magyar király rangja a középkor végén', in Péter Tusor, Kornél Szovák and Tamás Fedeles (eds.), *Magyarország és a római Szentszék II. Vatikáni magyar kutatások a 21. században*. (Collectanea Vaticana Hungariae, I/15.) Budapest, Róma, 2017, 137–172, 446–447.

2 Pál Engel, *The Realm of St Stephen: A History of Medieval Hungary, 895–1526*. London, New York, 2001, XIII–XV, 323–344; Tamás Pálosfalvi, *From Nicopolis to Mohács: A History of Ottoman–Hungarian Warfare, 1389–1526*. (The Ottoman Empire and Its Heritage. Politics, Society and Economy, 63.) Leiden, Boston, 2018, 11–15.

Habsburg (1437–1439) and Albert's son Ladislaus (1439–1457) held sole possession of the crowns of both countries.³

Later, the tradition of personal union was revived under Matthias Corvinus (1458–1490) and Vladislaus II (1490–1516) of the Polish Jagiellonian dynasty. After being elected king of Hungary, Matthias intervened on the Catholic side in the Bohemian religious war in 1468 and was crowned king of Bohemia. Vladislaus, however, established control of Bohemia proper in 1471 and retained it when Matthias was confirmed on the Bohemian throne by the Peace of Olomouc of 1478, which was also signed by Vladislaus. Matthias thus controlled only Moravia and Silesia. After Matthias' death in 1490, Vladislaus was elected king of Hungary, unifying the lands of the Bohemian crown,⁴ and although he was also obliged to defend his new crown by force of arms, the two countries were permanently linked (Table 1) in a union that continued until 1918 – except for a brief interlude following the early and tragic death of his son Louis II (1516–1526) at the Battle of Mohács.⁵

TABLE 1: THE KINGDOM OF HUNGARY AND THE LANDS OF THE CROWN OF BOHEMIA
IN THE EARLY SIXTEENTH CENTURY⁶

	Kingdom of Hungary	Lands of the Crown of Bohemia
Area (km ²)	320 000	125 000
Population	3 300 000	2 300 000

- 3 Wilhelm Wostry, *König Albrecht II.* (Prager Studien auf dem Gebiet der Geschichtswissenschaften) Prague, 1906–1907; David Papajík, *Ladislav Pohrobek (1440–1457): uherský a český král.* České Budějovice, 2016; Engel, *The Realm of St Stephen*, 278–297; Pálosfalvi, *From Nicopolis*, 77–187.
- 4 Tomáš Homola, 'Polish–Hungarian Rivalry for the Bohemian Crown in the 1460s', in Dániel Bagi, Gábor Barabás and Zsolt Máté (eds.), *Hungaro-Polonica: Young Scholars on Medieval Polish–Hungarian Relations.* Pécs, 2016, 291–311; Antonín Kalous, *Matyáš Korvín (1443–1490): uherský a český král.* České Budějovice 2009, 168–222; Roman Heck, 'Elekcija kutnohorska 1471 roku', *Śląski Kwartalnik Historyczny Sobótka* 27 (1972) 193–235.
- 5 András Kubinyi, 'Két sorsdöntő esztendő (1490–1491)', *Történelmi Szemle* 33 (1991) 1–54; György Székely, 'A rendek válaszüton: a dinasztia váltás harcai 1490–1492-ben', *Hadtörténelmi Közlemények* 116 (2003) 427–456; Tibor Neumann, 'Békekötés Pozsonyban – országgyűlés Budán. A Jagelló–Habsburg kapcsolatok egy fejezete (1490–1492) (Első közlemény)', *Századok* 144 (2010) 335–372; Idem, 'Békekötés Pozsonyban – országgyűlés Budán. A Jagelló–Habsburg kapcsolatok egy fejezete (1490–1492) (Második közlemény)', *Századok* 145 (2011) 293–347; Idem, 'A kassai hadjárat. II. Ulászló zsoldosserege és a lengyelek elleni harc (1490–1491)', in László Pósa and László Veszprémy (eds.), *Elfeledett háborúk: Középkori csaták és várostromok*, 6–16. század. Budapest, 2016, 363–397.
- 6 Source of this data: Géza Pálffy, *The Kingdom of Hungary and the Habsburg Monarchy in the Sixteenth Century.* (East European Monographs, DCCXXXV.) Translated from the Hungarian by Thomas J. and Helen D. DeKornfeld. Boulder, Colorado, 2009, 20. Estimates of the late medieval population of Hungary vary very widely, between 2.5 and 5.5 million (Engel, *The Realm of St Stephen*, 330); recently, however, the figure of 3–3.5 million has become widely accepted: András Kubinyi, 'A Magyar Királyság népessége a 15. század végén', *Történelmi Szemle* 38 (1993) 135–161; József Laszlovszky, 'Agriculture in Medieval Hungary', in József Laszlovszky, Balázs Nagy, Péter Szabó and András Vadas (eds.), *The Economy of Medieval Hungary.* (East Central and Eastern Europe in the Middle Ages 450–1450, 49.) Leiden, Boston, 2018, 90. For the lands of the Bohemian crown, there is also a lower estimate (2 million) than appears in the table. See the chapter in this book by Bence Péterfi.

Under the Habsburg–Jagiellon treaty of succession of 1515, the Bohemian estates elected Archduke Ferdinand Habsburg of Austria as Louis II's successor on the Hungarian throne. In the event, however, John Szapolyai, voivode of Transylvania and Hungary's wealthiest aristocrat, secured the throne first. Despite being forced out by Ferdinand in 1528,⁷ John regained part of his kingdom the following year with the help of Sultan Süleyman, and became an Ottoman vassal. When John kissed the hand of the sultan on the field of Mohács in 1529, his act marked the end of Hungary as a medium-sized sovereign power in Central Europe.⁸

Vladislaus and Louis, from their seat in the castle of Buda, governed what could in principle have been a formidable conglomeration of states, but the king's authority in Bohemia, a member of the Holy Roman Empire, had been considerably eroded by the Hussite wars. Government of the lands of the crown of St Venceslaus was largely in the hands of the estates – aristocrats, lower nobility and towns.⁹ Powerful aristocratic families and urban leaders had gained considerable economic and political influence, and the country was always tottering on the brink of another religious war.¹⁰ Although the Bohemian lands had considerable material and military potential, little of it was available for the king's efforts to consolidate his threatened rule of Hungary.¹¹ It was only after the fall of the Jagiellonians in 1526 that the two crowns were effectively reunited, this time by the Habsburgs, and with the addition of Austria.¹²

“RICH LAND, POOR COUNTRY”¹³

The extensive territory of the late medieval Kingdom of Hungary had relatively few inhabitants. Even in the inhabited areas, the average population density was low in comparison with the advanced areas of Western Europe, and true towns

7 Bogusław Dybaś and István Tringli (eds.), *Das Wiener Fürstentreffen von 1515. Beiträge zur Geschichte der habsburgisch-jagiellonischen Doppelvermählung*. (21st-Century Studies in Humanities). Budapest, 2019; János B. Szabó, 'János király döntő csatái: Tokaj, 1527 és Szina, 1528', in Pósnán and Veszprémy (eds.), *Elfeledett háborúk*, 426–442.

8 Gábor Barta, *La route qui mène à Istanbul, 1526–1528*. (Studia Historica Academiae Scientiarum Hungaricae, 195.) Budapest, 1994; Pál Fodor, 'Ottoman Policy towards Hungary', *Acta Orientalia Academiae Scientiarum Hungaricae* 45:2–3 (1991) 293–298.

9 Josef Macek, 'The Monarchy of the Estates', in Mikuláš Teich (ed.), *Bohemia in History*. Cambridge, 1998, 98–116.

10 Antonín Kalous, 'Tárgyalások az utraquisták egyesüléséről a római egyházzal. Kiegyezési politika', in Beatrix F. Romhányi and Gábor Kendeff (eds.), *Szentírás, Hagyomány, Reformáció. Teológia- és egyháztörténeti tanulmányok*. Budapest, 2009, 157–163.

11 Paradoxically, if corresponding to this situation, it was only to a very small extent that the dynasty remained embedded in Bohemia: Ilya Afanasyev, 'Did Bohemian Jagellonians Exist?', in Natalia Nowakowska (ed.), *Remembering the Jagellonians*. London, New York, 2019, 101–120.

12 Pálffy, *The Kingdom of Hungary*, 36–52; Robert John Weston Evans, *The Making of the Habsburg Monarchy 1550–1700: An Interpretation*. Oxford, 1979.

13 Péter Kulcsár, *A Jagelló-kor*. (Magyar História) Budapest, 1981, 16 (a chapter heading in the monograph).

(*civitas*) were rare and small: there were hardly forty of them, and the largest urban concentration, comprising Buda, Pest and Óbuda, had a total of only 10,000 inhabitants.¹⁴

The country had considerable natural resources, and its foreign trade largely comprised the import of luxury goods and manufactures (metal goods, such as weapons) and the export of raw materials, agricultural products and livestock. Cattle raised on the Hungarian Great Plain, Hungarian wine and the copper mined by the Thurzó-Fugger company in Upper Hungary all had a significant presence in European trade.¹⁵

Historians have in the past tended to “idealize” the revenues of fifteenth-century Hungarian kings, particularly Matthias Corvinus and compare it favourably to that of the Jagiellonians, whose annual income they estimated at only 200–300,000 gold forints.¹⁶ One of the foremost historians of the Hungarian Jagiellonian era, András Kubinyi, stated in 2004 that “there are two surviving sources that serve as indication of [the income of the country in the 1520s]: first, several reports by Venetian envoys and, second, budgetary forecasts during the reign of Louis II. The former sought to prove just how much the country had declined in terms of revenue in relation to the revenues achieved by Matthias. They probably tended to overvalue Matthias’ revenues and undervalue the Jagiellonians’ revenues,” but “given such contradictions, the figures should not be seen as supporting each other”.¹⁷

In the emergency following the Ottoman invasion of 1521, tax-payers’ discipline clearly improved, and the government turned to a means of raising revenue that was familiar throughout Europe – debasing the coinage.¹⁸ Total

14 Engel, *The Realm of St Stephen*, 244–260, 323–330; Katalin Szende, ‘Buda and the Urban Development of East Central Europe’, in Katalin Szende and András Vadas (eds.), *Medieval Buda in Context*. (Brill’s Companions to European History, 10.) Leiden, Boston, 2016, 526–553; Katalin Szende, ‘The Urban Economy in Medieval Hungary’, in Laszlovszky, Nagy, Szabó and Vadas (eds.), *The Economy of Medieval Hungary*, 335–358.

15 Balázs Nagy, ‘Foreign Trade of Medieval Hungary’, in Laszlovszky, Nagy, Szabó and Vadas (eds.), *The Economy of Medieval Hungary*, 483–490; László Zsámboki, ‘Magyarország ércbányászata a honfoglalástól az I. világháború végéig’, in Idem, *Közlemények a magyarországi ásványi nyersanyagok történetéből. Vol. I.* Miskolc, 1982, 23–24.

16 On the amounts and proportions of royal revenues under Sigismund, Ladislaus V and Matthias, see Márton Gyöngyössy, ‘Pénzverés és pénzügyigazgatás (1387–1526)’, in András Kubinyi, József Laszlovszky and Péter Szabó (eds.), *Gazdaság és gazdálkodás a középkori Magyarországon: gazdaságtörténet, anyagi kultúra, régészet*. Budapest, 2008, 191. For a table of the varying figures given in the literature for the annual income of Matthias and the Jagellonians, see Tibor Neumann, Tamás Pálosfalvi and Norbert C. Tóth, ‘Két évszázad a sztereotípiák fogságában (Helyzetkép a Jagelló-kor kutatásáról)’, in Pál Fodor and Szabolcs Varga (eds.), *Több mint egy csata: Mohács. Az 1526. évi ütközet a magyar tudományos és kulturális emlékezetben*. (Mohács 1526–2026: Reconstruction and Remembrance) Budapest, 2019, 51.

17 András Kubinyi, ‘Hungary’s Power Factions and the Turkish Threat in the Jagiellonian Period (1490–1526)’, in István Zombori (ed.), *Fight against the Turk in Central Europe in the First Half of the 16th Century*. Budapest, 2004, 121.

18 Norbert C. Tóth, ‘A Magyar Királyság 1522. évi költségvetése’, in Boglárka Weisz (ed.), *Pénz, posztó, piac. Gazdaságtörténeti tanulmányok a magyar középkorról*. (Magyar Történelmi

revenue thereby increased to between 478,000 and 528,000 forints in 1522, but even in average years, it was probably considerably higher than previously thought – as much as 350–400,000 forints. The latest study, by Norbert C. Tóth, finds that “in order to face the threat along the southern borders, where there had been a constant state of war following the loss of the Banate of Srebernik (Srebrenik) in 1512 and the failure of the subsequent peace talks, the kingdom’s internal resources had been continuously ‘maxed out’ for a decade, exhausting the royal revenues.”¹⁹

MILITARY POTENTIAL AND MOBILIZABLE FORCES

The Ragusan historian Ludovicus Tubero wrote that early sixteenth century Hungary “has many inhabitants, ... but only the Hungarian nobility have voting rights at the diets together with the prelates, who hold the highest position among them. The men considered as nobles among the Hungarians are those who spend their whole lives as soldiers and are far removed from urban learning – they consider living in towns to be an attribute of craftsmen and merchants, ... since Hungary’s strength lies not in the towns and castles or other such buildings but in the army, which is composed of nobles. The nobles do not live in towns, of which – as I have stated – there are few in Hungary, and all of the nobles live in the village of their estate, as they please, obeying the command of nobody except the king.”²⁰

Viewed from abroad, Hungary in the early sixteenth century seemed to be a country that was defended without large financial expenditure by a sizeable military class, because “it is the custom [of the Hungarians],” wrote Pierre Choque, the herald of arms of Brittany, “that when the king marches to war in person against the Turks, every man of arms voluntarily goes with him. Because they are good and brave warriors, the Turks fear this nation the most.”²¹

By aggregating demographic and military data, András Kubinyi concluded that “the strength of armies held permanently under arms and capable of mobilization, which means [Hungary’s] usable military potential ... was around 50–60,000.”²² This roughly corresponds with information that for an offensive campaign of limited objectives against the Ottomans in 1523, the Hungarian government promised no less than 60,000 troops.²³ This was not new. In the

Emlékek, Értekezések) Budapest, 2016, 83–148; cf. Márton Gyöngyössi, ‘II. Lajos legendás alkincstartója, Szerencsés Imre és a nova moneta’, *Századok* 151 (2017) 607–644.

19 Neumann, Pálosfalvi and C. Tóth, ‘Két évszázad’.

20 Ludovicus Tubero, *Kortörténeti feljegyzések: Magyarország*. (Középkortörténeti Könyvtár, 4.) Translated and published by László Blazovich and Erzsébet Sz. Galántai. Szeged, 1994, 66–70, 156.

21 Attila Györkös, *Reneszánsz utazás. Anna királyné 1502-es fogadtatásának ünnepei Észak-Itáliában és Magyarországon*. Máriabesnyő, 2016, 164.

22 Kubinyi, ‘Hungary’s Power Factions’, 126–129.

23 On the plans for 1523 and the 60,000-strong army: András Kubinyi, ‘A mohácsi csata és előzményei’, *Századok* 115 (1981) 83–85.

1490s, Vladislaus' well-informed historian, Antonio Bonfini, stated that in times of danger, the king of Hungary "immediately packed every castle on the border with the Turks with soldiers, guns, food and weapons, ... if the Turks continue their advance, while they spend their time besieging the outer castles of the country, he can easily gather an army of sixty thousand."²⁴ We may now, by refining Kubinyi's findings, regard this number as the maximum military potential that the government considered itself able to mobilize in the two countries of Louis II.

The bulk of the Hungarian military consisted of cavalry. We know from Venetian diplomatic sources of early in the century that the Kingdom of Hungary had 40,000 mobilizable cavalry, and Bohemia only 6,000.²⁵ The Italian diplomats put great effort into determining the military strength of their Hungarian partners, and their information at several points supports Kubinyi's calculations concerning the *banderium* ("private army") system. These find that with the *banderia* of barons and counties – depending on the varying ratio of *militia portalis* troops to peasant plots – and the 7,250 cavalry of the prelates, the king could muster 14–20,000 cavalry troops. In 1500, for example the envoy Francesco de la Zuecha was told by Vladislaus II that "the cavalry number 18–20,000, ... but this does not include the Transylvanian and Székely" contingents, which put the total cavalry potential of the country at 40,000.²⁶

Owing to its somewhat different social structure to the rest of the Kingdom of Hungary, Transylvania made a disproportionate contribution to Hungary's military potential. With a population at the end of the fifteenth century estimated at only 500,000, the Voivodate of Transylvania was one of the most militarized regions of Europe, as reflected in its internal organization.²⁷ Recent research estimates the number of men available for military service at the end of the fifteenth century at 50,000, although only a fraction of this number could be mobilized outside the provincial borders.²⁸

The Hungarian–Bohemian personal union established in 1490 allowed the Hungarian sovereign (even after the loss of Matthias' conquests) to bring into service the highly reputed Bohemian professional soldiers.²⁹ Documents of the

24 Antonio Bonfini, *A magyar történelem tizedei*. Translated by Péter Kulcsár. Budapest, 1995, 968.

25 István Balogh, *Velenczei diplomaták Magyarországról (1500–1526) (Forrástanulmány)*. Szeged, 1929, II, VIII–IX, XVIII, XXXIII.

26 András Kubinyi, 'Politika és honvédelem a Jagellók Magyarországon', *Hadtörténelmi Közlemények* 113 (2000) 405. Translation of the Venetian report of 1500: Balogh, *Velenczei diplomaták*, II.

27 András Borosy, 'The Militia Portalis in Hungary before 1526', in János M. Bak and Béla K. Király (eds.), *From Hunyadi to Rákóczi: War and Society in Late Medieval and Early Modern Hungary*. New York, 1982, 71.

28 András Kubinyi, 'Hadszervezet a késő középkori Magyarországon', in Idem, *Nándorfehérvártól Mohácsig. A Mátyás- és a Jagelló-kor hadtörténete*. Budapest, 2007, 201.

29 On the role of Bohemian mercenaries in Central Europe at that time: Uwe Tresp, *Söldner aus Böhmen. Im Dienst deutscher Fürsten: Kriegsgeschäft und Heeresorganisation im 15. Jahrhundert*. (Krieg in der Geschichte, 19.) Paderborn, München, Wien, Zürich, 2004.

Hungarian king and Venetian diplomats agree that only lack of money prevented an enormous mercenary army from the lands of Bohemian crown being added to the Hungarian forces, and recruitment could have extended into the territory of the Kingdom of Poland, also ruled by a Jagiellonian king.³⁰ There seem to have been no shortage of applicants: a report from 1521 claims that Francis I of France wanted to enlist 20,000 infantry and 4,000 cavalry troops from the lands of the Bohemian crown.³¹ The other major potential benefit deriving from the Bohemian-Hungarian personal union was that the Jagiellonian kings, if not without some difficulty, could sometimes get the estates of the Bohemian crown lands to support them in fighting the Ottomans. In 1523, a Venetian diplomat was very impressed by the diverse military capabilities of the lands ruled by Louis II: “They have heavy and light horses [cavalry] and large numbers of infantry that no other prince has. France has horses but no infantry and is thus obliged to enlist Swiss and other foreigners, Spain has many infantry but not as many horses.”³²

The reality did not in general live up to this rosy picture. In 1521, Louis II was able to raise mercenary troops amounting to only 4,000 infantry and – at most – 1,000 cavalry from the Kingdom of Bohemia; in 1523, with papal aid, he managed to mobilize 1,000 Moravian infantry.³³ In 1526, again with a subsidy from the pope, another 4,000 well equipped Bohemian and Polish infantry troops joined the royal army. In the Mohács campaign, these Bohemian and Polish units were the elite infantry of the Hungarian king.

Through the grants of the Bohemian estates, the strength of the Bohemian contingents did greatly increase: in 1521, the Moravian estates alone voted 7,220 well equipped infantry and 400 cavalry and eighteen guns as military aid for Louis II, and in 1526, according to Czech military historians, the estates raised a 16,000-strong auxiliary force for their king.³⁴ One of the greatest difficulties in

30 Balogh, *Velenczei diplomaták*, XXXIII. Letter from Louis II to Henry VIII of England, 1526: Ernő Simonyi, *Magyar történelmi okmánytár londoni könyv- és levéltárakból, 1521–1717*. (Monumenta Hungariae Historica, I; Diplomataria, V.) Pest, 1859, 73. In 1526, despite the official peace between Poland and the Ottoman Empire, 1,500 Polish professional soldiers arrived in the Hungarian camp under an officer of the Polish king, Leonard Gnoyenski: Piotr Tańkowski, *Mohács 29. VIII. 1526*. Zabrze, 2010, 62.

31 Attila Bárány, ‘Követjelentés Magyarország állapotairól 1521-ből’, in Attila Bárány, Gábor Dreska and Kornél Szovák (eds.), *Arcana tabularii. Tanulmányok Solymosi László tiszteletére. Vol. II*. Budapest, Debrecen, 2014, 490–491. On Bohemian professional soldiers in Poland and the Palatinate in the early sixteenth century, see the chapters by Bence Péterfi and László Szokola in this book.

32 Francesco Massaro’s report in 1523: Balogh, *Velenczei diplomaták*, LXII–LXIII.

33 Bárány, ‘Követjelentés’, 490–491; Balogh, *Velenczei diplomaták*, XXXIII. There were Polish mercenaries in the Pétervárad garrison in 1522: András Kubinyi, ‘The Battle of Szászszentdemeter-Nagytolnai (1523): Ottoman Advance and Hungarian Defence on the Eve of Mohács’ in Géza Dávid and Pál Fodor (eds.), *Ottomans, Hungarians, and Habsburgs in Central Europe: The Military Confines in the Era of Ottoman Conquest*. (The Ottoman Empire and Its Heritage. Politics, Society and Economy, 20.) Leiden, Boston, Köln, 2000, 87: note 54.

34 Petr Klučina, ‘Pohusitské vojenství (1434–1526)’, in Zdeněk Procházka and Jan Lipták (eds.), *Vojsenské dějiny Československa (do roku 1526)*. Praha, 1985, 314.

deploying these high-quality auxiliary troops against the Ottomans was the time factor: most of the somewhat unenthusiastic Bohemian and Moravian armies were unable to reach the southern mustering point of the Hungarian army in the Buda-Tolna region before the end of August or the beginning of September in either 1514, 1521 or 1526.³⁵ Consequently, the only Bohemian troops who arrived before the decisive battle on 29 August 1526, apart from the mercenaries raised with papal funds, were an estimated 1,600 infantry and 400 cavalry from the Bohemian royal towns.³⁶

Even within the borders of Hungary, mobilization ran into difficulties. The country could not assemble armies several tens of thousand strong before the harvest had been brought in.³⁷ In reality, the typical strength of armies that engaged in combat on the Ottoman front was between five and ten thousand. Mobilization was achieved on a much greater scale for the Ottoman war fought in alliance with Venice in 1501, but the 30,000 troops in that Hungarian force were made up of three separate corps, which carried out major incursions in three different regions: John Corvinus took 8,000 troops into Bosnia, Józsa Somi, *ban* of Temes, led 16,000 into Serbia, and Péter Szentgyörgyi, voivode of Transylvania, took 5,000 into Bulgaria.³⁸

This was about as large a force as the Hungarian military organization had ever assembled before the 1520s, and when the sultan started up his enormous campaigns, it was obliged to make new efforts. Foreign reports put the number of men in arms gathered in three camps in September 1521 – including foreign auxiliaries and peasants called up from the southern borders – at more than 70,000.³⁹ The total number assembled in 1526 was similar, but only about half of them were massed in the camp at Mohács before the decisive encounter on 29

35 Kubinyi, 'A mohácsi csata', 85: note 109; Idem, 'A magyar állam belpolitikai helyzete Mohács előtt', Lajos Rúzsás and Ferenc Szakály (eds.), *Mohács. Tanulmányok a mohácsi csata 450. évfordulója alkalmából*. Budapest, 1986, 82–83. On the 2,000-strong Bohemian auxiliary force in 1514: Gábor Barta and Antal Fekete Nagy, *Parasztháború 1514-ben*. Budapest, 1973, 226–227. On the auxiliary force of 1521: Jaroslav Dřímál, 'Účast Moravske zemské hotovosti v boji proti Turkum při obrane Bělehradu r. 1521', *Sborník prací Filosofické fakulty brněnské univerzity* 10:8 (1961) 149–160. On the preparations in Bohemia in 1526: Zdeněk Vybíral, *Bitva u Moháče. Krvavá porážka uherského a českého krále Ludvíka Jagellonského v boji s Osmany 29. srpna 1526*. Praha, 2009, 142–145, 164–168.

36 Marek Ďurčanský, 'Bitva u Moháče a česká města 20. let 16. století', in *Bitka pri Moháči – historický medzník v dejinách strednej Európy (490. výročie): zborník príspevkov z medzinárodnej vedeckej konferencie, z XX. archívnych dní v Slovenskej republike, v Tatranskej Lomnici v dňoch 23.–25. mája 2016*. / *Die Schlacht bei Mohács – ein historischer Wendepunkt in der Geschichte Mitteleuropas (490. Jahrestag): ein Sammelband mit Beiträgen zur internationalen wissenschaftlichen Konferenz anlässlich der XX. Archivtage in der Slowakischen Republik in Tatranská Lomnica 23.–25. Mai 2016*. Bratislava, 2016, 156.

37 András Kubinyi, 'Logisztikai kérdések a Mohács előtti magyar hadszervezetben', in Gábor Hausner (ed.), *Az értelem bátorsága. Tanulmányok Perjés Géza emlékére*. Budapest, 2005, 441–457.

38 Pálosfalvi, *From Nicopolis*, 305–308; Györkös, 'Reneszánsz utazás', 155.

39 Pálosfalvi, *From Nicopolis*, 394.

August.⁴⁰ The Hungarian chancellor, István Brodarics, put the strength of the army assembled there at 24–25,000, adding that this included an approximately thousand-strong force of river-fleet troops who did not take part in the fighting. The usually well-informed papal envoy, Baron Burgio, wrote to Rome about a 25–30,000 strong Hungarian army, and by 1526, calculated from the partial figures given by the chancellor, the widely accepted figure was 27,000.⁴¹

THE MILITARY ORGANIZATION OF THE KINGDOM OF HUNGARY

It is clear from the composition of the army that gathered in the Mohács camp in 1526 that the proportions of branches of arms specified in the previous military laws, and the troop numbers that may be inferred from these, do not necessarily correspond to the numbers of troops who actually marched to war. Many of the men called to arms in 1526 were mobilized outside the old organizational framework, or the framework itself had changed accordingly. The laws of the late fifteenth century thus give a very limited guide to the troops that fought in the Ottoman wars of the 1520s, when mobilization was on a much larger scale than ever before.

A good example is a review of the Zemplén county troops on 15 July 1526, which recorded 353 cavalry and infantry, even though the law made no provision for infantry until 1518 and 1523, and the 1523 provisions imply that the infantry in the county force was probably raised through the call to arms of one-plot nobles.⁴² The figures also suggest that future research should, instead of the usual “normative” approach, place greater attention on surviving documentary sources on mobilizations for specific military events.

The banderia of the king and the national dignitaries

At the turn of the fifteenth and sixteenth centuries, there must have been at least two hundred household troops serving the king (chamberlains, court hussars, etc.). Together with their retainers, they provided the king with about 500 men in arms. Some members of the *aula*, however, did not serve the king as mere soldiers but as officers of the large royal *banderium*.⁴³ The size of these was first

⁴⁰ Pálosfalvi, *From Nicopolis*, 394.

⁴¹ János B. Szabó, *Mohács. Régi kérdések – új válaszok. A Magyar Királyság hadserege az 1526. évi mohácsi csatában*. Budapest, 2015, 22–28; Pálosfalvi, *From Nicopolis*, 432.

⁴² Ede Reisz, ‘Zemplén vármegye története’, in Samu Borovszky (ed.), *Zemplén vármegye*. (Magyarország Megyéi és Városai) Budapest, 1905, 379–380; Antal Szirmay, *Notitia historica comitatus Zempléniensis*. Buda, 1804, 47. Act 20 of the Hungarian diet of 1523 provided that one-plot nobles were to be called up as cavalry or infantry, but not to go by wagon, as many had usually done: Dezső Márkus (ed.), *Corpus Juris Hungarici. Vol. I*. Budapest, 1899 (= *CJH*), 814–815.

⁴³ András Kubinyi, ‘A Mátyás-kori államszervezet’, in Gyula Rázsó and László Molnár (eds.), *Hunyadi Mátyás. Emlékkönyv Mátyás király halálának 500. évfordulójára*. Budapest, 1990, 64–67; Idem, ‘A királyi udvar élete a Jagelló-korban’, in László Koszta (ed.), *Kelet és Nyugat között. Tanulmányok Kristó Gyula tiszteletére*. Szeged, 1995, 320–326.

specified in Hungary in Act 21 of 1498. This stated that under the old tradition, probably dating from the Sigismund era, the king's *banderium* had to consist of 1,000 cavalry. Additionally, the four paid royal stewards safeguarding the security of the southern borders – the voivode of Transylvania, the *ispán* of the Székelys, the *ispán* of Temes and the *ban* of Croatia – in principle each maintained forces of 400 cavalry.⁴⁴

Border defence forces

Arranged along the southern perimeter of the Kingdom of Hungary was one of the largest border defence forces of any Christian power in Europe: the budget records for the 1510s show that it consisted of 7,817 troops, 5,547 of them cavalry. Although the accounts do not always identify what kind of cavalry they were, the stated amounts imply a low rate of pay, which – together with the border defence function – suggests that they were mainly light cavalry.⁴⁵

The remainder were lightly-armed infantry armed with arquebuses, who in the constant low-level war in progress in the frontier lands had a major part to play. In the impassable mountain areas of Dalmatia, Croatia and Bosnia, neither side could do without such troops. This may have been one of the main reasons why the Hungarian command stationed more paid infantry in the west of the frontier region than on the flat central area, and why Croatian officers regularly requested infantry reinforcements for the western stretch of the border.⁴⁶

The militia portalis banderia

When the standing forces were unable to defend the country, the laws passed in the 1490s required the prelates and barons to provide troops from their *banderia* in numbers specified according to their wealth. If further troops were required, the county cavalry *banderia*, raised according to the holdings of less wealthy nobles, also had to be called up. Act 16 of 1498 required one light cavalryman to be provided for every twenty-four peasant households in eleven southern counties and one heavy cavalryman for every thirty-six peasant households in the other counties. In return, as part of the military reforms of 1498–1500, the king assigned about a half of his revenue from the previous one-forint extraordinary war tax to the lords who maintained the *banderia*, to be spent on soldiers' pay and equipment.⁴⁷

44 András Kubinyi, 'Hadszervezet a késő középkori Magyarországon', in Árpád Rác (ed.), *Nagy képes millenniumi hadtörténet. 1000 év a hadak útján*. Budapest, 2000, 76–78.

45 Zoltán Tóth, 'A huszárok eredetéről', *Hadtörténelmi Közlemények* 35 (1934) 184–189; Kubinyi, 'Politika és honvédelem', 406.

46 See Kubinyi, 'The Battle of Szávaszentdemeter-Nagyolaszi', 75; Tóth, 'A huszárok eredetéről', 163; note 120; 166, 178, 187.

47 Martyn Rady, 'Fiscal and Military Development in Hungary during the Jagello Period', *Chronica* 9–10 (2009–2010) 86–99, https://www.academia.edu/2928218/Fiscal_and_Military_Developments_in_Hungary_during_the_Jagello_Period (accessed: 31.05.2019).

For the prelates, Act 22 of 1500 revived the *banderia* registers of the Sigismund era. Thus, according to a French report of 1502, the king could in principle mobilize 11–12,000 cavalry troops, and the church and the barons, 14,000. (The figures were similar in 1524, when an Austrian diplomat reported the intention to march 12,000 *banderium* soldiers to defend the southern frontier.)

The county nobility also raised *banderia* of varying strengths, comprising their own peasants and led by a captain elected by the county. Nógrád county, which is well served by sources, spent 4,758 forints in four years (1505–1508) on its 55–60-strong cavalry troop, and to judge from the amount of tax paid, the counties of Bars and Szabolcs must have raised troops of similar strengths in 1498.⁴⁸ The entire county nobility of Transylvania, unless they were required to turn out in person, were – according to the Sigismund-type registry produced in the first half of the fifteenth century – required to raise only 300 soldiers in the *banderia* of the seven Transylvanian counties, and this figure roughly agrees with other data from Hungary.⁴⁹ Consequently, the county *banderia* kept permanently under arms could not have amounted in total to more than a few thousand troops.⁵⁰

The members of all of these *banderia* were paid a small retainer for most of the year and received full pay only during campaigns, starting upon mobilization.⁵¹ The system had a “dress rehearsal” at the armed diet in Bács in September 1500, where Vladislaus II reviewed the country’s military forces in the presence of envoys from Venice, Poland and France. Soranzo, the Venetian envoy, “saw a parade of 10,000 cavalry” and reported that the roll-call was quite successful, even though “only 4,000 were armed [i.e. were heavy cavalry] and the rest were not [they were light cavalry], and of this number, 700 were *ragazzi* [which in the usage of the time meant soldiers’ retainers], and the rest of the army were good troops and horses.”⁵²

The looming Ottoman threat seems to have given rise to changes in the way *militia portalis* troops were raised. Act 19 of 1523 stipulated that one cavalryman must be equipped for every ten plots; the 1526 diet did not specify such precise quotas, its military clauses stating only that everybody must turn out with “preparations well in excess” of the specified quantity.⁵³

48 Kubinyi, ‘Politika és honvédelem’, 403–404; István Kádas, ‘A megye pénze. A zsoldosok fenntartására kivetett adó és a megyei pénztár (1498–1511)’, in István Kádas, Renáta Skorka and Boglárka Weisz (eds.), *Veretek, utak, katonák. Gazdaságtörténeti tanulmányok a magyar középkorról*. (Magyar Történelmi Emlékek, Értekezések) Budapest, 2018, 197–198.

49 Norbert C. Tóth, ‘Szapolyai János erdélyi vajda 1522. évi havasalföldi hadjárata’, *Hadtörténelmi Közlemények* 125 (2012) 1009: note 180.

50 Francesco de Zuecha, however, claimed that the counties raised 5,000 cavalry: Balogh, *Velenczei diplomataik*, II.

51 *CJH* I. 602–605; Kubinyi, ‘Politika és honvédelem’, 403–404.

52 Balogh, *Velenczei diplomataik*, III.

53 András Kubinyi, ‘Az egyház szerepe az országos politikában és a honvédelemben a középkor végén’, in Idem, *Főpapok, egyházi intézmények és vallásosság a középkori Magyarországon*. Budapest, 1999, 97; Idem, ‘A magyar állam’, 67; Idem, ‘A mohácsi csata’, 86.

Church estates were also required to produce many more soldiers as the Ottoman peril grew in the sixteenth century. Act 24 of 1504 required church forces, like the royal troops, to answer the call to arms immediately, and the Bács diet of 1518 (by Act 1) ordered half of the prelates' troops to the southern border; Act 4 of 1522 ordered all of them to go. Act 48 of 1524 went further by prohibiting the troops to be withdrawn from there. This means that by the 1520s, the church *banderia* had become part of the kingdom's standing army.⁵⁴

A crucial change in the system, usually afforded little attention by historians, was a provision passed at the Tolna diet of 1518 (Act 6). The seven North Hungary counties of Árva, Nyitra, Szepes, Trencsén, Túróc, Zólyom and Sáros were henceforth required to send, instead of cavalry, five arquebus-bearing infantryman for each hundred peasant plots.⁵⁵ If every landowner in the Carpathian Mountains region had provided the corresponding number of soldiers, then – since there were 16–17,000 tax-paying peasant plots in the northern counties – the army would have received about 800 arquebus-bearing infantry soldiers.⁵⁶ (Significantly, it was from this region that infantry was recruited for the country's mercenary army in 1522.)

Paid troops from the free royal towns

Large towns and town alliances sent guns and paid troops of varying numbers in a quota system that has still not been fully investigated. In summer 1526, for example, Louis II requested 25 infantry troops and one gun from Eperjes (Prešov), 75 infantry and one gun from Bártfa (Bardejov), and 100 arquebus-bearing infantry and two guns from Sopron. András Kubinyi considered that these town forces were unlikely to have numbered much more than 1,000, not counting Transylvania. More recent research has found that cash substitute for military service became increasingly common in the second half of the Jagiellonian era, when the possibility of mobilizing urban paid soldiers in person arose only in case of a general Ottoman invasion.⁵⁷

54 *CJH* I. 686–687, 752–753; Holub József, 'Az 1522. évi országgyűlés és törvényei', *Századok* 52 (1918) 508; Márton György Kovachich, *Sylloge decretorum comitialium...* Vol. 1. Pesthini, 1818, 367.

55 *CJH* I. 746–747.

56 I have estimated the number of households in these counties from the tax receipts of 1494–1495; Erik Fügedi, 'Mátyás király jövedelme 1475-ben', *Századok* 116 (1982) 492.

57 Jenő Házi, *Sopron szabad királyi város története*. Vol. I/7. (Oklevelek, levelek és iratok 1521-től 1531-ig). Sopron, 1929, 186–188; Béla Iványi, 'Eperjes városa és az 1526–1528. évi hadjáratok', *Hadtörténelmi Közlemények* 11 (1910) 446–447; Hain Gáspár *Lőcsei krónikája*. Ed. by Jeromos Bal, Jenő Förtes and Aurél Kauffmann. Lőcse, 1910–1913, 32; Kubinyi, 'A mohácsi csata', 96, 100. A more recent survey of the subject: László Szokola, 'Magyarországi városok zsoldos-állításai a Mátyás- és Jagelló-korban', in Csaba Farkas, Tamás Lados, András Ribí and Dorottya Uhrin (eds.), *Magister Historiae II. Válogatott tanulmányok a 2014-ben és 2015-ben megrendezett középkorral foglalkozó, mesterszakos hallgatói konferenciák előadásából*. Budapest, 2016, 122–141.

The local military strength of the Voivodate of Transylvania

Transylvania had its own provincial military organization based on the privileges of the Hungarian, Székely and Saxon “nations”.⁵⁸ The least substantial element was the nobility of the Hungarian counties, because unless there was a general call to arms, they were – as we have seen – obliged to raise only 300 soldiers in the seven counties’ *banderia*.⁵⁹

The Saxons also had an obligation of personal military service, but they could redeem this in money or by raising mercenaries. They provided, on different occasions, between 500 and 5,000 troops of various kinds, including almost the only soldiers in Transylvania who bore firearms at that time. They were responsible for providing recruits and guns for the Transylvanian army. Additionally, instead of providing their own infantry, their wealthy towns could raise paid troops – sometimes cavalry – from different “nations”.⁶⁰

The Székelys were the strongest armed force in Transylvania. Since they collectively counted as nobles, all of them were in principle obliged to serve within the boundaries of the province.⁶¹ Although there are sixteenth-century reports that up to 30–50,000 Székely men bore the obligation to serve in the army,⁶² one Venetian diplomatic report states that Matthias Corvinus had only 16,000 Székely cavalry, armed with lance, shield and bow, “who are known as the best archers in the East, and ride very fast horses,” and only a minority of this force could probably be called up.⁶³ The Transylvanian nations’ military was mainly committed to the defence of the province, and little of it was available for operations beyond the provincial borders.⁶⁴

The noble levy

In 1523, Francesco Massaro, secretary to the Venetian envoy, claimed that 43,000 noblemen lived in Hungary. Today, the number of nobles is estimated at around half that number, 20–21,000. Of these, 12–13,000 or more owned only a single peasant plot and were no better off than peasants. Nonetheless, Act 37 of 1518

58 On the military organization of the Principality of Transylvania, also covering most of the sixteenth-century background: János B. Szabó and Győző Somogyi, *Az Erdélyi Fejedelemség hadserege*. Budapest, 1996.

59 *nobilitas Transsilvanie tota Illc*: C. Tóth, ‘Szapolyai János’, 1009: note 180.

60 László Szokola, ‘Magyarországi városok zsoldosállításának társadalmi és gazdasági háttere a késő középkorban – Az erdélyi városok katonaállítása’, manuscript.

61 Elek Benkő, *A középkori Székelyföld. Vol. I*. Budapest, 2012, 176–179, 186–189, 450–452.

62 Ákos Egyed, ‘A székely hadkötelezettség és hadszervezet, különös tekintettel a XVI. századra’, in Samu Benkő, Lajos Demény and Károly Vekov (eds.), *Székely felkelés 1595–1596. Előzményei, lefolyása, következményei*. Bukarest, 1979, 50.

63 Zoltán Kordé (ed.), *A középkori székelység. Krónikák és oklevelek a középkori székelyekről*. (Múltunk Könyvek) Csíkszereda, 2001, 139, 145, 148; Lipót Óváry, ‘Jelentés olaszországi kutatásaimból’, *Századok* 18 (1884) 509; C. Tóth, ‘Szapolyai János’, 1009: note 181.

64 See Tibor Neumann, ‘Bulgária–Erdély–Temesvár. Szapolyai János és a parasztháború’, in Norbert C. Tóth and Tibor Neumann (eds.), *Keresztesekből lázadók. Tanulmányok 1514 Magyarországról*. Budapest, 2015, 103–154; see also: C. Tóth, ‘Szapolyai János’.

required them, in case of great danger to the kingdom, to turn up for military service in person.

Many petty noble families could not provide a man capable of military service, owing to age and other factors, and many suitable men were already serving as paid soldiers of the *banderia*. Nonetheless, the mustering of 353 troops at Sárospatak on 15 July 1526 suggests that, even if there were serious deficiencies in their combat effectiveness, they could make a significant addition to the numerical strength of the army.⁶⁵

General mobilization of the peasants

In the extreme case, every inhabitant of the country was obliged to report for military duty if the king sent the bloody sword from village to village, proclaiming the general call to arms. Contrary to a long-held belief, this obligation was not repealed after the peasant war of 1514. General preparedness was ordered by the 1526 spring diet (Act 10), and several sources indicate that the king – in an attempt to even out the oppressive numerical superiority of the Ottomans – eventually ordered the peasants in the south of the country to be called to arms.⁶⁶ The limited utility of such temporary soldiers had already been manifested in the defeats of the peasant rebels in 1514 and in the “Croatian Mohács” at Krbava in 1493.⁶⁷

CAVALRY

The late fifteenth century laws on military service were the product of a period when the heavy cavalry held undisputed primacy on the battlefield. This explains the great efforts made to increase the number of domestic heavy cavalry after the foreign mercenaries were discharged in 1493. Fully armoured Hungarian troops, however, did not always stand up well in comparisons with their western counterparts, and seem to have been less well equipped.⁶⁸

According to Francesco de la Zuecha’s report of 1500, the smallest unit of Hungarian cavalry consisted of six horsemen led by one in full armour, which roughly corresponds to the customary formations in Italian armies, the *elmetto* or *corazza*, more common by then than the “lance”, but surviving *banderium*

⁶⁵ Szirmay, *Notitia*, 47.

⁶⁶ *CJHI*. 842–843. Letters from Louis II to Ferenc Batthyány, *ban* of Croatia: Elemér Mályusz, ‘II. Lajos király oklevelei a herceg Batthyány család körmendi levéltárában’, *Levéltári Közlemények* 4 (1926) 80–93.

⁶⁷ Bonfini put the Croats’ losses at 5,077: Bonfini, *A magyar történelem tizedei*, 973–974; Suzana Miljan and Hrvoje Kekez, ‘The Memory of the Battle of Krbava (1493) and the Collective Identity of the Croats’, *The Hungarian Historical Review* 4:2 (2015) 283–313.

⁶⁸ Ippolito d’Este considered that the Hungary’s “heavy cavalry are poor, but her light cavalymen are the best in the world”: Balogh, *Velenczei diplomaták*, XXXIII.

registers show that these units were very varied in Hungary, and we find examples of three- or four-horse units.⁶⁹

According to Bonfini's contemporary description from the 1490s, the heavy cavalry was still fighting in closed squares as in the time of Matthias, but we do not know the tactics employed in subsequent decades and whether any changes were made. After 1492, the peace of the Jagiellonian era did not favour the use of such an expensive branch of arms: only twenty-four of the 3,757 cavalry recruited to defend the southern border in 1523 were heavily armoured, even though such troops were indispensable in combat with the Ottomans.⁷⁰

Knights in armour were still crucial when an army fought a major engagement. The Ottoman chronicles record that the lightly-armed Ottoman cavalry, moving in loose formation, were almost incapable of halting a heavy cavalry charge.⁷¹ Even raids, when carried out on a large scale, required the presence of heavy cavalry. In Pál Kinizsi's incursion into Serbia in 1494, for example, Bonfini records that the various cavalry units were coordinated by the following method: "...the enormous corps of armoured horsemen were sent in advance in slow march, as the guarantee for the whole campaign; in the centre, as was the custom in enemy territory, the soldiers placed their baggage. In the meantime, the light troops galloped far and wide, burning villages, looting houses, pillaging the land, driving out persons of any sex and age, together with their livestock, and gathering in everything to the strong corps of knights."⁷²

Neither is it surprising that the light cavalry still featured prominently in the *banderia*, together with their heavily-armoured counterparts. Their proportions were first stipulated – at 50% – in Act 21 of 1494. Even though the hussars – except in the eleven southern counties – were officially abolished in 1498, theoretically making the heavy cavalry the bulk of the armed forces, the surviving registers show that this condition was never fully achieved, and at least ten per cent of the few known *banderia* were still hussars. The problem shows up in the laws of the 1518 Buda diet, which prohibited the advance of hussars at the expense of horsemen in full armour.⁷³

69 Balogh, *Velenczei diplomaták*, IX; Michael Mallett and John Rigby Hale, *The Military Organization of a Renaissance State: Venice c. 1400 to 1617*. Cambridge, 1984, 70–71. According to the Dalmatian humanist Ludovico Tubero, there were at least three cavalry retainers, and some knights had 15–20 men: Tóth, 'A huszárok', 165.

70 On the heavy cavalry in the Battle of Csontmező in 1490: Bonfini, *A magyar történelem tizedei*, 914; in the Battle of Eperjes in 1491: *ibid.*, 964–965; in the rout of the "Black Army" in 1492: *ibid.*, 970; on the mercenary army of 1523: Kubinyi, 'The Battle of Szávaszentdemeter-Nagyolaszi', 84; note 41.

71 On the fears of the Ottoman leaders (Kemalpaşazade): János B. Szabó (ed.), *Mohács* (Nemzet és Emlékezet) Budapest, 2006, 212; Celalzade Mustafa: *ibid.*, 233.

72 Bonfini, *A magyar történelem tizedei*, 989.

73 The increasing prevalence of the Balkan light cavalry in Venice was also largely due to their low cost: Mallett and Hale, *The Military Organization*, 375–380. 1492: *CJH* I. 89–90; 1498: *ibid.*, 602–605; 1518: Márton György Kovachich (ed.), *Vestigia comitiorum apud Hungaros ... usque ad hodiernum diem celebratorum*. Budae, 1790, 408. We know from Tubero's figures that there were deviations from these proportions in both directions before 1492. Báthori's and

The increase in the numbers of troops required from the *militia portalis* also had the inevitable effect of “lightening” cavalry armour, because under the old laws, the troops raised on 20 households had always been light cavalry. The decree that increased the requirement to one soldier for every 10 households clearly states that the horseman only needed to be equipped with lance and shield, or with bow and quiver. In 1518 the government specified that even wealthier nobles, with 50–100 peasants, were to “equip themselves as hussars, with armour [i.e. mail shirt], helmet and diverse weapons”.⁷⁴

The weaponry of the Hungarian light cavalry at that time was a combination of lance and shield, highly typical of sixteenth-century hussars. This enabled them to take up close combat with the similarly lightly-armed Ottoman cavalry, or with infantry. They were thus not confined to typical light-cavalry duties, and in the frontier region, despite fighting in traditional small, loose formations, they could be effective as battle cavalry if required.⁷⁵

As the old-type heavy cavalry, following the European trend, was increasingly marginalized and completely disappeared in Hungary after 1540, it was replaced by a second-echelon medium cavalry that continued to be known abroad as the “hussar”, but in Hungarian were increasingly referred to as *katona* (soldier) or *lovag* (knight), occasionally as *kopjás lovas* (lancer cavalryman). The improved equipment of these troops enabled them to stand up to Ottoman cavalry who were usually present in superior numbers.⁷⁶ A slightly later example of the effectiveness of their devastating charge was the part played by Hungarian royal hussars in the Battle of Schmalkalden in 1547.⁷⁷

The Hungarian cavalry was a feared opponent of the Ottomans throughout the period. As long as they had effective bridgeheads on the Danube and Sava, the Hungarians could pose a real threat to Ottoman-held areas. In the war of 1500–1503, “the Venetian senators were greatly pleased to make an alliance with the king of Hungary, and it proved very beneficial, because they heard even from Constantinople that the sultan took the feats of the Hungarians seriously

Kinizsi's *banderium* in 1490, for example, consisted solely of light horsemen: Tóth, 'A huszárok', 163–165.

74 Kubinyi, 'Politika és honvédelem', 401. The 1459 law stated that for every 20 households *cum uno armigero ... bene armato, gladio, clipeo, pharetra et arcu, vel lancia teneantur*: Kovachich (ed.), *Vestigia comitiorum*, 335. A similar provision in Act 20 of 1492 also mentions the mail shirt: *CJH* I. 492. Act 2 of 1518 also specified *unum equitem, ad minus lanceam, et clypeum habentes* for the 20-plot rule: *CJH* I. 744–745; on the call to arms under the 10-plot rule: *CJH* I. 814–815, 834–835; on the weaponry of better-off nobles: *CJH* I. 744–745.

75 János B. Szabó, *A középkor magyarországi könnyűlovassága X–XVI. század.* (Studia Militaria Hungarica, 12.) Máriabesnyő, 2017, 231–232, 248–252.

76 Ralf-Peter Ritter, 'Ung. Katona „Soldat”', *Nyelvtudományi Közlemények* 77 (1975) 187–189; Marek Plewczyński, *Obertyn 1531*. Warszawa, 1994, 194–197; S. Tibor Kovács, *Huszárfegyverek*. Budapest, 2010, 75–93, 122–130, 149–157, 221–245.

77 More recently: Barnabás Guitman, 'Fejezetek a schmalkaldeni háború történetéből', *Világtörténet* 2:2 (2014) 295–317; B. Szabó, *A középkor magyarországi könnyűlovassága*, 253–255.

and this distracted his attention from elsewhere.”⁷⁸ The cavalry also fought effectively in Wallachia under John Szapolyai in 1522.⁷⁹

INFANTRY

The laws governing military organization give some guidance on the proportions of cavalry, but provide no hint of why infantry comprised half of the Hungarian army in 1526. Consequently, a plan for an army to attack the Ottomans compiled by an unknown Hungarian leader sometime between 1516 and 1518 is of particular value. It assigns a strikingly greater role to the infantry that is implied by the laws, envisaging an army of 10,000 men, of which 3,000 would be heavy cavalry, 3,000 light cavalry, and the remaining 4,000 infantry, half with arquebuses and the other half with spears. This army was clearly intended for the offensive and, presumably, for open field battle.⁸⁰ The plan also tells us that the archbishop of Esztergom was required to provide 500 infantry, 300 hussars and 200 heavy horsemen rather than the 800 horsemen specified in the 1498 law, and the archbishop of Eger, also legally obliged to keep 800 cavalry, was to bring 500 infantry, 200 hussars and 200 heavy cavalry to the army. These figures presage records made in the 1520s: the archbishop of Kalocsa maintained 500 paid hussars and 300 paid infantry in 1523, and the king, previously required to provide 1,000 cavalry, sent a contingent of 1,000 infantry and 200 cavalry to the army setting out to relieve Jajca (Jajce) in 1525.⁸¹

The relatively cheap arquebus-bearing infantry was excellently suited for fighting the mainly-cavalry armies optimized for the long distances and low population density of Central and Eastern Europe. It was also effective in siege warfare. We do not know of any heavily-armed infantry in the Hungarian *militia portalis*. (Such troops show up only among soldiers hired by the towns.) The few references to infantry in the laws concern only “gunners” (*pixidarii*; in fact, arquebusiers), as in the list of types of troops that may be mobilized for the army included in Act 11 of 1526. There were only three categories: heavy cavalry, hussars and handgunners.⁸²

The traditional peasant weapon was the spear, but there were peasants from all parts of the country, as shows up in records for the year 1514, who used arquebuses in combat. Although the arquebus appears in István Taurinus’ epic poem *Stauromachia* as a weapon of the noble army, used against the peasants armed with spears and bows and arrows, hiding behind their shields, the Zemplén

78 Magda Jászay, *Velence és Magyarország. Egy szomszédság küzdelmes története*. Budapest, 1990, 197.

79 C. Tóth, ‘Szapolyai János’.

80 The ratio of cavalry to infantry was similar in the mercenaries recruited in 1522: Kubinyi, ‘The Battle of Szávaszentdemeter-Nagyolaszi’, 79. There would have been similar proportions in the 15,000-strong attacking force that the Hungarian government intended to tie down the Ottomans’ border defence forces in 1523 while they rebuilt the fortress of Szalánkemén. Its 6,500–7,000 infantry troops, however, would all have come from Bohemian, Moravian and German auxiliary forces: Kubinyi, *ibid.*; Idem, ‘A mohácsi csata’, 83.

81 Kubinyi, ‘The Battle of Szávaszentdemeter-Nagyolaszi’, 79; Idem, ‘Az egyház szerepe’, 97.

82 Act 11 of 1526: *CJH* I. 842–843.

muster of 1526 records the nobles joining the infantry as bearing either arquebuses or spears. Another indication of the spread of firearms is that after the war of 1514, the government attempted to prohibit peasants from owning firearms. In spring 1526, after the Besztercebánya miners' rebellion, miners were prohibited from entering the town with arquebus or other weapon.⁸³ Not even national boundaries interrupted the spread of hand-held firearms: a law had to be passed in Hungary in 1525 to prohibit the export of arquebuses to the Ottoman Empire!⁸⁴

Swiss- and German-type offensive heavy infantry armed with pikes and halberds, often presented as typical in Hungarian literature, were hardly present in the Hungarian royal army.⁸⁵ The Bohemian and Polish *darabonts*, described by the Venetian diplomat Massarro as the best in Central Europe, "stand in armour from head to toe. Most of them have good arquebuses, others have sharp maces made of hard iron, attached to a pole by a chain, like a flail; they can give a blow that can bring down a man in armour. Some carry halberds and shields, and when in combat, always seek contest with the enemy even if the latter is in superior number."⁸⁶ In the 1526 campaign, the Bohemian mercenaries who came to Buda were mostly arquebus-bearing "shooters" (*scopietieri*, *scopetieri*), along with pavise-bearers (*targoni longi et grossi*, *targoni grandi quanto uno huom[o]*), and heavy infantry with pikes and polearms (*armati benissimi con meze piche, longo ferro; armati con meza picha*).⁸⁷

Polish and Czech historians state that only about 25% of these troops were heavily-armed foot soldiers with polearms and standing shields (*tarpajzs* in Hungarian),⁸⁸ and 70–75% of them "shooters", among whom the arquebus had almost universally replaced the traditional crossbow by the end of the fifteenth century.⁸⁹ The Bohemian and Polish infantry mercenaries in service with the Hungarian army thus had much greater numerical firepower than the renowned Swiss or German infantry of the time, of which every fourth or fifth man carried a firearm even in the 1540s.⁹⁰ The Bohemian mercenaries of the king and the count of Szepes were similarly equipped in the 1520s. The family estates of the Szapolyais

83 László Geréb (compil.), *A magyar parasztháborúk irodalma, 1437–1514*. Budapest, 1950, 125–126. Act 60 of 1514: *CJHI*. 732–733; Szirmay, *Notitia*, 47; Gusztáv Heckenast, 'A besztercebányai bányászfelkelés (1525–1526)', *Századok* 86:2 (1952) 387.

84 Act 9 of 1525: *CJHI* I. 830.

85 On Louis II's *landsknecht* guards: Antonín Kalous, 'Elfelegett források a mohácsi csatáról', *Hadtörténelmi Közlemények* 120:2 (2007) 606, 614.

86 Balogh, *Velencei diplomaták*, L.

87 Kalous, 'Elfelegett források', 614.

88 Arkadiusz Przybyłok, 'Pavisemen Armour. Iconography vs. Written Sources', *Acta Universitatis Lodzensis. Folia Archaeologica* 29 (2012) 261–269.

89 Klučina, 'Pohusitské vojenství', 279–280. On the Polish infantry as it developed under strong Bohemian influence: Tadeusz Graberczyk, 'Firearms in the Equipment of Mercenary Troops of the Kingdom of Poland in 1471–1500', *Fasciculi Archaeologica Historicae* 25 (2012) 53–58; Aleksander Böldyrew, 'Hand Fire-arms of the Polish Mercenary Infantry during the Moldavian Campaign of 1538', *Fasciculi Archaeologica Historicae* 25 (2012) 59–66.

90 Gerhard Quaas, *Das Handwerk der Landsknechte. Waffen und Bewaffnung zwischen 1500 und 1600*. Osnabrück, 1997, 144.

were spread through the northern counties of the country, and the proximity of Moravia enabled György Szapolyai to recruit mercenaries from there, as he did in 1514 and was rumoured to have done in 1526.⁹¹ In 1527, the army of his brother King John was mentioned in Venetian reports as including 500 Bohemian mercenaries.⁹²

ARTILLERY

The artillery became an integral part of the Hungarian army under King Sigismund, who for several decades had to contend with the masterful deployment of guns by his Bohemian subjects.⁹³ He established an artillery arsenal in Buda that operated continuously until 1526 and by the early 1500s was using the most advanced European techniques of gun casting.⁹⁴ Heavy artillery pieces were usually taken by ship, along the Danube, to where they were needed – castle sieges and field battles.⁹⁵ The use of firearms was not confined to the royal army; towns and aristocrats also saw their potential, and the artillery left its mark on early sixteenth century Hungarian fortress architecture.⁹⁶

Some sources put the number of large guns in the Hungarian camp at Mohács at fifty-three, others at eighty-five. Since there were approximately 27,000 troops in the army, the artillery was approximately in the proportion recommended by the renowned military writer Count Reinhard zu Solms in the middle of the century. He considered that an army of 20,000 infantry and 6,000 cavalry should have eighteen siege guns and fifty-four field guns.⁹⁷ The Hungarian field artillery at Mohács also included the not inconsiderable firepower of 500–

91 Burgio's report of 31 July 1526: B. Szabó (ed.), *Mohács*, 77. The Szapolyais were well known for taking advantage of the proximity of their estates to recruit Bohemian mercenaries: Ferenc Zay, *János király árultatása*; Péter Kiss, *Magyarázat*; [György Bánffy], *Második János török császárhoz menetele*. (Régi Magyar Könyvtár. Források, 2.) Compiled by József Bessenyei. Budapest, 1993, 28.

92 Marino Sanuto, *I diarii*. Vols. I–LIX. Ed. Nicolò Barozzi, Guglielmo Berchet et al. Venice, 1879–1903, XLV. column 449.

93 László Veszprémy, 'Bombardes, arquebuses et manuscrits de l'art militaire. L'apparition des armes à feu en Hongrie jusqu'en 1526', *Cahiers d'études et de recherches du musée de l'Armée* 6 (2005–2006) 139–154.

94 Károly Belényesi, *15–16. századi ágyúöntő műhely Budán – az ágyúöntés mesterei, technikája és a haditechnika átalakulása a reneszánsztól az újkorig*. PhD Dissertation, ELTE Faculty of Humanities. Budapest, 2014, <http://doktori.btk.elte.hu/hist/belenyesykároly/diss.pdf> (accessed: 29.05.2019).

95 Tamás Fedeles, *A király és a lázadó herceg. Az Újlaki Lőrinc és szövetségesei elleni királyi hadjárat (1494–1495)*. (Szegedi Középkortörténeti Könyvtár, 27.) Szeged, 2012, 61–63, 67–91.

96 See the chapter by Gergely Buzás in this book.

97 Hieronimo di Zará's report: Sanuto, *I diarii*, XLIII. column 274; István Brodarics, 'Igaz történet a magyarok és Szulejmán török császár mohácsi ütközetéről (translated by Péter Kulcsár)', in B. Szabó (ed.), *Mohács*, 147. Letter from István Brodarics to Péter Tomiczky, Polish vice-chancellor, 6 September 1526: Adam Titus Dzialynski [Zygmunt Celichowski] (ed.), *Acta Tomicianiana. Epistole, legationes, responsa actiones, res geste ... Sigismundi ... I. Regis Polonie*. Vols. I–XVIII. Poznań, 1852–1999 (= *Acta Tomicianiana*), VIII. 220, 229; Kalous, 'Elfeleltett források', 615–616; cf. Quaa, *Das Handwerk*, 162.

600 “Prague” arquebuses à croc.⁹⁸ (The walls of Vienna were defended by only 360 arquebuses à croc in 1557.)⁹⁹

TACTICS

Although the Jagiellonians established their rule in 1490 by force of arms,¹⁰⁰ the din of battle subsided after 1494 and – despite recurrent resumptions of the state of war – there was no major, national trial of strength until the great Ottoman war erupted in 1521.

The famous Polish general of the time, Jan Tarnowski (who also came to Hungary with the European armies that marched against the Ottomans in 1521), considered that the strength of Christian armies fighting the Turks lay in their infantry.¹⁰¹ Hungarian tactics at the time, however, were certainly based on the cavalry, and it was the Hungarian heavy cavalry that the Ottomans themselves feared most. Ottoman chroniclers several times recorded worries about the irresistible armour-clad Hungarian heavy cavalry, and illustrators painted masses of armoured knights in the manuscripts, as if the Christians had no light cavalry similar to their own.¹⁰²

The example of the neighbouring Bohemians, however, prompted the Hungarians to assign an increasing role to the artillery and to infantry armed with crossbows and – overwhelmingly after the turn of the sixteenth century – hand-held firearms. Even the use of war wagons was adapted in the Hungarian army. The infantry during this period never exceeded the cavalry in numbers, however, and only rarely made up more than a third of the army.¹⁰³

The mass of cavalry provided the Hungarian forces with great manoeuvrability at tactical and operational levels. In 1526, for example, the voivode of Transylvania, John Szapolyai, asked the town of Beszterce for mounted arquebusiers, effectively dragoons. They were capable of moving with the same rhythm as the cavalry, a novelty in Europe at this time.¹⁰⁴ This mobility showed up well in Syrmia in 1523,

98 József Kelenik, ‘Szakállas puskák XVI. századi magyarországi inventáriumokban. A terminológia problémái’, *Hadtörténelmi Közlemények*, New Series 35:3 (1988) 500–501.

99 György Domokos, ‘A kassai királyi hadszertár fegyverzete és felszerelése a XVI–XVII. században az inventáriumok tükrében’, *Hadtörténelmi Közlemények*, New Series 117:3 (1997) 17.

100 See note 4.

101 Vernon J. Parry, ‘La Manière de Combattre’, in Vernon J. Parry and Malcolm Edward Yapp (eds.), *War, Technology and Society in the Middle East*. London, 1975, 223.

102 Géza Fehér, *A magyar történelem oszmán-török ábrázolásokban*. Budapest, 1982, Plates 4, 14, 16, 17, 27 and 63.

103 János B. Szabó, ‘A huszita hadviselés hatása és adaptációja Kelet-Közép-Európában’, in Attila Bárány and László Pósan (eds.), ‘*Causa unionis, causa fidei, causa reformationis in capite et membris*’. *Tanulmányok a konstanzi zsinat 600. évfordulója alkalmából*. Debrecen, 2014, 432–441.

104 Letter from John Szapolyai, voivode of Transylvania, to Louis II, Szászsebes, 16 March 1526 and letter from John Szapolyai to the Beszterce council, Szászsebes, 10 June 1526: Tibor Neumann, *A Szapolyai család oklevéltára I. Levelek és oklevelek (1458–1526)*. (Magyar Történelmi Emlékek, Okmánytárak.) Budapest, 2012, 515, 524; cf. Marco Merlo, ‘Teoria e pratica militare nel XV secolo: leques scoppietarius nei manoscritti di Mariano

for example, when the Hungarian king's 4,000 troops were victorious over a 10–12,000-strong Ottoman invading force, breaking them into units and destroying them one by one. Allegedly, only a few thousand attackers made it back to the south side of the Sava.¹⁰⁵

The dominance of highly mobile cavalry also had disadvantages on the battlefield. In the middle of the sixteenth century, Hyeronym Faleti, an envoy of the duke of Ferrara, wrote of the Hungarian light cavalry, the hussars, that “when these soldiers engage, it is their custom to attack first with ferocious strength and take positions with audacious courage, but they do not remain in formation side by side, and instead wander in disarray, so that when the enemy squadrons attack, they readily flee.”¹⁰⁶

Similarly to the light cavalry, lightly-armed troops also had an important place in the infantry. A good example of flexible cooperation between infantry and cavalry is the Hungarian military expedition that set off to resupply – and ultimately succeeded in relieving – the besieged castle of Jajca in 1525. In the mountainous terrain, the commander of the convoy, Count Kristóf Frangepán, sent the mobile arquebusiers ahead to take the high points and secure the route of the slowly-moving convoy. In this combat, even the hussars had to fight on foot. When the besieging Ottomans resolved to attack the relieving force, Frangepán's cavalry lured the Bosnian governor's cavalry on to the arquebusiers, who allegedly fired five hundred rounds before the attackers ran off. The Hungarians thus broke through the encirclement and took supplies into the castle.¹⁰⁷

It was only shortly afterwards that Sultan Süleyman, in one of the largest open battles in sixteenth-century Europe, dealt the decisive blow to the Hungarian armies at Mohács. Louis II himself fell while fleeing after the defeat.¹⁰⁸

THE BATTLE OF MOHÁCS (29 AUGUST 1526)¹⁰⁹

The Ottoman-Hungarian wars that resumed in 1521 came to a decisive climax at Mohács, on the Danube, on 29 August 1526.¹¹⁰ That day, 12–13,000 cavalry and 12–13,000 infantry troops were concentrated on the Hungarian side, accompanied by 5,000 wagons and 15,000 draught horses. Their armoury

Taccola e i primi archibugieri a cavallo', *Rivista di Studi Militari* (2014) 47–70; Idem, 'Innovazione tecnica nella guerra del Quattrocento tra teoria e pratica', *Rivista di Studi Militari* (2015) 21–43.

105 Kubinyi, 'The Battle of Szávaszentdemeter-Nagyolaszi', 105–114.

106 Árpád Károlyi, 'Magyar huszárok a schmalkaldi háborúban', *Századok* 10 (1877) 649: note 2.

107 Lajos Thallóczy, *Jajcza (bánság és vár) története (1450–1527)* (Monumenta Hungariae Historica, I; Diplomataria, XL.), charters edited by Sándor Horváth. Budapest, 1915, CCXLII–CCXLIII.

108 B. Szabó, *Mohács*, 105–118; Idem, 'II. Lajos halálának helyszíne: táj és orális hagyomány', *Hadtörténelmi Közlemények* 132:2 (2019) 443–453.

109 The summary is based on a detailed account of the battle: János B. Szabó and Ferenc Tóth, *Mohács, 1526 – Soliman le Magnifique prend pied en Europe centrale*. Paris, 2009; B. Szabó, *Mohács. Régi kérdések – új válaszok*.

110 On the Ottoman-Hungarian war that started in 1521: Pálosfalvi, *From Nicopolis*, 372–444.

included 500 heavy “Prague” arquebuses à croc and eighty-five cannons. At least another 15,000 Bohemian, Croatian and Transylvanian troops were making their way towards Mohács, but they did not arrive in time to join Louis II, king of Hungary and Bohemia, before the battle. Even without them, however, this was one of the largest concentration of forces in the history of medieval Hungary. Nearly all of the peoples of Central Europe were represented in the camp: the Hungarians were joined by Croatian, Serbian, Slovak, Bohemian, German and Polish troops.

It was a very substantial force by the standards of Europe at that time, but Sultan Süleyman’s superb troops still outnumbered them by two to one. The Hungarians were arranged in two formations, arranged with their left flank on the marshy flood plain of the Danube and spread out widely, to prevent the Ottoman army from extending beyond their right flank. Most of the infantry and light cavalry – some 15–20,000 troops – were arranged in two wings in the first formation. All the guns that had been unloaded in time from the Danube ships were placed between the light cavalry and the infantry. Behind these came the second formation, with the king at the centre, surrounded by the dignitaries and their units, and a thousand armoured horsemen at the rear. Lightly-armed cavalry took up positions on each side of the second formation, with small infantry units defending the flanks. A small squadron of light cavalry was assigned to protect the king himself and cover his flight. Since there were hardly any infantry troops suited for offensive action, the original idea seems to have been for the powerful troops in the second formation to be held in reserve for a counter-attack. This would have been an appropriate arrangement for the infantry, who were armed mainly with arquebuses, crossbows and bows and were more at home in defensive combat from a distance.

The manoeuvres performed by the Ottomans changed all this. Although preliminary skirmishes had been going on for three days, Süleyman was also preparing for battle on 29 August. His forces made their way slowly over the difficult terrain towards the already-assembled Hungarian army. Leading the way was Grand Vizier Ibrahim Pasha’s Rumelian corps reinforced with 4,000 janissaries and 150 guns, and even they only arrived at the edge of the plateau around the Mohács plain around midday. Ibrahim Pasha’s force of 30–40,000 troops was itself larger than the Hungarian army, but he decided that his army was too tired to fight. He therefore sent a 7–10,000-strong detachment of light cavalry to lie in ambush behind the Hungarians, ordering his other troops to wait in battle order opposite the Hungarian right flank while the servants set up camp.

The encircling manoeuvre was soon detected, however. To avoid breaking up the battle order, Pál Tomori, bishop of Kalocsa and commander-in-chief of the Christian forces, sent the king’s guard of lightly-armed guard troops to reconnoitre the enemy. They engaged with the intruders but could not withstand the numerically superior Ottoman raiders, who went on to attack the Hungarian camp and the rear of the Hungarian army throughout the battle.

Tomori and his fellow commanders were convinced of the unlikelihood that Süleyman’s whole army would arrive on the battlefield that day, but they counted

on an Ottoman attack. Seeing how slowly the enemy was marching, however, and possibly observing the Rumelian troops making preparations for camp, they decided that the battle should not be postponed and that the enemy should be provoked to attack before the rest of its army arrived.

Accordingly, at the time of Muslim afternoon prayers, the right flank of the first Hungarian formation, led by Ferenc Batthyány, *ban* of Croatia, launched an attack on the Ottomans. They drove off the Ottoman cavalry covering the camp as far as the guns set up in the centre of the Rumelian corps, but the barricade set up in front of the guns deflected the attack. The Hungarian light cavalry turned away from the janissaries defending the guns and wheeled round to face the Rumelian cavalry arranged alongside, breaking through the lines at several points. Some got as far as breaking into the Ottoman camp, setting off a flight towards the sultan.

To follow up this success, the second formation also entered the fray and started to encircle the Rumelian corps. The infantry of the right flank soon reached the guns. It soon became apparent, however, that the Hungarian commanders had delayed too long, because Sultan Süleyman's entire army, after a forced march, was arriving on the battlefield, and spread out in its accustomed order, the court salaried troops in the centre around the sultan and the Anatolian forces on the right. The Hungarian left flank held up in the new situation, but the armoured cavalry of the second formation eventually abandoned their attack on the Rumelians. Most of them probably turned on the Anatolian corps, but one section confronted the sultan's retinue. The volleys of the janissaries around the sultan, however, forced the Hungarians back. In the words of the Ottoman chronicler Kemalpaşazade, "three Ahriman-[devilish-]sized drunken knights holding shining lances broke through the lines standing in their way as a bolt of lightning splits the cloud and appeared frighteningly before the sun of the sky of the caliphate [the sultan]."¹¹¹ The guards, however, brought them down.

After the failed attack, troops started to flee the battle in increasing numbers, and the remnants of the Hungarian army broke in two. Most of the cavalry joined the left flank, while the completely encircled infantry of the right flank fought on, allegedly falling to the last man. The Hungarian forces gathered on the left flank launched another assault on the Anatolian corps, but this desperate attempt failed, and the overwhelmingly superior Ottomans gradually forced the Hungarians on to the marshes of the Danube flood plain. The Bohemian and Polish professional infantry, assembled into a square, managed to repulse the Ottoman cavalry for a while, but most of them were eventually cut down by janissary arquebus balls.

The struggle went on until dusk, and was ended by a sudden downpour. Any cavalry troops who were able went into flight. Not believing that they had finished off the Hungarian army, the Ottomans stayed at the ready all night, the

111 János B. Szabó and Gábor Farkas Farkas (eds.), *Örök Mohács: szövegek és értelmezések*. (Mohács 1526–2026: Reconstruction and Remembrance) Budapest, 2020, 334.

sultan staying on his horse until midnight. In fact, they no longer had anything to fear.

According to a report by Chancellor Brodarics, the Hungarian army, fighting a force several times larger than itself, lost 4–5,000 cavalymen, and only 2,000 of the infantry remained alive. There were reports that 1,500–2,000 men had fallen into Ottoman captivity, and that they were systematically executed by the victors after the battle. The commanders of the two flanks escaped, but the commanders-in-chief of the Hungarian army fell, as did seven prelates and many aristocrats. Louis II disappeared in the chaos of battle, and his fate emerged only later: in flight, his wounded horse had abandoned him in a marsh near the village of Csele, and he drowned in the water. The defeat decapitated the government of Hungary. The sultan proceeded unopposed to Buda, and the only reason that he did not make a vassal out of the conquered country was that there was nobody to surrender to him. As autumn came, he evacuated the city, which he considered impossible to defend, together with most of the Hungarian territory he had taken. Only in the strategically important Syrmia, between the Danube and the Sava, did he maintain an occupying force.

The country, however, had lost much of its ability to resist. In 1527 and 1528, John I (1526–1540), the king elected after Süleyman's withdrawal, was unable to defend his throne from another claimant, Ferdinand of Habsburg, archduke of Austria, who was much weaker than the Ottomans. Having started out in possession of more than 90% of the territory of the kingdom, John was driven out in hardly more than six months, and in 1529, he finally put his fate in the hands of the Ottoman Empire.

THE RIVER FLEET

Although the Hungarian kings controlled the substantial Adriatic coastline of Dalmatia, occasionally bringing them into conflict with Venice, they never put any effort into stationing a major naval force there. This contrasted with the southern border of the kingdom, where according to a Byzantine chronicler, the waters of the Danube and the Sava were veritable “moving bastions made of water” and presented a major obstacle to Byzantine military operations in the wars of the twelfth century.¹¹²

No enemy could cross these wide rivers without ships, except when they froze over in winter. In the early sixteenth century, they were spoken of in similar terms as the Russians' famous “General Winter”. Tomasso Daniero, ambassador of Modena, wrote, “This kingdom's strong bastion is the Danube,

112 Mátyás Gyóni, *Magyarország és a magyarság a bizánci források tükrében*. Budapest, 1938, 25; János B. Szabó, *Háborúban Bizánccal: Magyarország és a Balkán a 11–12. században*. Budapest, 2013, 104–105, 121–126, 135–138.

and it is said that the Turk [sultan] often mentions that the Hungarians have a good captain and two good officers, the Danube, and the Drava and Sava.”¹¹³

Consequently, when the Ottoman Empire established a border with Hungary in this region, both sides stationed a river fleet on the Danube and its tributaries to prevent each other's forces from crossing. This duty was performed by small warships of the kind that were first built for the Danube by Dutch craftsmen brought by King Sigismund. It was a type of ship known as *naszád* in Hungarian and *şayka* in Turkish. In the second half of the fifteenth century, there were 1,000–1,500 *naszád* troops serving on 30–40 ships of the Hungarian royal fleet.¹¹⁴

SUMMARY

The late medieval Kingdom of Hungary went through significant economic and demographic development in the fourteenth and fifteenth centuries, benefiting from the general economic growth in Central and Eastern Europe. This enabled the kingdom to retain its positions in the region throughout the rule of successive foreign dynasties, with their long periods of civil war and a series of Ottoman attacks. During the reign of Matthias Corvinus, Hungary again established itself as a major aggressive power. Gradually overshadowing this, however, was the advance of the Ottoman Empire along the southern borders. The adoption of military innovations, the continuously expanding border defence system and the great efforts invested in maintaining combat readiness among the population, finally exhausted the resources of the state and ultimately proved inadequate against Ottoman military strength.

Only the integration of the Central European powers in facing up to the Ottoman threat could have provided a way out of this crisis. The Jagiellonian dynasty did manage to link up the crowns of Hungary and Bohemia, but the substantial material and military potential of the lands of the Bohemian crown were never fully available for the defence of the increasingly threatened Hungarian realm. The Battle of Mohács broke the resistance of one of the Ottoman Empire's hitherto most tenacious opponents, the Kingdom of Hungary, and marked the end of the rule of the Jagiellonian dynasty there. John Szapolyai's attempt at ruling the country could not resist even the much weaker pressure of the Habsburgs, and in a very short time, while remaining king, he sank to being a puppet of Sultan Süleyman. Set against him, under the protection of Emperor Charles V of Spain, Ferdinand of Habsburg, archduke of Austria, gradually integrated the Hungarian and Bohemian lands, now with the addition of Austria, into a new kind of complex monarchy.

¹¹³ Report by Daniero Tomasso, 22 October 1501: *Modenai és velencei követek jelentései Magyarország földrajzi és kulturai állapotáról a XV. és XVI. századból*. Budapest, 1881, 10 (translated by Péter Erdősi).

¹¹⁴ Jenő Szentkláray, *A dunai hajóhadak története*. Budapest, 1885, 49–98.

Bence Péterfi

THE MILITARY ORGANIZATION AND ARMY OF THE HOLY ROMAN EMPIRE (1493–1532)

THE BACKGROUND

“It may happen that the cities unite with the princes to favor the enterprises of the Emperor, or that they desire to do so by themselves, which would be quite Sufficient. But neither cities nor princes would like the aggrandizement of the Emperor; for if he ever had any states of his own, or were to become powerful, he would so subdue and abase the princes, and would reduce them to that degree of obedience, that he could avail himself of them at his will, and not when it suited them.” These are the words of the famous Niccolò Machiavelli appraising the internal affairs of the Holy Roman Empire (*Rapporto di cose della Magna*, 1508).¹ Modern historians take a similar view: the Holy Roman Empire was a peculiar form of state, headed by a single monarch, but other political figures within it, including church and secular dignitaries, enjoyed much greater autonomy than their counterparts in the French, English or even Spanish monarchies.²

The Holy Roman Empire assumed the mantle of its ancient predecessor in more than name alone: many contemporaries saw it as embodying the idea of *translatio imperii*. Unlike ancient Rome, however, the medieval Holy Roman Empire was not a precisely delineated geographical entity. It was more of an ideal rooted in antiquity and the early Middle Ages, and as an institution it was analogous to the church. Common or “empire-wide” ventures were always

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- 1 *The Historical, Political, and Diplomatic Writings of Niccolo Machiavelli. Vols I–IV.* Translated by Christian E. Detmold. Boston, 1882, IV. 385.
- 2 Joachim Whaley, *Germany and the Holy Roman Empire. Vols I–II.* (Oxford History of Early Modern Europe) Oxford, New York, 2012, I. 2. For a short summary of the historiography of the research on the Holy Roman Empire, see Len Scales and Joachim Whaley, ‘Introduction. Rewriting the History of the Holy Roman Empire’, *German History* 36 (2018) 331–346.

difficult to pursue in such a geographical and legal mosaic, with constant tensions among local dynasties and other political figures, some with their eyes on the imperial throne. After the Lutheran Reformation, this imperfect harmony was further poisoned by confessional conflicts that raged for a long time, ending only with the Peace of Westphalia.³

Our period – the turn of the fifteenth and sixteenth centuries and the following two or three decades – was a time of transformations driven by the Reformation and the great geographical discoveries, while the advance of official bureaucracy was a phenomenon that pervaded the (early) modern age. Historical surveys covering the whole of the early modern or modern periods usually take as their starting point either the death of Holy Roman Emperor Frederick III of Habsburg (1440–1493) in 1493, leaving his son Maximilian I (1493–1519) in sole control as king of the Germans, or the key imperial diet (*Reichstag*) of Worms in 1495.⁴ Others assign the era of Maximilian I to the late medieval period, despite its undoubted early-modern developments.⁵ Some medievalists understandably draw the boundary of the late Middle Ages at the publication of the Lutheran doctrines in 1517.⁶ There can be no doubt, however, that Maximilian's grandsons Emperor Charles V (1519–1555) and his brother and successor on the imperial throne Ferdinand (archduke of Austria: 1521–1564, king of Hungary and Bohemia: 1526–1564, emperor: 1556–1564) represent the early modern age.

TERRITORY AND POPULATION

That the empire acquired very clear secular foundations⁷ was primarily the consequences of early modern developments. Nonetheless, the German Golden Bull of 1356 (which established the list of electors – the archbishops of Cologne, Mainz and Trier, the king of Bohemia, the duke of Saxony, the count palatine of the Rhine and the margrave of Brandenburg) and the imperial diets of Worms (1495) and Augsburg (1500) were crucial steps along the way. The idea of “reform” of the empire (*Reichsreform*) had already arisen during the rule of Sigismund of Luxemburg (1411–1437) in the 1420s, but until the 1490s it was repeatedly put off

3 For a recent survey of this, see Mathias Schmoeckel, ‘Holy Roman Empire of the German Nation’, in Heikki Pihlajamäki, Markus D. Dubber and Mark Godfrey (eds.), *The Oxford Handbook of European Legal History*. Oxford, 2018, 358–378.

4 Peter Moraw, *Von offener Verfassung zu gestalteter Verdichtung. Das Reich im späten Mittelalter (1250 bis 1490)*. (Propyläen Geschichte Deutschlands, 3.) Berlin, 1985 and Heinrich Lutz, *Das Ringen um deutsche Einheit und kirchliche Erneuerung. Von Maximilian I. bis zum Westfälischen Frieden (1490 bis 1648)*. (Propyläen Geschichte Deutschlands, 4.) Berlin, 1983. Taking the starting point at 1493: Whaley, *Germany*. Identifying 1495 as the lower boundary: Peter H. Wilson, *The Holy Roman Empire (1495–1806)*. New York, 2011.

5 The last, fourteenth subseries of the series *Regesta Imperii* is a publication of sources on the era of Emperor Maximilian I: Hermann Wiesflecker (ed.), *Regesta Imperii XIV. Ausgewählte Regesten des Kaiserreiches unter Maximilian I. (1493–1519)*. Bd. I–IV. Wien, Köln, 1990–2004.

6 Heinrich Pleticha (ed.), *Das ausgehende Mittelalter (1378–1517)*. (Deutsche Geschichte, 5.) Gütersloh, 1982.

7 See Moraw, *Von offener Verfassung*, 21–22.

by either the emperor or the imperial estates. In the mid-1490s, reform suited both sides. King Maximilian I sought money for his wars, for which there was a pressing motivation: the appearance of French troops in North Italy in 1494. Among the complaints of the imperial estates was that their feudal lords were excessively driven by their own dynastic aspirations. The imperial diet of Worms in 1495 passed several measures of empire-wide significance: its proclamation of “eternal public peace” (*Ewiger Landfriede*) was an attempt to eliminate feuds (*Fehde*), and it also set up the “imperial chamber court” (*Reichskammergericht*), completely independent of the highest feudal lord, the emperor, with judges appointed by the imperial estates (half of them of noble birth and the other half trained lawyers) and a president appointed by the emperor. Decisions on making peace or starting war were in principle to be made by the annual imperial diets, whereby the imperial estates further attempted to strengthen their positions.⁸ An important development of later years was the written formulation of the terms of Charles V’s election in 1519, a kind of basic law that limited the power of the emperor; this eventually became a permanent tradition.⁹

The “members” of the empire were undoubtedly those who took part in the symbolic events (coronation, oath of fealty, imperial diet, etc.).¹⁰ The first “official” register of the empire’s “component parts,” however, dates only from 1422:¹¹ it is a list of imperial lands that provided soldiers for the war against the Hussites approved at the imperial diet of Nuremberg that year, a kind of list of quotas (*Reichsmatrikel*, i.e. “imperial register”). This only gives names, however, and not descriptions of borders.¹² There were subjects who owed fealty to more than one feudal lord, in some cases, a lord that did not belong to the imperial structure. And some were “absent with leave.”¹³

No better illustration of how the past was connected to the present is the status of the three prelates designated as imperial archchancellors: the archbishop of Mainz for the German lands (*sacri imperii per Germaniam archicancellarius*), the archbishop of Trier for Burgundy (*sacri imperii per Galliam et regnum Arelatense archicancellarius*), and the archbishop of Cologne for Italy (*sacri imperii per Italiam archicancellarius*). By the turn of the fifteenth and sixteenth century, only the archchancellorship of the archbishop of Mainz had any meaning. In North Italy, the states of Savoy, Milan, Modena, Parma, Genoa, Lucca, Pisa, Florence and Siena continued to regard the emperor as their feudal lord. The main difference from the German lands of the empire was that the

8 Whaley, *Germany*, I. 29–36.

9 Horst Rabe, *Reich und Glaubensspaltung. Deutschland (1500–1600)*. (Die Neue Deutsche Geschichte, 4.) München, 1989, 74–75; cf. Wolfgang Burgdorf (ed.), *Die Wahlkapitulationen der römisch-deutschen Könige und Kaiser (1519–1792)*. (Quellen zur Geschichte des Heiligen Römischen Reiches, 1.) Göttingen, 2015, 10–12, 21–31.

10 See Barbara Stollberg-Rilinger, *Des Kaisers alte Kleider. Verfassungsgeschichte und Symbolsprache des Alten Reiches*. München, 2008, 11.

11 Moraw, *Von offener Verfassung*, 43.

12 See Schmoeckel, ‘Holy Roman Empire of the German Nation’, 372.

13 I have more to say on this below.

Italian (city-)states did not attend the imperial diets and remained outside the system of imperial circles (*Reichskreise*) that appeared in the early sixteenth century.¹⁴

The Swiss cantons had a different position: by the late Middle Ages, they had completely left the empire, and after 1471 did not even send deputies to the imperial diet. Even the imperial cities close to the Swiss lands, Basel and Schaffhausen, stayed away after 1530. Although the Swiss formally remained in the empire and insisted on their most ancient privileges, they made clear at the turn of the fifteenth and sixteenth centuries that they did not wish to be part of the imperial reform aimed at improving cooperation among far-flung lands. The Swiss Confederacy officially left the empire only under the Peace of Westphalia of 1648, as did the northern Netherlands.¹⁵

The Burgundian succession was claimed by both the Habsburgs (through the fortunate marriage of Maximilian I) and Louis XI of France (1461–1483). Under the Peace of Senlis (1493) that ended the War of the Burgundian Succession (1477–1493), Charles VIII of France (1483–1498) and Holy Roman Emperor Frederick III were obliged to share this valuable territory. Although the Dutch did not extricate themselves from the imperial reforms (e.g. the formation of imperial circles), the Habsburgs, in their own interests, afforded the Netherlands special treatment. This, and the French threat, meant that the Netherlands had little fear of discipline by the imperial estates, especially after the country was exempted from any kind of imperial obligation or jurisdiction in 1548.¹⁶

There are many other examples of this “fluid” structure and its incompletely-defined details. The duke of Lorraine was a vassal of the emperor, but his possession of the Duchy of Bar also made him a subject of the king of France. In the north, the Danish crown held Holstein as an imperial vassal, while Holstein’s northern neighbour Schleswig had no higher lord than the king of Denmark.¹⁷ The situation was similar in the Bohemian–Hungarian branch of the Jagiellons. Bohemia belonged to the empire, Hungary did not. The Habsburgs’ “core lands” were full members of the empire, but many of their possessions lay outside it, including a large minority of the lands of Burgundy, the whole of the Spanish Monarchy and the Spanish colonies outside Europe.¹⁸

In reality, apart from an ideal that faded with time or adapted to reality,¹⁹ what chiefly bound the empire together was the chain of allegiance leading downwards from the emperor (*Personenverband*).²⁰ This is what may have

14 Rabe, *Reich*, 13–14; Whaley, *Germany*, I. 20.

15 Rabe, *Reich*, 14–15; Whaley, *Germany*, I. 21.

16 Rabe, *Reich*, 15–16; Whaley, *Germany*, I. 21–22.

17 Whaley, *Germany*, I. 21–22.

18 Lutz, *Das Ringen*, 29–30.

19 On the unravelling and transformation of the medieval ideology, see Lutz, *Das Ringen*, 135–138; Len Scales, *The Shaping of German Identity: Authority and Crisis, 1245–1414*. Cambridge, 2012.

20 Whaley, *Germany*, I. 51.

underlain the aptly identified “parallel worlds” which, much more than conflict or cooperation, were characteristic of the great questions faced by the empire in the late Middle Ages.²¹ The association of the “German nation”²² with the Holy Roman Empire became well established at the turn of the fifteenth and sixteenth centuries (the “Holy Roman Empire of the German nation”), but this could certainly not have been the result of some early manifestation of national pride in the modern sense. Apart from anything else, the organizing power of the empire was a system of feudal bonds based on a fundamentally different outlook.²³

Peter Moraw has identified various categories by which the position of imperial subjects relative to the Habsburg emperor may be ranked.²⁴ The most important were the core territories of the monarch’s own dynasty and the associated interests. Second came the provinces of rival dynasties; third, the territories of the electors, and fourth, the imperial subjects that were close to the emperor (*königsnah*). Then came those that were open to him (*königsoffen*)²⁵ and those that were remote from his aims (*königsfern*). Lands having close relations with the emperors were Franconia, the lands of the middle Rhine and the lower Main, part of Swabia, and the smaller part of the lower Elbe. Neutral lands were those along the upper and middle courses of the Rhine. Lands finding little in common with the monarch and maintaining a distance from him lay to the south-west and west.²⁶

In the second half of the fifteenth century, the emperor’s staff and those within his wider orbit had a broadly South German/Upper German composition.²⁷ Understandably, Frederick III and Maximilian spent much of

21 Moraw, *Von offener Verfassung*, 176.

22 On the genesis of the term “German nation”, see, for instance, Claudius Sieber-Lehmann, “Teutsche Nation” and Eidgenossenschaft. Der Zusammenhang zwischen Türken- und Burgunderkriegen.’ *Historische Zeitschrift* 253 (1991) 561–602.

23 Cf. Whaley, *Germany*, I. 50–57; Schmoeckel, ‘Holy Roman Empire’, 371–373. On new arguments concerning the cohesion of the Holy Roman Empire in the early modern period from the view of economic history, see Oliver Volckart, “The Dear Old Holy Roman Realm, How Does it Hold Together?” Monetary Policies, Cross-cutting Cleavages and Political Cohesion in the Age of Reformation’, *German History* 36 (2020) 365–386.

24 Peter Moraw, ‘Franken als königsnaher Landschaft im späten Mittelalter’, *Blätter für deutsche Landesgeschichte* 112 (1976) 125.

25 Moraw, ‘Franken’, 125.

26 Moraw, *Von offener Verfassung*, 175. On the foundations of the reign of Maximilian I, see Hermann Wiesflecker, *Kaiser Maximilian I. Das Reich, Österreich und Europa an der Wende zur Neuzeit*. Bd. I–V. Wien–München, 1971–1986, V. 53–54.

27 Moraw, *Von offener Verfassung*, 175. Fundamental for the era of Frederick III: Paul-Joachim Heinig, *Kaiser Friedrich III. (1440–1493). Hof, Regierung und Politik*. Bd. I–III. (Forschungen zur Kaiser- und Papstgeschichte des Mittelalters. Beihefte zu J. F. Böhmer, Regesta Imperii, 17.) Köln, Wien, 1997; see also Heinz Nollatscher, *Räte und Herrscher. Politische Eliten an den Habsburgerhöfen der österreichischen Länder (1480–1530)*. (Beiträge zur Sozial- und Verfassungsgeschichte des Alten Reiches, 14.) Mainz, 1999.

their time in this region,²⁸ which constituted the economic base for their rule as well as providing political support. Frederick III did not go anywhere outside the borders of his Habsburg provinces for forty-four years of his fifty-three year reign.²⁹ His son Maximilian I travelled much more widely, but the real change came when Charles V, who had grown up under the supervision of his aunt in the Netherlands, ascended to the throne in 1519. His rule may be divided into four periods by his place of residence³⁰ and practice of government: in the 1520s, he was resident in the Kingdom of Spain and his younger brother, Archduke Ferdinand of Austria and the Imperial Government (*Reichsregiment*) assisted him in government. The second period was from 1532 to 1540, when Charles remained on Spanish lands and the empire continued to be run by Ferdinand, but by then as king of the Germans, unshackled by any body of the imperial estates. After a brief period (1541–1543), the conflict that flared up in Flanders caused the emperor to return to imperial territory, and from then until his abdication in 1556, he moved between the Netherlands, the Kingdom of France and other imperial lands.³¹ At the beginning of his rule, facing the antipathy of the Spanish estates, Charles V surrounded himself with Flemish counsellors from the milieu he was used to, but Spaniards gradually gained a substantial role in his court.³² Persons from Spanish lands also appeared in provinces governed by his brother, Archduke Ferdinand I, who had grown up in Spain.³³

This fragmentation alone frequently encouraged emperors in the Middle Ages and the (early) modern age to give priority to their own family interests (*Hausmachtpolitik*).³⁴ Such considerations were behind Maximilian of Habsburg's marriage to Mary of Burgundy and the marriage contract made with the Hungarian–Bohemian branch of the Jagiellons in 1515, both aimed at increasing the dynastic lands of the Habsburgs.³⁵ These bold ambitions must be

28 Cf. Heinig, *Kaiser Friedrich III*, III. 1347–1389; Viktor von Kraus, 'Itinerarium Maximiliani I. (1508–1518) mit einleitenden Bemerkungen über das Kanzleiwesen Maximilians I', *Archiv für österreichische Geschichte* 87 (1899) 229–318.

29 Susanne Wolf, *Die Doppelregierung Kaiser Friedrichs III. und König Maximilians (1486–1493)*. (Forschungen zur Kaiser- und Papstgeschichte des Mittelalters. Beihefte zu J. F. Böhmer, *Regesta Imperii*, 25.) Köln, Weimar, Wien, 2005, 14.

30 Cf. Manuel Foronda y Aguilera, *Estancias y viajes del Emperador Carlos V, desde el día de su nacimiento hasta el de su muerte*. [Madrid,] 1914.

31 Christine Roll, 'Die "kaiserlosen Zeiten" im Reich – zu einigen Aspekten der Reichsregierung Karls V. absente imperatore', in Alfred Kohler, Barbara Haider and Christine Ottner (eds.), *Karl V. (1500–1558). Neue Perspektiven seiner Herrschaft in Europa und Übersee*. (Zentral-europa-Studien, 6.) Wien, 2002, 263.

32 Alfredo Alvar Ezquerro, 'Der Prozeß der Akzeptanz einer fremden Dynastie', in Kohler, Haider and Ottner (eds.), *Karl V. (1500–1558)*, 105–122; see also José Martínez Millán, 'Der Hof Karls V. Das Haus des Kaisers', in *ibid.*, 123–151.

33 Cf. Christopher F. Laferl, *Die Kultur der Spanier in Österreich unter Ferdinand I. (1522–1564)*. (Junge Wiener Romanistik, 14.) Wien, Köln, 1997.

34 Rabe, *Reich*, 74–75.

35 See Bogusław Dybaś and István Tringli (eds.), *Das Wiener Fürstentreffen von 1515. Beiträge zur Geschichte der habsburgisch-jagiellonischen Doppelvermählung*. (21st-Century Studies in Humanities) Budapest, 2019.

seen in the light of what Frederick III, the second member of the family to ascend the imperial throne, experienced in the middle of the fifteenth century, when the Habsburg family split into branches. Not only were the family estates divided among different members, but Frederick III, holding only part of the core lands, had great trouble in establishing a solid hinterland.³⁶

This sketch of the empire's territories may give a clue as to difficulties of estimating their population. The sources are as fragmented as the empire was, and thus very difficult to interpret. The available partial studies are an uncertain basis for conclusions regarding the whole. One estimate puts the population of the empire in the first half of the sixteenth century at no more than 7 million, a very small number for an area of some 600,000 square kilometres. (It would mean that the 38,000 square kilometre territory of Switzerland, with its mountainous lands, had a higher population density only shortly afterwards.) Adding to this the population of the Netherlands (1.1 million in the last third of the fifteenth century, according to data from various sources), where two thirds of the inhabitants of Brabant and Flanders were town dwellers, brings the total up to no more than 8.1 million.³⁷ Some researchers find rather higher figures – between 9 and 12 million – for the population at the turn of the fifteenth and sixteenth centuries.³⁸ Others estimate the population of the empire in this period at about 16 million, 2 million of which lived in the Netherlands and another 2 million in the lands of the Bohemian crown, and 550,000–600,000 in Switzerland. This total corresponds to a quarter of the European population of the time, and about the same number, 15 or 16 million, lived in the Kingdom of France.³⁹ By the end of the sixteenth century, despite territorial losses and without the Italian lands, the population grew to about 20 million, still close to the population of the rival Kingdom of France.⁴⁰ Yet another researcher claims that the population of the empire reached the figure of 20 million by around 1400.⁴¹

36 Eberhard Isenmann, 'The Holy Roman Empire in the Middle Ages', in Richard Bonney (ed.), *The Rise of the Fiscal State in Europe, c. 1200–1815*. New York, 1999, 261. Cf. Konstantin Moritz A. Langmaier, *Erzherzog Albrecht VI. von Österreich (1418–1463). Ein Fürst im Spannungsfeld von Dynastie, Regionen und Reich*. (Forschungen zur Kaiser- und Papstgeschichte des Mittelalters, 38.) Köln, Weimar, Wien, 2015.

37 Josiah C. Russel, 'Late Ancient and Medieval Population', *Transactions of the American Philosophical Society* 48:3 (1958) 122–126.

38 Justus Nipperdey, *Die Erfindung der Bevölkerungspolitik. Staat, politische Theorie und Population in der Frühen Neuzeit*. (Veröffentlichungen des Instituts für Europäische Geschichte Mainz, 229.) Göttingen, 2012, 123, and *ibid.*: note 1. It should be added that – utterly unhistorically – the population within Germany's 1914 boundaries is calculated as 9 million.

39 Rabe, *Reich*, 27–28, whose position is taken up in Whaley, *Germany*, I. 50. Rabe's figures approximately agree with Roger Mols' calculations: Roger Mols, 'Population in Europe (1500–1700)', in Carlo M. Cipolla (ed.), *The Fontana Economic History of Europe. The Sixteenth and Seventeenth Centuries*. Glasgow, 1978, 38.

40 Rabe, *Reich und Glaubensspaltung*, 408; cf. Mols, 'Population in Europe (1500–1700)', 38.

41 Moraw, *Von offener Verfassung*, 49. On the population, see also Hermann Kellenbenz and Rolf Walter, 'Das Deutsche Reich 1350–1650', in Hermann Kellenbenz (ed.), *Europäische*

There were great differences in population density at different points of the compass: higher in the west than in the east, as much as 70/km² in the Netherlands. There were about 5,000 towns on imperial territory, most of them small (less than 2,000 inhabitants). Hardly forty had more than 10,000, and only Cologne, Prague, Nuremberg, Augsburg, Lübeck and Danzig had more than 25,000 inhabitants. Larger towns were more characteristic of the Mediterranean, but on imperial lands – outside Italy – Augsburg, Cologne and the Flandrian towns of Ghent and Antwerp had more than 40,000 inhabitants. Antwerp, in the highly urbanized Netherlands, drew ahead in the sixteenth century and became the second largest city in Europe north of the Alps.⁴²

IMPERIAL REVENUES

Like the members of the empire, the emperor had property that accrued to the post rather than the dynasty. It consisted of lands or the revenue generated by them and imperial regalian holdings (duties, tolls, mints, mines), and the emperors, for various reasons, gradually mortgaged or granted fiefs on most of it. All that remained, such as the tax on imperial towns, and revenues from legal proceedings, did not add up to much: by the late medieval period, the imperial treasury was completely dependent on the propensity of imperial subjects to cooperate, and to pay.⁴³ As we saw in the previous section, this further narrowed the restricted political options of the emperor. King/Emperor Sigismund still had some property to mortgage, but there was none left for Frederick III. By the middle of the fifteenth century, the income from ordinary imperial sources had shrunk to a few thousand Rhenish guildens.⁴⁴

There were various schemes that attempted to remedy the increasingly serious lack of income. In 1342, general poll tax was first levied on the Jewish population of the empire: Jews over the age of twenty and owning land and buildings worth more than 20 guildens had to pay one gulden. Taxation of the Jews continued under Wenceslaus, king of the Germans (1376–1400) and his brother Sigismund, and occasionally – to the understandable indignation of creditors – a general debt amnesty was proclaimed. By the time of Maximilian I, however, this form of tax had dwindled into insignificance. A one-time scheme was applied to make up for declining revenues: when tax income dried up, the Jewish population was banished from certain towns or provinces and their property seized.⁴⁵

Taxation of the non-Jewish population of the empire came on to the agenda several times in the late Middle Ages. Among all the plans and attempts at

Wirtschafts- und Sozialgeschichte vom ausgehenden Mittelalter bis zur Mitte des 17. Jahrhunderts. (Handbuch der europäischen Wirtschafts- und Sozialgeschichte, 3.) Stuttgart, 1986, 828–829.

42 Rabe, *Reich und Glaubensspaltung*, 28; Mols, 'Population in Europe (1500–1700)', 42–43; cf. Russel, 'Late Ancient and Medieval Population', 125; Kellenbenz and Walter, 'Das Deutsche Reich', 829–830.

43 See also *The Historical, Political, and Diplomatic Writings of Niccolo Machiavelli*, IV. 386–387.

44 Isenmann, 'The Holy Roman Empire', 252–261, particularly 260.

45 *Ibid.*, 255–256, 258–260.

implementation, the tax levied in 1422 was surprisingly successful, because there was repeated recourse to it until the new tax register was compiled at the imperial diet of Worms in 1521. The imperial diet of Nuremberg in 1422 approved an “imperial register” comprising the ecclesiastical and secular members of the empire. The emperor asked them to raise cavalry troops (*Gleiven*, i.e. lances), the central element of the chivalrous mode of combat, and whoever could not raise soldiers could make a financial contribution towards the Hussite campaign instead.⁴⁶ What we would like to know, of course, is how much revenue these tax arrangements generated for the treasury. Much seems to have depended on whether the members of the empire approved of the intended expenditure of the money (i.e. the tax was not to be used purely for dynastic aims) and on the extent to which the emperor was on good terms with the tax-paying subject.⁴⁷

The new “imperial register” of 1521 ushered in a form of finance that was much favoured and implemented in the early modern period. The original purpose was the coronation of Charles V as Holy Roman Emperor, and it was in this new form that the estates of the empire stood the costs of raising the requisite army. In our period, monthly pay was ten (later twelve) Rhenish guildens for a cavalryman, four guildens for an ordinary infantryman, and ten guildens for an elite infantryman (*Doppelsöldner*, “double-pay man”). A captain usually received twenty guildens per month, and a cavalry captain fifty. Calculating with these average pay rates, a mercenary army of 4,000 cavalry and 20,000 infantry troops must theoretically have had a monthly pay bill of 120,000 – later 128,000 – Rhenish guildens.⁴⁸

This sum became the unit of account of the post-1521 quota system, and was called a “Roman month” (*Römermonat*), a reference to the coronation in Rome. When the emperor requested money from his estates, they calculated it in Roman months and voted accordingly. During the thirty-seven-year reign of Charles V, the imperial estates voted total finance of 73.5 Roman months.⁴⁹

46 Isenmann, ‘The Holy Roman Empire’, 265–266; Maximilian Lanzinner, ‘Der Gemeine Pfennig, eine richtungsweisende Steuerreform? Zur Entwicklung des Reichssteuersystems 1422 bis 1608’, in Peter Rauscher, Andreas Serles and Thomas Winkelbauer (eds.), *Das „Blut des Staatskörpers“*. *Forschungen zur Finanzgeschichte der Frühen Neuzeit*. (Historische Zeitschrift, Beihefte. Neue Folge, 56.) München, 2012, 261–318, particularly 269–270, 282–287; Michael North, ‘Finances and Power in the German State System’, in Bartolomé Yun Casalilla and Patrick K. O’Brien with Francisco Comín Comín (eds.), *The Rise of the Fiscal States: A Global History (1500–1914)*. Cambridge, 2012, 145–163, particularly 152–154.

47 Isenmann, ‘The Holy Roman Empire’, 262. For this in the example of the Duchy of Bavaria, see Maximilian Lanzinner, ‘Reichssteuern in Bayern im 15. und 16. Jahrhundert’, in Johannes Helmuth and Heribert Müller in Zusammenarbeit mit Helmut Wolff (eds.), *Studien zum 15. Jahrhundert. Festschrift für Erich Meuthen*. Bd. I–II. München, 1994, II. 821–843.

48 Michael Kruppe, *Die Türkenhilfe der Reichsstädte Nordhausen und Mühlhausen in der Zeit von Maximilian I. bis Rudolf II (1493–1612). Ein Beitrag zur Steuer- und Finanzgeschichte im Spätmittelalter und der Frühen Neuzeit*. Dissertation zur Erlangung des philosophischen Doktorgrades an der Philosophischen Fakultät der Georg-August-Universität zu Göttingen. Göttingen, 2012, 29; note 108. See also Wiesflecker, *Kaiser Maximilian I*, V. 551–552, 556.

49 North, ‘Finances and Power in the German State System’, 154.

The quota tax levy is of interest for another reason: Frederick III had already attempted to obtain money from the imperial estates in this way to address the Ottoman threat as well as the danger posed by the Hungarians. Since the Ottoman threat became stronger than ever in the early 1520s, this quota system would have provided an appropriate financial base for defence.⁵⁰ But at the diets of 1530–1532, 1538 and 1542–1544, the confessional conflicts among the imperial estates completely frustrated these plans.⁵¹ Such detrimental factors – especially after the Peace of Augsburg of 1555 – greatly diminished, and subventions from the empire became crucial for the financing of the Hungarian frontier defences against the Ottoman Empire.⁵²

The quota levy was not the only imperial taxation in the late medieval period: in emergencies, the emperor requested “minor tax” (*kleiner Anschlag*) or “urgent assistance” (*eilende Hilfe*) without going through the imperial diet. We also know of examples, first in 1427, when the monarch wished to collect general tax to finance the costs of the war against the Hussites.⁵³ This may be seen as the forerunner of the imperial tax that is usually regarded as the invention of the imperial diet of Worms in 1495, the “imperial penny” or “common penny” (*Gemeiner Pfennig*).⁵⁴

What did the common penny levied in 1495 consist of? It was payable by every subject over the age of fifteen, an amalgam of poll tax, income tax and property tax. It was designed to raise a total of 150,000 Rhenish guildens without urgent assistance or extraordinary taxes, and the tax payable by every member of the empire was calculated accordingly. The treasurer received only a fraction of the amount of tax payable in the empire as a whole. Maximilian I looked to raise 50,000 Rhenish guildens in common pennies from his own lands, but the imperial estates put this much higher, at 80,000 guildens. This money and the

50 Lanzinner, ‘Der Gemeine Pfennig’, 282–287; see also Wolfgang Steglich, ‘Die Reichstürkenhilfe in der Zeit Karls V’, *Militär-geschichtliche Zeitschrift* 1 (1972) 7–55; Maximilian Lanzinner, *Friedenssicherung und politische Einheit des Reiches unter Kaiser Maximilian II. (1564–1576)* (Schriftenreihe der Historischen Kommission bei der Bayerischen Akademie der Wissenschaften, 45.) Göttingen, 1993, 464–499, particularly 470. For the role of the *Türkenhilfe* in the economy and politics of the imperial cities Nordhausen and Mühlhausen, see Kruppe, *Die Türkenhilfe*.

51 Peter Rauscher, ‘Kaiser und Reich. Die Reichstürkenhilfe von Ferdinand I. bis zum Beginn des „Langen Türkenkriegs“ (1548–1593)’, in Friedrich Edelmayer, Maximilian Lanzinner and Peter Rauscher (eds.), *Finanzen und Herrschaft. Materielle Grundlagen fürstlicher Politik in den habsburgischen Ländern und im Heiligen Römischen Reich im 16. Jahrhundert*. (Veröffentlichungen des Instituts für Österreichische Geschichtsforschung, 38.) Wien, München, 2003, 49.

52 Another example of this is given in István Kenyeres, ‘Zacharias Geizkofler birodalmi fillérmester számadásai a tizenöt éves háború időszakából (1589–1603)’, *Fons* 25 (2018) 453–484.

53 Isenmann, ‘The Holy Roman Empire’, 265–267. On the urgent assistance, see also Gerhard Kurzmann, *Kaiser Maximilian I. und das Kriegswesen der österreichischen Länder und des Reiches*. (Militär-geschichtliche Dissertationen österreichischer Universitäten, 5.) Wien, 1985, 44.

54 Cf. Lanzinner, ‘Der Gemeine Pfennig’, 261–262.

tax of a few other provinces went straight to the king of the Germans without the involvement of the treasurers. The treasurers received 43,254 guldens. The total income – depending on which estimate we use for the tax base of the Habsburg lands – was thus 106,632 or 136,632 Rhenish guldens. In addition, the imperial diet held in Lindau at the turn of 1496 and 1497 voted urgent assistance of 58,996 Rhenish guldens, so that the final sum may be estimated at 165,628 or 195,628 Rhenish guldens.⁵⁵

The imperial estates insisted that 6–8,000 Rhenish guldens of the common penny income must be used to finance the new measures and institutions (such as the imperial chamber court) ordered by the 1495 diet of Worms. The amount remaining with the treasurer after this and other, lesser deductions was the greater part of the income (about 27,428 Rhenish guldens) and was passed on to Maximilian I. (This means that only 50.5 guldens of the total was not used up.) We know much less about the sums paid directly to the king of the Germans, but the imperial estates certainly permitted Maximilian I to use the money from the Duchy of Saxony to pay his debts to Albert III (“the Courageous”), duke of Saxony.⁵⁶

Of the two main forms of taxation in the Holy Roman Empire, the quota levy was definitely more successful than the common penny. The reason is simple: the emperor had little means to induce any but his direct vassals to pay tax. This made it easy to avoid tax, and the imperial estates could pass on the blame to their own subjects.⁵⁷

Given this highly adverse situation, we might ask how it was possible that with such uncertain sources of income emperors still managed to rule. The secret for Maximilian I lay in the Habsburg core lands, whereas the economic base for Charles V’s system of rule was the Spanish monarchy.⁵⁸ Both of these monarchs also placed great reliance on loans from their subjects and from merchants and money men.⁵⁹ Since Zoltán Korpás, in another chapter of this book, gives the details of Charles V’s financial policy, here I will cover only the financial affairs of the Austrian provinces under his predecessor, Maximilian I.

55 Peter Schmid, *Der Gemeine Pfennig von 1495. Vorgeschichte und Entstehung, verfassungsgeschichtliche, politische und finanzielle Bedeutung*. (Schriftenreihe der Historischen Kommission bei der Bayerischen Akademie der Wissenschaften, 34.) Göttingen, 1995, 556–566.

56 Schmid, *Der Gemeine Pfennig*, 566–572.

57 Isenmann, ‘The Holy Roman Empire’, 265–266; Lanzinner, ‘Der Gemeine Pfennig’, 286.

58 Cf. James D. Tracy, ‘Der Preis der Ehre. Die Finanzierung der Feldzüge Kaiser Karls V.’, in Kohler, Haider and Ottner (eds.), *Karl V. (1500–1558)*, 158.

59 Isenmann, ‘The Holy Roman Empire’, 256–257; Wiesflecker, *Kaiser Maximilian I*, V. 583–592; cf. Reinhard Baumann, ‘Süddeutschland als Söldnermarkt’, in Philippe Rogger and Benjamin Hitz (eds.), *Söldnerlandschaften. Frühneuzeitliche Gewaltmärkte im Vergleich*. (Zeitschrift für historische Forschung. Vierteljahresschrift zur Erforschung des Spätmittelalters und der frühen Neuzeit. Beiheft, 49.) Berlin, 2014, 75; Lukas Winder, ‘Die Kreditgeber der österreichischen Habsburger (1521–1612). Versuch einer Gesamtanalyse’, in Rauscher, Serles and Winkelbauer (eds.), *Das „Blut des Staatskörpers“*, 435–458.

Maximilian I first set up government institutions (governing body, chamber, chancelleries) in Tyrol, and after the death of his father Frederick III in 1493 he did the same in the other Habsburg provinces. He staffed these with reliable officials, some from further afield – South Germany and Burgundy. One governing body, based in Innsbruck, was responsible for “Upper Austria”, which meant Tyrol and Further Austria. The other, with its centre in Vienna, or sometimes Enns or Linz, governed “Lower Austria” (Carinthia, Carniola, Archduchy of Austria and Styria). The imperial treasury (*Hofkammer*) had powers that extended beyond the Habsburg lands, to the Netherlands and other parts of the empire, which of course elicited considerable antipathies among everyone concerned. The enormous costs of the Italian campaign of 1496 led to the establishment the same year of a treasury (*Schatzkammer*), based in Innsbruck, with authority over every Habsburg land. The increasing burden of war strained the abilities and the patience of the highly competent staff, who were loyal to the monarch: the counsellors in Innsbruck were only persuaded not to resign their posts by the dissatisfaction that broke out after the death of Maximilian I in 1519.⁶⁰

The emperor thus attempted to transform his own provinces, but the Venetian wars of his final years – in which their ruler, as emperor, presented himself as representing the interests of the empire – completely exhausted them. By some estimates, Maximilian I levied taxes of 3 million Rhenish guildens in his own dynastic lands during the last ten years of his rule, which for a population of about one million meant an annual tax of 0.3 gulden per head. This was an exceptionally high figure by comparison with the rest of the empire. A special and necessary means of raising money was to mortgage the Tyrolean mines and smelters to the Fuggers of Augsburg for 2 million Rhenish guildens. According to some calculations, Maximilian obtained 200,000 Rhenish guildens from mortgages and sales in Styria alone during his reign. Overall, the emperor left his grandchildren a debt of about 6 million Rhenish guildens, equivalent to ten times the income from the Austrian lands.⁶¹

ATTEMPTS AT IMPERIAL MILITARY REORGANIZATION

The highest military commander of the empire was the emperor himself, but his options were as limited in this area as in the matter of finance. A product of the transitional character of our period is that the feudal system still provided the emperor with what was sometimes a very attractive option for military ventures: the imperial estates could be requested to raise troops from among their lieges rather than pay money. (The request was sometimes accompanied by the threat of removing their privileges if they did not comply.) The weakness of executive authority, however, made it difficult for the emperor to exert his will, and was

60 Repeating the main findings of his earlier work is: Wiesflecker, *Kaiser Maximilian I*, V. 205–219; Manfred Hollegger, *Maximilian I. (1459–1519). Herrscher und Mensch einer Zeitenwende.* (Urban-Taschenbücher, 442.) Stuttgart, 2005, 83–88, 226–236.

61 Wiesflecker, *Kaiser Maximilian I*, IV. 304–305, 446.

usually obliged to supplement the army from his own provinces. Tyrol promised the monarch 1,000 men for the imperial coronation of 1508 that was originally planned for Rome, 5,000 in case of war, and 10,000 in an emergency.⁶²

Shortfalls of income more than once brought Maximilian I into an uncomfortable position, such as the financial fiasco of the 1496 Italian campaign. Despite many attempts, the king of the Germans did not receive substantial military or material support either from the empire or his Italian allies and had to dig deep into his “own” pockets. That was not enough, however, to prevent an Italian contemporary from contemptuously comparing Maximilian I and his somewhat small army to a German castellan and his company.⁶³ Another embarrassing example was the call to the troops who were present at the imperial diet of Cologne in 1499 to fight against the Swiss: Swabia was almost the only positive responder.⁶⁴

But the highest church and secular dignitaries of the empire were hardly in a better position than the emperor: they were able to raise troops of varying quality, comprising their vassals, household troops, noble and commoner retainers and “classic” mercenaries. The troops of towns, large and small, could in general only be counted on if there was a hostile incursion. Even less well organized were troops of another category, who would help defend the empire if (and only if) it was attacked from outside: companies of nobles, townsmen and even peasants. There was however a reluctance to call the latter to arms for fear of a peasant rebellion.⁶⁵

Throughout his rule, Maximilian I made several attempts to at last set up a – long-desired – centralized imperial military organization as part of a general vision of “reforming” the Holy Roman Empire. The military affairs were discussed at the diets of Worms in 1495 and Augsburg in 1500. The latter decided to set up the post of imperial captain-general (*Reichshauptmann*), who had to be consulted before the signing of any treaty or truce. Albert IV, duke of Bavaria (1467–1508), was appointed to the post, which was to carry a “salary”. A further idiosyncrasy of the post was that its holder was accountable not to the emperor but to the Imperial Government, which existed only for a short period in the early sixteenth century and comprised representatives of the imperial estates. (Of course, it also had to be consulted before the captain-general could start a war.) The Imperial Government also had the power to determine, after the imperial taxation and the equipping of troops, where the armies should assemble. Another of its tasks was to inform the captain-general of the call to arms. The imperial diet of 1500 also attended to many other important details, such as the pay due to cavalry and infantry troops and the

62 Kurzmann, *Kaiser Maximilian I*, 41, 45. In respect of Tyrol, see also Martin Paul Schennach, *Ritter, Landsknecht, Aufgebot. Quellen zum Tiroler Kriegswesen (14.–17. Jahrhundert)*. (Tiroler Geschichtsquellen, 49.) Innsbruck, 2004, 14–108.

63 Wiesflecker, *Kaiser Maximilian I*, II, 91, 438: note 5 (...*si fusse stato el minimo castelanuzo di Elemagna*).

64 Kurzmann, *Kaiser Maximilian I*, 38.

65 *Ibid.*, 43, 48–49. On the late medieval Duchy of Bavaria, see Andreas Kraus (ed.), *Handbuch der bayerischen Geschichte. Bd. I–IV*. München, 1966–1975, II, 590–591 (by Dieter Albrecht).

oath to be sworn by the “captains”. These many provisions all had just one flaw: nothing whatever came of them, because the imperial tax was not delivered, and the troops could not be raised.⁶⁶

The unreliability of income meant that the security of the empire was difficult to guarantee. There was an understandable proposal at the 1510 diet of Augsburg for the empire to have a standing army even in peacetime. The emperor intended the force to be overseen by a body, rather than a single commander, composed of persons responsible for organization, preparation and recruitment. (This was different from the Imperial Government, which had been abolished by that time.) They would also have been authorized to act against anyone breaking the peace of a province. The imperial captain-general would also have been subordinate to this body. The empire was to be divided into quarters, each with a captain who would arrange the call to arms at the command of the committee. Their superior, the captain-general, would have been the commander of the troops of every quarter. The plan was not discussed in detail, however, and debate was adjourned to the following imperial diet.⁶⁷

Although the question of the imperial captain-general and the standing army remained off the agenda for some time, one substantial reform did receive approval, although it did not initially result in much change. This was the creation of imperial circles. It was an old idea, and the first attempt to implement it was made in 1433. The first effective steps were eventually taken in 1500, with the establishment of six circles, increasing later to ten. The aim was to ensure peace within the empire: every imperial circle was led by a (vice-)captain (*Unterhauptmann*) who was charged primarily with maintaining peace in the provinces and overseeing the execution of judgements passed in the imperial chamber court. This would have required the availability of troops. These circles did not cover the whole of the empire. The areas that remained outside them, apart from the Italian lands and Switzerland as discussed above, included the lands of the Bohemian Crown.⁶⁸

Comparable to the attempts to set up a standing army was an agreement made at the meeting of deputations from the Habsburg provinces in Innsbruck in 1518. Following the Tyrolean precedent, each province was to maintain troops, military counsellors and a captain(-general) who in case of trouble would be obliged to march in support of another Habsburg province. This gave rise to a kind of defensive alliance among Habsburg provinces (*Verteidigungsgemeinschaft*),⁶⁹ and was put to effective use for active resistance to the Ottomans.

66 Kurzmann, *Kaiser Maximilian I*, 20–21.

67 *Ibid.*, 24.

68 *Ibid.*, 25; cf. Winfried Dotzauer, *Die deutschen Reichskreise (1383–1806). Geschichte und Akten-edition*. Stuttgart, 1998, particularly 51–54.

69 Wiesflecker, *Kaiser Maximilian I*, V. 527.

ESTIMATED MILITARY POTENTIAL

The troop numbers in the imperial registers discussed above should be regarded only as theoretical estimates. In 1422, the register compiled for the war against the Hussites consisted of only 754 lances (a unit of one heavy cavalryman and his retainers) and 777 armoured knights. This shows up the disproportion between those included on the list and their financial resources, and there are also striking absences, such as the Habsburg lands. The most likely explanation is that the Hussite threat demanded constant military expenditures from these provinces.⁷⁰ The numbers of troops constituting the tax base in the 1521 imperial register were 4,000 cavalry and 20,000 infantry,⁷¹ an indication of the new times: a hundred years later, the infantry had taken the central role in combat, displacing the armoured knights on which the 1422 register was based.

The sharp difference between theoretical estimate and practical figures shows up well in Frederick III's tussle with the imperial estates in the 1480s. In his proposal to the imperial diet of 1486, the emperor wanted to call 34,000 men to arms against the Hungarians. This would have cost 527,900 guildens. Resistance by the estates brought this sum down to 153,400 guildens, enough for only 8–10,000 troops, and in the event, even less money was forthcoming. In 1487, the sum of 149,000 voted as urgent assistance for the emperor was again enough only for 8–10,000 troops instead of the 32,000 requested. In 1489, when presiding over his first imperial diet, Maximilian I proposed that the imperial estates finance 40,000 troops, but he was forced to reduce his request to 20,000 troops. This mobilization was again required to fight the Hungarians, but this time, also the rebelling Flandrians. Not for the first or last time, none of the tax levied was actually received, and he raised the matter again, ultimately receiving urgent assistance sufficient for only 6,000 paid troops. (He could definitely count as a success, however, that the imperial estates came up with funds to pay for the 2,000 troops then serving in the Netherlands.)⁷²

In the final years of Maximilian I's rule, similar troop numbers were discussed in imperial diets, if with somewhat different objectives in mind. When the idea of a standing army arose in Augsburg in 1510, he had in mind a basic strength of 10,000 cavalry and 40,000 infantry. As we have seen, the proposal did not meet with a positive response. The raising of such a 50,000-strong standing army was also debated at the diet of Trier and Cologne in 1512, when the estates swept it aside and, instead, supported the formation of imperial circles.⁷³

70 Michaela Bleicher, *Das Herzogtum Niederbayern-Straubing in den Hussitenkriegen. Kriegsalltag und Kriegsführung im Spiegel der Landschreiberrechnungen*. Inaugural-Dissertation zur Erlangung der Doktorwürde der Philosophischen Fakultät III (Geschichte, Gesellschaft und Geographie) der Universität Regensburg. Regensburg, 2004, 123.

71 For example, Lanzinner, 'Der Gemeine Pfennig', 282.

72 Wolf, *Die Doppelregierung*, 290, 416–417, 419–420.

73 Kurzmann, *Kaiser Maximilian I*, 24–25.

Finally, it is worth quoting Maximilian I's words to the Venetian envoy in 1502. The Habsburg ruler claimed that if he was in full control of the empire, he would be stronger than the kings of Hungary, France and Spain put together and would even surpass the strength of the Ottoman Empire.⁷⁴ It would be hard to verify this bold statement, and the proceedings of envoys' missions have to be treated with care, because an envoy's recollections were subject to influences both "direct" (e.g. diplomatic formulae) and "indirect" (e.g. accidental misunderstandings), and were further modified when put to paper. Whatever Maximilian actually said, the case neatly illustrates how the disunity of the empire caused it to perform well below its true military capacity.

STRENGTH OF ARMIES IN THE FIELD

The strikingly small army – about 2,000 infantry and 500 cavalry – that Maximilian I, as king of the Germans, led on the fruitless Italian expedition of 1496⁷⁵ bears witness to the inadequate preparations for the venture. In the joint French-German capture of Vicenza in 1509, Maximilian I had provided 9,000 infantry and 2,000 cavalry troops to join the 12,000 infantry and 1,200 cavalry in French pay.⁷⁶ Eventually, in 1516, Maximilian matched the 15,000 troops of his ally, the Swiss, in the army that set out to take Milan (10,000 German and Spanish infantry, 4–5,000 cavalry).⁷⁷

Under Charles V, in summer 1526, there were still only 6–8,000 Spanish and German infantry, a few Italian infantry, 700 lances of heavy cavalry and 1,200 light cavalry troops in the emperor's army in North Italy, but this army swelled to 18,000 infantry (10,000 German, 5,000 Spanish and 3,000 Italian), 700 lances of heavy cavalry and 800 light cavalry troops by early 1527. The German mercenary commanders could bring substantial numbers of troops from the empire: in late autumn 1526, Georg von Frundsberg commanded 16,000 "German-type" troops (*landsknecht*),⁷⁸ and in 1528, Marx Sittich von Ems marched out of Rome with 12,000 men – most of them probably also *landsknechts*.⁷⁹

Finally, there is an illustrative example from the eastern half of the empire. There are records – somewhat difficult to verify – of a very large Christian army that massed near Vienna in 1532: King Ferdinand wrote to Mary Habsburg telling of 80,000 infantry and 6,000 cavalry, others told of 65,000 infantry and

74 Alfred Schröcker, 'Maximilians I. Auffassung vom Königtum und das ständische Reich. Beobachtungen an ungedruckten Quellen italienischer Herkunft', *Quellen und Forschungen aus italienischen Archiven und Bibliotheken* 50 (1971) 181.

75 Michael Mallett and Christine Shaw, *The Italian Wars (1494–1559): War, State and Society in Early Modern Europe*. London, New York, 2012, 30, 39.

76 Elfriede Schaden, *Die politischen Beziehungen Kaiser Maximilian I. zu Venedig in den Jahren 1508–1519*. PhD Dissertation. Graz, 1975, 56.

77 Mallett and Shaw, *The Italian Wars*, 132; Wiesflecker, *Kaiser Maximilian I*, V. 525.

78 Mallett and Shaw, *The Italian Wars*, 156, 158.

79 Reinhard Baumann, *Landsknechte. Ihre Geschichte und Kultur vom späten Mittelalter bis zum Dreißigjährigen Krieg*. München, 1994, 129.

11,000 cavalry. Yet others record 120,000 troops (not all belonging to the field armies), which included 30,000 cavalymen and 20,000 artillerymen.⁸⁰ However many were actually gathered then, motivated by terror of the Ottomans, one important reason for this exceptional mobilization was that the Ottoman armies had already – in 1529 – besieged Vienna. Then, the defenders did not number more than 17,000, including the imperial auxiliary troops. One hundred arrived from Bavaria, led by Philip, the count palatine of the Rhine, and about 800 from Nuremberg. The total number of auxiliaries from the empire was no more than 5,000.⁸¹

CAVALRY

The general “obsolescence” of German cavalry, as seen through the contemporary eyes of Machiavelli⁸² was probably partly to do with the expense of horses and equipment; the great masses were more suited to be infantry soldiers. Secondly, infantry tactics were proving to be much more economical and effective. There was also a distinctive – if not unresolvable – “ideological” antagonism between these two branches of arms at the time: the cavalry continued to represent the ideal image of the noble-provincial soldier. Maximilian I’s plans for the cavalry did not involve any innovations, but envisaged building on the existing foundations. His captains included many nobles experienced in combat, some from the most distinguished dynasties, but unlike infantry troops, the cavalry soldiers themselves were of widely assorted quality.⁸³ This did not improve the reputation of the cavalry, and mercenary cavalymen in large numbers only became available later. We can see as the precursors of this professional cavalry, however, the Albanian light cavalymen who took part in the Venetian War. There was a great need for their mode of combat even outside Italy, in the Habsburg provinces that were constantly under Ottoman threat. Although historians are cautious about the division between heavy and light cavalry at the turn of the fifteenth and sixteenth centuries,⁸⁴ it cannot be excluded that light cavalry combat – in response to the Ottoman and partially to the earlier Hungarian incursions, perhaps influenced by what was seen there⁸⁵ – was fairly widespread in the Habsburg provinces by that time.

Another challenge, to some extent denying the ideal of the medieval knight, was the little room that remained for individual acts of heroism, especially

80 Hans Delbrück, *Geschichte der Kriegskunst im Rahmen der politischen Geschichte*. Bd. I–IV. Berlin, 1920–1921, IV. 111–112. In addition, see the chapter by Zoltán Korpás in this book.

81 Walter Hummelberger, *Wiens erste Belagerung durch die Türken (1529)*. (Militärhistorische Schriftenreihe, 33.) [Wien, 1976], 12. (The author unfortunately does not take a completely unambiguous position regarding the number of defenders.)

82 *The Historical, Political, and Diplomatic Writings of Niccolo Machiavelli*, IV. 388–389.

83 Kurzmann, *Kaiser Maximilian I*, 101–102, 105–106, 108.

84 See *ibid.*, 120–121; Wiesflecker, *Kaiser Maximilian I*, V. 554.

85 See János B. Szabó, *A középkor magyarországi könnyűlovassága X–XVI. század*. (Studia Militaria Hungarica, 12.) Máriabesznyő, 2017.

against enemies fighting in well-organized formations like the Swiss infantry companies and – following the Swiss pattern – the German *landsknechts*, against which only similarly well-formed battle units could be effective. Nonetheless, for a while – and certainly during our period – the old-style heavy cavalry (*Kürisser*) retained its well-trying organizational system based on the lance, as appears in the imperial registers of 1422 and 1521. The central element was the armoured knight, attended by three to seven lighter-armed horsemen or infantrymen armed with (cross)bows or some kind of thrusting weapon. It was a deeply entrenched system, as is apparent from Maximilian's plan of 1498 aimed at settling once and for all the question of a standing army to defend the Habsburg provinces of Lower Austria. This proposed a force of twenty-five heavy cavalrymen, each with seven cavalry retainers, for each of the four captains. (Lack of money, as usual, frustrated the plan.)⁸⁶

INFANTRY: THE LANDSKNECHTS

In the armies of the Holy Roman Empire, the fifteenth century may be regarded without exaggeration as the golden age of Bohemian mercenaries.⁸⁷ The sixteenth century was the great age of a new type of South German infantryman, the *landsknecht*. Their reputation must have been fearful among contemporaries: "And so it was lately when the Catholic King declared war against France, and made an attack in Guienne; the Spaniards were more afraid of a body of ten thousand German troops which the king of France had, than of all the rest of his infantry, and avoided every occasion of meeting the Germans hand to hand."⁸⁸ Economic circumstances caused a large proportion of the South German population to come forward as soldiers,⁸⁹ just as had been the case in Bohemian lands in the fifteenth century.

The changeover took place at the turn of the fifteenth and sixteenth centuries, and there was certainly some overlap, since both military cultures were based on the infantry and the geographical separation was not great. Thus the Bavarian noble Ludwig von Eyb, in a treatise (*Kriegsbuch*) dated at around 1500, still concentrates on the use of the (Hussite-type) wagon fort.⁹⁰ In the Landshut War of Succession between the two branches of the Bavarian Wittelsbachs (1504–

86 Kurzmann, *Kaiser Maximilian I*, 114–120; Wiesflecker, *Kaiser Maximilian I*, V. 554–556.

87 Uwe Tresp, 'Böhmen als Söldnermarkt. "Böhmen" als Söldnertypus im späten Mittelalter', in Rogger and Hitz (eds.), *Söldnerlandschaften*, 119–141. See also Uwe Tresp, *Söldner aus Böhmen. Im Dienst deutscher Fürsten: Kriegsgeschäft und Heeresorganisation im 15. Jahrhundert*. (Krieg in der Geschichte, 19.) Paderborn, München, Wien, Zürich, 2004.

88 *The Historical, Political, and Diplomatic Writings of Niccolo Machiavelli*, IV. 390.

89 Baumann, 'Süddeutschland als Söldnermarkt', 68–69.

90 The section concerning the wagon forts is published in: Eugen von Frauenholz, *Das Heerwesen in der Zeit des freien Söldnertums*. (Entwicklungsgeschichte des deutschen Heerwesens, II/2.) München, 1937, 143–148: No. III; cf. Hans-Otto Keunecke, 'Ludwig von Eyb der Jüngere zum Hartenstein und sein Kriegsbuch', *Jahrbuch des Historischen Vereins für Mittelfranken* 96 (1992–1993) 21–36, particularly 30–36.

1505), this highly effective military technique was certainly used by the Bohemian mercenaries in the Palatinate army.⁹¹

Mercenary infantry flourished in the north approaches to the Alps in the late fifteenth century, undoubtedly modelled on a mode of combat perfected by the soldiers of the Swiss cantons, who had proved its effectiveness against cavalry. The extremely fragmented political structure of the South German region no doubt also contributed to its spread.⁹² Most historians ascribe to Maximilian a definitive “founding” role in the formation of the *landsknecht*. This may be no more than one of the myths surrounding him.⁹³ The weakness of imperial executive power is enough in itself to conclude that he probably did no more than support this mode of combat, particularly having seen the death of his father-in-law, the duke of Burgundy, when fighting the Swiss in the Battle of Nancy in 1477.⁹⁴

It became such a popular occupation that the entrepreneurial mercenary commanders must have experienced an oversupply on the “labour market”. Most of the infantry recruits probably had urban backgrounds, although the *landsknecht* career may also have been attractive to boys from the villages. The main attraction, apart from the prospects for adventure, was the monthly pay of four Rhenish gulden that remained constant up to the second half of the sixteenth century. It was comparable to the earnings of an urban craftsman. In addition, applicants were not required to have their own equipment. The mercenary commander made all the necessary provisions, as well as the corresponding deductions from the soldier’s pay. Because the monarch was often late in providing funds, the soldiers were frequently paid on credit that was readily available from wealthy merchants like the Fuggers and must have been a substantial contribution to the smooth working of the system.⁹⁵

These German infantrymen, as we shall see, were similar to their Swiss peers in their equipment and weaponry, but in their traditions, they were the heirs of the imperial urban military culture. Even in the first third of the sixteenth century, they had an enormous effect on the lower sections of society: the South German peasant uprising of 1525 in many respects (weaponry, level of organization, etc.) imitated the military culture of the *landsknechts*. Their reputation went ahead of them throughout Germany and beyond. Enhancing their effectiveness and thus their popularity was the very rapid development of an officer corps.⁹⁶ Another indicator of their reputation is that Maximilian I prohibited soldiers from joining foreign armies. There was a widely-held contemporary view that professional soldiers could be retained in the empire by

91 Wiesflecker, *Kaiser Maximilian I*, 517; see the description of the Battle of Wenzenbach below.

92 Baumann, ‘Süddeutschland als Söldnermarkt’, 69–70, 78.

93 Wiesflecker, *Kaiser Maximilian I*, V. 545–546.

94 Kurzmann, *Kaiser Maximilian I*, 92–96.

95 Baumann, ‘Süddeutschland als Söldnermarkt’, 70–75.

96 *Ibid.*, 74–77, 82–82.

establishing a standing army, but as we have seen, nothing came of it.⁹⁷ In 1525, some 20,000 men were fighting in Italy as French or imperial mercenaries.⁹⁸

WEAPONRY

The equipment of the imperial cavalry – if we are to believe Machiavelli – did not stand up well in comparison with the Italian or French equivalents: their saddles were of a poor design and they neglected to protect their horses or their legs.⁹⁹ The main weapon of the armoured knight was a lance approximately 3.5 metres long, and although the original rules of warfare prohibited cavalymen from carrying either a crossbow or even a shorter spear, the restriction was not widely observed at this time. There were increasing numbers of light cavalry and even the much-criticized mounted crossbowmen, who had also started to carry firearms.¹⁰⁰

Most of the *landsknecht* infantry were armed with pikes 4–5 metres long, a minority with halberds. In close combat, after the enemy's order of battle had been broken, they also used a (two-handed) sword, dagger or other cutting/piercing weapon.¹⁰¹ In some views, another difference was that the South German *landsknechts* used the short sword (*Katzlbalger*), while the Swiss infantry did not. (The Germans also wore a cap of linen or leather, which was not common among the Swiss.) There were also differences in the use of the pike.¹⁰² Initially, the morning star and crossbow also featured among *landsknecht* equipment, but these gradually disappeared, giving way to the arquebus à croc and hand-held firearms. Their protection – especially in the front ranks – was body armour, but full armour was too expensive for most soldiers, apart from being heavy and restrictive, so that most used a light form of armour.¹⁰³ An emerging custom at this time was for soldiers in a company to wear a uniform: some units, for example, dressed in fear-inducing black. The idea of a general imperial uniform, however, was inconceivable.¹⁰⁴

Of course, good use was made of cannons at that time both in Italy and elsewhere. The artillery gave substantial service in the Landshut War of Succession, taking much of the credit when Maximilian's forces captured the castle of Kufstein (1504). Cannons started to be made with trunnions (*Räderlafette*) that greatly facilitated adjustment of the cannonball trajectory.

⁹⁷ Kurzmann, *Kaiser Maximilian I*, 67–69, 90–92.

⁹⁸ Baumann, 'Süddeutschland als Söldnermarkt', 71.

⁹⁹ *The Historical, Political, and Diplomatic Writings of Niccolo Machiavelli*, IV, 388–389.

¹⁰⁰ Kurzmann, *Kaiser Maximilian I*, 103–104.

¹⁰¹ *Ibid.*, 71; for more detail on this, see Gerhard Quaas, *Das Handwerk der Landsknechte. Waffen und Bewaffnung zwischen 1500 und 1600*. (Militärgeschichte und Wehrwissenschaften, 3.) Osnabrück, 1997, 113–127.

¹⁰² Baumann, 'Süddeutschland als Söldnermarkt', 81.

¹⁰³ Kurzmann, *Kaiser Maximilian I*, 72–74; for more detail on this, see Quaas, *Das Handwerk*, 127–138.

¹⁰⁴ Wiesflecker, *Kaiser Maximilian I*, V, 552.

Historians have – as with the *landsknechts* – given excessive personal credit to the emperor for the adoption of this Burgundian invention. The “explanation” is supposedly that the emperor enthusiastically took part in target practice, in which he “naturally” always came in first place, and he also established prizes for gunnery. In addition to the Burgundian influence, the sophisticated, long-established Tyrolean metallurgy industry and Venetian metalwork may also have had a substantial influence on the development of the artillery under Maximilian I.¹⁰⁵

By the turn of the fifteenth and sixteenth centuries, artillery had taken on its distinctive forms – there were light, medium, heavy field and siege pieces. Some of the latter were extremely heavy, but no more were cast after the failed forty-day siege of Padua in 1509. The most common types thereafter weighed between two and six tonnes, and fired balls of between five and fifty kilograms. There were also mortars, some of them very big – up to 500 kilograms.¹⁰⁶

Maximilian I set up arsenals (*Zeughaus*) in his own provinces to supply the equipment and munitions for sieges and battles. At that time, Italy was the theatre of war most important to the Habsburgs. (The Ottoman fronts in Hungary and Croatia were soon to catch up in importance.) The system was not so much a feature of the empire as the product of works by provincial lords. According to the report of a visit to Innsbruck by Philip the Fair, son of Maximilian I, in 1503, the Innsbruck arsenal held 30 large-calibre guns, 1,000 field guns, 2,000 arquebuses, 9,000 halberds, 800,000 arrows, 12,000 pikes, 4,000 helmets and 400 suits of armour. Innsbruck was also important to the Habsburgs because of the foundries of nearby Hötting, an important centre of the metallurgy industry.¹⁰⁷

BATTLE TACTICS¹⁰⁸

Much has been written by both contemporaries and historians about the emperor’s military prowess. Some of the more exaggerated claims may be traced to propaganda that was put out at the time.¹⁰⁹ His military sophistication must have been mainly at the theoretical level, because warfare was already a separate profession that demanded practical skills, especially if the army was made up of soldiers of mixed origin and combat value, as – for the reasons we have seen –

105 Wiesflecker, *Kaiser Maximilian I*, V. 516, 518, 556–557; Kurzmann, *Kaiser Maximilian I*, 123–138.

106 Wiesflecker, *Kaiser Maximilian I*, V. 558; for more detail on this, see Quaas, *Das Handwerk*, 138–168.

107 Kurzmann, *Kaiser Maximilian I*, 151–156; Wiesflecker, *Kaiser Maximilian I*, V. 558–562. On the Tyrolean weapons manufacture in general during this period, see Erich Egg, *Der Tiroler Geschützguß (1400–1600)*. (Tiroler Wirtschaftsstudien, 9.) Innsbruck, 1961, 49–94.

108 See Siegfried Fiedler, *Kriegswesen und Kriegführung im Zeitalter der Landsknechte*. Koblenz, 1985. Republished under a new title but with the same content: Siegfried Fiedler, *Taktik und Strategie der Landsknechte*. Augsburg, 2002.

109 For a – somewhat excessive – extolment of Maximilian I’s military leadership qualities, see Wiesflecker, *Kaiser Maximilian I*, V. 502–503.

the imperial army often was. Consequently, the commanders employed for this task were proven soldiers, who could be men of lowly origins as well as sons of dynastic families.¹¹⁰

The great numbers of Swiss and German infantrymen and Spanish arquebusiers who fought in the Italian wars had an enormous influence on European warfare. At the beginning of the Italian wars in the mid-1490s, battles usually involved equal numbers of the two main branches of arms, infantry and cavalry. By the time of the Battle of Pavia thirty years later (1525), this had changed completely. Infantry outnumbered cavalry by the ratio 6:1. The relatively low cost of infantry was a major factor behind this trend. We should not imagine, however, that some fundamentally new military philosophy had crystallized by 1530. Although many of the old principles of warfare were obsolete, they had not been completely disposed of, and there were many different individual innovations.¹¹¹

A *Regiment* (army) of infantry (i.e. *landsknechts*) consisted, according to some sources, of twenty-five battalions (*Fahne*) of 100 men, and each battalion was divided into eighteen *Rotten*. We also know of 300–400-strong battalions, however. The battalions were primarily organizational rather than tactical units. Whether the infantry battle order was exactly that which had been tried and tested by the Swiss, involving square formations, is an open question. There are signs that they sometimes went into battle in looser order, a formation three times as wide as it was deep (counted in soldiers). With this formation, according to one contemporary, it was more difficult for an enemy to break up the battle order at the edges.¹¹²

What was the *landsknechts*' characteristic mode of combat? They were more than a simple company of pikemen, because their weaponry was much more diverse. According to the famous German military theorist of the second half of the sixteenth century, Lazarus von Schwendi, a *landsknecht* battalion should consist of 300 men: one third elite infantry (*Doppelsöldner*) responsible for breaking up the enemy battle order, one third simple troops (with pikes) and one third arquebusiers. We know from other examples that the troops were usually divided into three main corps. The vanguard prepared the way for the advance of the main army behind them and did not have a strict order. Its troops mainly carried bows and firearms (which did not provide nearly as much mobility early in the sixteenth century as they did by the end), often joined by *Doppelsöldners* with two-handed swords. The main army, by contrast, looked like a hedgehog, with pikemen all along its outer sides and standard-bearers and drummers marching in the middle. Following a few hundred metres behind

110 A survey of Maximilian I's principal commanders: Wiesflecker, *Kaiser Maximilian I*, V. 530–545.

111 Mallett and Shaw, *The Italian Wars*, 177–178.

112 Delbrück, *Geschichte der Kriegskunst*, IV. 63–65; Kurzmann, *Kaiser Maximilian I*, 77–80; Wiesflecker, *Kaiser Maximilian I*, V. 546; see also Frauenholz, *Das Heerwesen*, 61–79.

was the rearguard, which was much better able to assess battlefield developments from afar, and was at the ready to intervene.¹¹³

Although much of this resembles the Swiss battle order, it was not a matter of simple imitation. The Swiss fought almost exclusively with infantry, while cavalry and artillery were integral parts of imperial armies. Maximilian I most often started the battle by deploying the artillery, and the cavalry gave good service in campaigns involving long marches and also frequently made the decisive charge or helped to keep the front intact. This mixed mode of combat did not derive from Swiss influence alone. Elements that may be traced to Burgundy and the Kingdom of France are explained by many historians in terms of the emperor's personal involvement: from the end of the 1470s, Maximilian I had the good fortune to spend an extended period in the lands he had acquired in Burgundy through his wife. The French influence, however, could also quite easily have been acquired during fighting not only for the Burgundian succession but also for Italy. As demonstrated by the French army that clashed with, and defeated, a force consisting almost exclusively of Milanese and Swiss infantry at Marignano in 1515, formations based on pikemen could no longer be depended on to win every battle.¹¹⁴

Machiavelli had a similar view. Although he was generous in his praise of the feared German *landsknechts*, he also pointed out their defects: "They are most excellent troops for a battle in the open field, but are not good for a siege, nor for defending a city; and generally speaking, where they cannot preserve their order and their ranks they are not to be depended upon. Experience has proved this; for whenever they have had to do with Italians, and especially when they have had to besiege a town, as was the case at Padua and other places, they gave but poor account of themselves; whilst, on the contrary, wherever they found themselves in the open field, they have always shown to advantage."¹¹⁵

The Battle of Wenzenbach (12 September 1504)

The internecine war of the Wittelsbach dynasty at the turn of the fifteenth and sixteenth centuries put the workings and internal problems of the empire sharply into focus. By that time, the number of branches of the Wittelsbach family sharing the territory of the Duchy of Bavaria had decreased from four to two, based in Munich and Landshut. Since the head of the Landshut duchy, George of Bavaria (1479–1503), had no male issue, he gave his daughter Elizabeth in marriage to Ruprecht, count palatine of the Rhine (d. 1504), the son of Elector

113 On tactics in detail, see Quaas, *Das Handwerk*, 168–181; see also Wiesflecker, *Kaiser Maximilian I*, V. 552. On arquebusiers-crossbowmen, see Wiesflecker, *Kaiser Maximilian I*, V. 553. Some understand *Doppelsöldners* to have been expressly arquebusiers and crossbowmen: Matthieu E. Chan Tsin, 'Landsknechte', in Clifford J. Rogers (ed.), *The Oxford Encyclopedia of Medieval Warfare and Military Technology*, 3 vols. Oxford, 2010, II. 487.

114 Wiesflecker, *Kaiser Maximilian I*, V. 547–548; for more on this, see the chapter of this book by Attila Györkös.

115 *The Historical, Political, and Diplomatic Writings of Niccolo Machiavelli*, IV. 389.

Palatine Philip (1449–1451, 1476–1508), also of the Wittelsbach family. He did so in the hope of passing on his duchy through the female line. This, however, breached both the customs of the Wittelsbach succession set into the Treaty of Pavia of 1328 and imperial feudal law, because only the Holy Roman Emperor/King of the Germans could dispose of property rights reverting to the emperor/king. Consequently, disregarding the other circumstances, Maximilian I – in February 1504, only a few months after the death of Duke George in December 1503 – granted tenure of the Landshut duchy not to the successor designated by George but to Duke Albert IV of Bavaria-Munich (1465–1508).

Despite appearances, this was not just a local Bavarian conflict. The French connections of the Palatinate of the Rhine implied the danger that Louis XII of France (1498–1515) might intervene. Although the non-Wittelsbach factors were eliminated, negotiations were unable to prevent war. The forces of Count Palatine Ruprecht, with the support of the Palatinate of the Rhine, faced up to those of Duke Albert IV, who gained the backing of Maximilian I by promising to him the domains of Kitzbühel, Kufstein and Rattenstein in the south of the disputed duchy, along the river Inn. The king of the Germans thus declared an “imperial war” (*Reichskrieg*) against Count Palatine Ruprecht at the end of May 1504, and in the Landshut War of Succession he effectively neutralized the forces sent to Bavaria by the Elector Palatinate and only had to face Ruprecht’s army.

Ultimately, the only major battle took place at Wenzelbach near Regensburg on 12 September 1504. At the sight of the king’s heavy cavalry, the 1,600-strong Palatinate cavalry – allegedly to seek assistance – simply took to their heels. The remainder, about 3,000 Bohemian infantry troops, went into retreat to nearby heights (*Wenzenberg*). Since these troops in the pay of the Count Palatinate had neither cavalry nor firearms, they dug themselves in and set their large standing shields into the soil, behind which they assembled a wagon fort. (This was the Hussite form of warfare that had been successful in the fifteenth century.)

The king and his commanders, fearing that these Bohemian mercenaries would also take flight, decided on immediate attack. The first charge was undertaken by the young Casimir, margrave of Brandenburg, with 400 horsemen, but he failed to break through the wall of shields. The royal forces, comprising 4,000 infantry and 1,600 cavalry, then took up three arrow-shaped formations: the mounted dukes, counts and other nobles on the right flank (led by Maximilian I), the *landsknechts* and auxiliaries from imperial cities in the centre, and cavalry again on the left.

The battle started with artillery fire. One of Maximilian I’s commanders, Eric I, duke of Brunswick-Lüneburg (1495–1540), was seriously wounded, but the king himself got through the battle almost uninjured. The heavy knights knocked down the buried shields and the forces joined together to besiege the wagon fort. Since the Bohemian mercenaries had nowhere to run, they fought bitterly to the finish. The battle lasted about two hours, and when the wagon fort fell, 1,600 Bohemians had died and 600 were captured. Many of those who fled were beaten to death by local peasants. The king’s forces allegedly lost only 200 infantry troops, and they took away the Bohemians’ war chest as booty.

After the battle, the war itself soon came to an end. Ruprecht, who had avoided any attempt at making peace, had already been dead for a month (20 August 1504), and his wife, who had also sought war, followed him into the grave in 15 September 1504. Maximilian undertook to settle the affair, and did so at the imperial diet of Cologne the next year, on 30 July 1505. The battle was of more than just political significance. Firstly, the Bohemian “Hussite” mode of combat that had dominated much of the fifteenth century finally met its nemesis. Secondly, it demonstrated that the new-style German infantry attacking in closed formation – in coordination with the cavalry and with some artillery support – was an effective military innovation.¹¹⁶

SUMMARY

The Holy Roman Empire was deeply divided at the turn of the fifteenth and sixteenth centuries, and the emperor did not have sufficient rights to change this or face up to the imperial estates, who had some interests in retaining the status quo. Despite the empire’s enormous economic resources, the very small budget available to the emperors greatly restricted their scope in foreign affairs. They usually attempted to alleviate this problem by relying on their own dynastic lands. This was also true of the Habsburg dynasty, whose lands within the empire were in a marginal position but who had ever-expanding possessions in Europe outside the empire and in the New World, resulting in a peculiar shift in the centre of gravity. It is thus not surprising that the dynasty often put its own aims before the interests of the empire as a whole.

The resulting dissatisfaction of the imperial estates and the impecuniousness of Maximilian I, king of the Germans, opened the way at the turn of the fifteenth and sixteenth centuries to measures (“imperial reforms”) aimed at strengthening the empire’s cohesive bonds. Changes in taxation enabled the imperial institutions – after the settlement of post-Reformation confessional conflicts (1555) – to be consolidated into a more effective system than had existed in the medieval period. In the long term, however, against neighbours with more centralized regimes, above all the Kingdom of France, it still proved inadequate.

Our period was crucial in the transformation of warfare. The testing grounds for these changes in the first third of the sixteenth century were undoubtedly the battlefields of North Italy. What was taking place was firstly a technological revolution (firearms) and secondly the appearance of many tactical innovations: the sixteenth century was certainly the golden age of warfare based on the *landsknechts*, although their success could only be guaranteed through cooperation with other branches of arms. Wars at the time involved ever larger armies, composed increasingly of professional soldiers.

116 See Wiesflecker, *Kaiser Maximilian I*, III. 164–205; Tresp, *Söldner aus Böhmen*, 72–75, 85–90.

THE MILITARY ORGANIZATION AND ARMIES OF THE ITALIAN STATES (1494–1526)

ITALY IN THE FIRST HALF OF THE SIXTEENTH CENTURY

During the fifteenth and sixteenth centuries, the inhabitants of the Apennine Peninsula – despite being regarded from the outside as Italians – primarily identified themselves with smaller, traditional geographical units and thus remained Florentines, Lombardians, Venetians, Neapolitans, etc. This helps us to understand why – despite sharing a common language, culture and Catholic faith, sometimes facing common enemies, and having many commercial and financial interests in common – the people of the peninsula remained politically divided and in mutual conflict until Italian unification in 1861.

The Republic of Venice was one of the largest and most important Italian states at the end of the fifteenth century. Its territory totalled 69,000 km² – 32,000 km² on the Italian mainland, the *Terraferma*, and about 37,000 km² on its overseas possessions, the *Stato da Mar*.¹ Other major states in North Italy were the Duchy of Savoy² with an area of 37,903 km², the Duchy of Milan with 21,110 km² and the Republic of Genoa with a total of 14,100 km² (including Corsica). In the centre of Italy, there were two substantial states at this time: the Republic of Florence with an area of 13,287 km² and the Papal States, which covered about 44,400 km². In South Italy, the Aragon-ruled Kingdom of Naples extended over 77,642 km², the Kingdom of Sicily, 26,148 km² (including Malta) and the Kingdom of Sardinia, 24,100 km².

The population of Italy during our period is difficult to estimate. Although individual states kept military or financial records of various kinds, there was no registration of births and deaths until the Council of Trent (1545–1563). Nonetheless, there was certainly a demographic regression, with many

I am very grateful to Ciro Paoletti (Commissione Italiana di Storia Militare) for his assistance in the writing of this paper.

1 Of which Istria without Fiume (Rijeka, Croatia) accounted for 3,000 km²; Dalmatia, 14,000 km²; Cyprus, 9,250 km²; Crete, 8,336 km²; and Corfu and the Ionian Sea islands, 2,307 km².

2 The composition of the territory of the Ducato di Savoia was: Piemonte 13,187 km², Val d'Aosta 3,260 km², Nizza 4,299 km², Savoia 10,416 km² and the County of Ain, now part of France, 5,762 km².

devastating epidemics, that lasted until the 1450s, after which the population may be roughly estimated at 7.5 million. In the next century and a half, it grew to 13.5 million, so that in the early sixteenth century, Italy probably had about 11 million inhabitants.³

Growth chiefly benefited the cities, whose leaders encouraged the increase in population. Some surviving records permit approximate estimates to be made. A 1509 census shows the population of Venice to have been at least 100,000, and figures for 1574 show it to have been no more than 195,000. This gives an average of 150,000, a figure has remained almost unchanged up to the present. The population of the mainland possessions of the Republic of Venice (*Terraferma*) in 1548, the year of the first full survey, was 1,379,393.

In Milan, a hearth census of 1492 counted 17,000 households, implying a population of 70–80,000. The total population of the Duchy of Milan must have been about 400,000 during this decade. Genoa had about 80,000 inhabitants,⁴ and Naples, in the middle of the sixteenth century, had more than 200,000, making it the most populous city in Italy. The population of the whole of the Kingdom of Naples, estimated from the register of taxed hearths (*rilevazioni dei fuochi tassati*), may be estimated at 900,000 in 1465.

By the second half of the fifteenth century, the great European monarchies competing for what would eventually become Italy had resources and revenues far beyond those of the independent Italian states, most of whose armies eventually became part of the Spanish war machine. Italy was a particularly complex region of the European political space during this period, and proved very important as both a source of revenue and a testing ground.⁵ Its strategic importance made it one of the regions over which competing European powers struggled for hegemony.⁶

ESTIMATED MILITARY POTENTIAL AND STRENGTH OF ARMIES IN THE FIELD

Because the Italian states were not exposed to serious external threat before the late fifteenth century, they had reduced the size of their armies, mostly to save the expense of maintaining a permanent force. Instead, the Italian city states and duchies tended to hire mercenaries when needed.

3 A demographic analysis by Pier Marco Ferraresi: <https://alleanzacattolica.org/la-popolazione-in-italia-profilo-storico/> (accessed: 29.05.2019).

4 http://www.treccani.it/enciclopedia/popolazione_%28Enciclopedia-Italiana%29/ (accessed: 09.05.2019.); other references: Lorenzo Del Panta, Massimo Livi Bacci, Giuliano Pinto and Eugenio Sonnino, *La popolazione italiana dal medioevo ad oggi*. Roma, Bari, 1996; Nora Federici (ed.), *La popolazione in Italia*. Torino, 1976; Atos Bellettini, *La popolazione italiana. Un profilo storico*. Torino, 1987.

5 Maurizio Arfaoli, *The Black Bands of Giovanni: Infantry and Diplomacy during the Italian Wars (1526–1528)*. Pisa, 2005, XI (observation in the foreword by Ann Katherine Isaacs).

6 Arfaoli, *The Black Bands*, 3.

The military organization of Italian states in the medieval and early modern periods is difficult to analyse and compare for the further reason that the only states maintaining real armies of their own were the Papal States, Florence, the Duchy of Savoy (about 15,000), the Kingdom of Naples, the Duchy of Milan and the Republic of Venice (about 20–25,000), and of those, only the latter two had substantial standing armies.⁷ The other – smaller – city states hardly kept more soldiers in permanent arms than were needed for the city guard or a small garrison.

Of the states that joined the alliance to resist the invasion by Charles VIII of France (1483–1498) at the start of the great Italian Wars (1494–1559), Naples had the largest number of mobilizable troops (about 18,000), followed by the Papal States and Florence. The three most experienced commanders of the time were also in the pay of this alliance: Niccolò and Virginio Orsini and Gian Jacopo Trivulzio.⁸ (Florence capitulated without a fight, the pope fled from Rome ahead of the French, and in 1495, Naples fell to the French without any serious resistance.)

The other major protagonist, Venice, had a defensive system based on efficient coordination of naval forces and a chain of forts. The sea, and maritime warfare, always held the priority for the Republic, but during the period of great wars in Italy, it avoided any clashes with the Ottoman Empire and channelled greater resources to its land forces. It was thus able to raise up to 30,000 men for a military venture. In peacetime (around 1536), the Republic of Venice had a standing army of about 2,000 troops stationed in the Italian *Terraferma* and 2,400 on its overseas possessions, and so had a total of 4,400 permanent troops. Unlike its naval forces, Venice's army was mostly made up of mercenaries.⁹ Whereas Venice was required to make increasing efforts to defend the territories it had taken in East and North Italy in the fifteenth century, its final triumph over the Genoese diminished the importance of the navy. Accordingly, the warship fleet was reduced, but repeatedly restored to full strength in time of conflict.¹⁰

The costs of defence (maintaining large standing armies and reinforcing garrisons and forts), together with the costs of preventive mobilizations and the wars themselves, placed an increasing burden on the Republic of Venice and the other Italian states. The sudden increase in expenditure caused a psychological and administrative shock.¹¹ Venice's state revenues between the middle and end of the fifteenth century varied between 1,100,000 and 1,115,000 ducats. Later, in 1550s, revenue started to grow steadily, reaching 2 million ducats in 1580.¹² The

7 Luciano Pezzolo, 'La rivoluzione militare: una prospettiva italiana 1400–1700', in Alessandra Dattero and Stefano Levati (eds.), *Militari in età moderna. La centralità di un tema di confine*. Milano, 2006, 12, 15.

8 Michael Edward Mallett, *Mercenaries and Their Masters: Warfare in Renaissance Italy*. London, Sydney, Toronto, 1974, 237.

9 Luciano Pezzolo, 'The Rise and Decline of a Great Power: Venice 1250–1650', *Working Papers. Department of Economics Ca' Foscari University of Venice* 27 (2006) 5.

10 Pezzolo, 'The Rise and Decline', 4.

11 Michael Edward Mallett and John Rigby Hale, *The Military Organization of a Renaissance State: Venice c. 1400 to 1617*. (Cambridge Studies in Early Modern History) Cambridge, 1984, 461.

12 Pezzolo, 'The Rise and Decline', 24.

sum of 1,149,400 ducats realized in 1490 was about twice the income of the Duchy of Milan, which at that time also possessed Como, Lodi, Cremona, Parma, Pavia, Novara, Alessandria, Tortona and Genoa. Although the Kingdom of Naples ruled a larger area of Italy, Venice, by virtue of its overseas colonies, was wealthier, and its navy was more powerful than that of King Ferdinand of Aragon.¹³

Venice's objective in the sixteenth century was to retain its possessions and coastal bases. It thus set up an extensive system of forts from its Italian mainland territories all the way to Cyprus, and this was also very costly.¹⁴ The true costs of the war are very difficult to estimate, because nobody ever attempted to count up the pay for the land and sea troops, the costs of weapons, equipment and transportation, or the financial support given to allies. Neither were any budget or financial accounts produced between 1509 and 1617.¹⁵

THE MILITARY ORGANIZATION – *I CONDOTTIERI*

The army commanders, the *condottieri* were originally mercenary leaders (*capitani di ventura*), military entrepreneurs who led their troops under contracts (*condotta*) with state governments. Some *condottieri* always served the same state, while others frequently changed their allegiances. Many fourteenth- and fifteenth-century *condottieri* were famous for their corruption and immorality, and some of them became the lords of cities. These powerful and ruthless military leaders dominated the style of warfare in Italian society for at least two hundred years.¹⁶

They have been judged variously in retrospect, depending on point of view. Although they were professional soldiers, sharp-witted, cold, strong and calculating, some also excelled in the arts and were well-versed in painting, poetry, law, weapon manufacture, military engineering and medicine. Members of later generations who grew up during the great Italian Wars, such as Roberto da Sanseverino, had higher aims than merely selling their services to the highest bidder.¹⁷

By the fifteenth century, the *condottieri* were professional army commanders – relatively loyal and reliable, and increasingly aristocratic. They gradually established permanent relationships with their employers, which meant they came under tighter control. The figure of the mercenary leader described by Machiavelli, Giovio and Castiglione became out of date, because by that time, Italian *condottieri* often had to lead armies composed of Swiss or German mercenaries.¹⁸

In the Republic of Venice, for example, the *condottieri* effectively came into permanent state employment during the fifteenth century, and the renewal of

13 Pierre Daru, *Storia della repubblica di Venezia*. Capolago, 1838, 25–30.

14 Pezzolo, 'The Rise and Decline', 5–6.

15 Mallett and Hale, *The Military Organization*, 461.

16 David Murphy, *Condottiere 1300–1500. Infamous Medieval Mercenaries*. Oxford, New York, 2007.

17 Christine Shaw, *Barons and Castellans: The Military Nobility of Renaissance Italy*. Leiden, Boston, 2014, 132–133.

18 Mallett, *Mercenaries*, 257–258.

their contracts was merely formal. The associated constant administration gave the state greater influence in the internal matters of the military, and much of the army came under the control of the centralized state administration.¹⁹ The same process of the institutionalization of warfare can also be traced in the other Italian states: what had been mercenary troops started to be absorbed into the standing military organization. This brought new problems: first of all, the question of quarters and provisions for the soldiers. In Milan, for example, a special office was set up to deal with this, the *Commissario generale sopra gli alloggiamenti*.²⁰

This emerging military class held its place among the Italian nobility for several centuries: they had substantial lands, forts, legal functions and social status, which grew steadily. The civil and military nobility never merged, but there was much overlap. The phenomenon of a son of a baron or an old, powerful noble family becoming part of the military nobility through his deeds on the battlefields of Europe was an integral part of Italian culture.²¹

Cesare Borgia

One of the outstanding commanders of the period was Cesare Borgia (1475–1507), son of Pope Alexander VI (1492–1503): he captured the entire province of Emilia-Romagna, including its main castles, between 1499 and 1503. He is also significant for being one of first – together with Camillo Vitelli – to include units armed with arquebuses, adding a new component to the Italian light cavalry and infantry.²²

The services of the *condottieri* were called on for political manoeuvres as well as military operations. This was hazardous, however, a double game, and Cesare Borgia himself was one of the last of these famously dangerous “employers”.²³ Any *condottiere* ran the risk of being murdered by a political rival or even his own client.

Cesare Borgia only enjoyed good fortune in Italy during the papacy of his Aragonese, later Roman, father Alexander VI. After the mysterious death of his brother Giovanni Borgia in 1497, he became the most influential of his father’s progeny, implementing Alexander’s policy of extending the borders of the Papal States. He also proved to be a talented commander. In 1503, when – probably through poisoning – both fell sick, and his father died, the next pope was Alexander’s sworn enemy, Julian II (1503–1513) of the della Rovere family, and Cesare had to flee Italy. He was in the service of his kinsman the duke of Navarre when he died in 1507.

19 Mallett and Hale, *The Military Organization*, 101.

20 Pezzolo, ‘La rivoluzione militare’, 17.

21 Shaw, *Barons and Castellans*, 254.

22 Mallett, *Mercenaries*, 158.

23 Murphy, *Condottiere*, 49.

Giovanni delle Bande Nere

The last outstanding military commander of the period was Giovanni delle Bande Nere (1498–1526),²⁴ the only member of the Medici family to become a *condottiere*. His force comprised 6,000 infantry and 300 cavalry, half of whom were light cavalry. The infantry was organized into twelve battalions, each battalion into five companies, and each of those into ten squadrons.²⁵ Giovanni delle Bande Nere was among the first in Italy to recognize the declining utility of the heavy cavalry, and he won his main honours as an infantry commander. He introduced into Italy the transportation of infantry by horse. This involved specially-trained horsemen who each carried a foot soldier with a light firearm (*scoppietto*) on the rump of his horse. Firearms also caused his downfall: in the year of Mohács, 1526, during a skirmish between the imperial and Italian forces, he died of his wounds after being hit in the leg by a ball fired from a small cannon, a *falconetto*, and amputation failed to save him.²⁶

The era of the *condottieri* was thus in its twilight in the final decades of the 1400s, and this became very clear in the wars that started in 1494. Against the very large enemy armies, the forces led by mercenary commanders in politically compartmentalized and discordant Italy were less and less effective.

BRANCHES OF ARMS

Cavalry units in Italy divided between the heavy (*genti d'arme*) and light cavalry. The small basic unit, the *lancia*, had its origins in the Middle Ages.²⁷ (Knights accompanied only by armour-bearers were called *lancia spezzata*.)²⁸ The Italian light cavalry, like the French, did not have their own organization within the cavalry: four to six light cavalry troops served in a *lancia* alongside the heavy cavalry. The *lancia* constituted a tactic as well as an organizational unit, in which heavy and light cavalry troops fought together in a mixed formation.²⁹

In the fifteenth century, the *lancias* were grouped into *squadras*. An average *squadra* had 25 *lancias* in North Italy and 20 in Naples, and was led by a *squadriero* (lieutenant). These units were – generally loosely – organized by various commanders into *compagnias*, to which small infantry units were attached.³⁰

24 In fact, Giovanni's forces took on the black colour only after his death. Since he was the father of Cosimo de' Medici, the second *pater patriae* of Florence, he was made into a great hero; see Arfaioi, *The Black Bands*, XVI.

25 Ciro Paoletti, *Gli Italiani in armi – cinque secoli di storia militare nazionale 1498–2000*. Roma, 2002, 18.

26 Murphy, *Condottiere*, 55.

27 Originally all of these had a *lancia* leader, one horseman and one page: the leader rode a slow battle horse, his retainer, a fast horse, and the page, a lower-value horse of the kind assigned to rank-and-file soldiers.

28 Paoletti, *Gli Italiani in armi*, 15.

29 Frederick Lewis Taylor, *The Art of War in Italy, 1494–1529*. Westport, 1973, 69–70.

30 Piero Pieri, *Il Rinascimento e la crisi militare italiana*. Torino, 1952, 232–233.

The infantry assumed a gradually increasing role in the Italian armed forces starting in the fifteenth century. The Italians had no pikemen equipped and trained in the Swiss manner³¹ and infantry were initially few, but gradually grew in number and were better trained. At Campomorto in 1482, the *condottiere* leading the papal forces, Roberto Malatesta, on marshy ground, used an infantry assault to defeat the forces of Alfonso, duke of Calabria (heir to the throne of Naples), who had barricaded themselves in a fortified camp.³²

The infantry divided into small units (*bandiera*) consisting of a captain, two corporals, two pages, ten crossbowmen, nine shield-bearing infantrymen (*palvesai*) and the captain's servant. Initially, however, there were no well-trained, disciplined infantry capable of attacking in large formations of the kind that were becoming a standard part of German and Spanish armies, following the example of the Swiss. In the sixteenth century, however, we do find such peasant-born, trained soldiers. The Republic of Venice was in the forefront in the development of Swiss-type infantry.³³

Initially, the proportion of cavalry to infantry was in general one to ten.³⁴ The rapid change during the period may be illustrated by two examples: there were five times as many infantry as cavalry troops at Garigliano in 1503, and this ratio increased to twelve at Pavia in 1525.³⁵ When the diminishing role of the heavy cavalry was recognized in the late fifteenth and early sixteenth centuries, the Italians quickly followed the changes in tactics, and this led to a transformation in the proportions of cavalry and infantry. In 1499, the army of the Republic of Venice consisted of 36% heavy cavalry, 17% light cavalry and 47% infantry; by 1527, the latter accounted for no less than 90%!³⁶ When battling for forts and fortified positions, only the infantry and the artillery could take up the competition.

THE EFFECT OF THE SPREAD OF FIREARMS

The development of the artillery, one of the great innovations in military technology of the time, became manifest in Italy after the Battle of Ravenna of 1512. Cannons of various sizes and types were used on both land and sea.³⁷ Forts (*fortezze*) kept pace with the development of artillery. Although Italian soldiers and traditions had an influence in the development of military technology in

31 Swiss mercenaries had a reputation throughout Europe and were involved in the Italian wars from the beginning. When Charles VIII set out to conquer the Kingdom of Naples in 1494, he took 25,000 Swiss soldiers with him, and they proved themselves at the Battle of Fornovo the next year. At the Battle of Marignano in 1515, however, and again at Bicocca in 1522 and Pavia in 1525, they did not fully meet the expectations of their "employers", because firearms decimated their ranks.

32 Mallett, *Mercenaries*, 158–159.

33 Pieri, *Il Rinascimento*, 597–604.

34 Paoletti, *A Military History of Italy*. Westport, 2008, 5.

35 Taylor, *The Art of War*, 61.

36 Pezzolo, 'La rivoluzione militare', 21.

37 Paoletti, *Gli Italiani in armi*, 15.

many areas, it was in military engineering, or architecture, that the Italians truly stood out. Most fortresses built during that time were the work of Italian military engineers.³⁸

The best indication of the effectiveness of the new defensive systems, considering that the main objective of campaigns during the period was to capture one place or area, is that during the years 1521–1528, defences were so successful that very few sieges succeeded. If defenders surrendered a fort, the weakness of the defensive system was not usually to blame: either the besiegers exploited exceptionally favourable circumstances (such as the marquis of Pescara at Genoa in 1522) or the defenders' morale was low (as in Milan in 1521, when the city fell to the forces of the Holy Roman Empire).³⁹

At the start of the period, hand-held firearms were used almost solely to defend fortified positions. The Italian *scoppietto* or *schioppetto* was the first portable hand-held firearm to spread through Europe (*escopette* in French, *hand cannon* in English, *cañón de mano* in Spanish). This primitive type gave way in the sixteenth century to the much more accurate and easy-to-operate arquebus (*archibugio*). The Italians subsequently distinguished two types of these – the *schioppetto* and the larger *archibugio*.

The latter type took much of the credit at Cerignola in 1503, when Spanish troops, having dug a trench around their camp, successfully defended themselves against Swiss pikemen. Firearms were similarly important in the defence of Ceri.⁴⁰ In battle, however, it was only at Marignano⁴¹ in 1515 that arquebusiers prevailed over pikemen.⁴² In the Republic of Venice in 1510, only one infantryman carried an arquebus to every ten carrying pikes, but this ratio gradually changed over the subsequent decades of the Italian Wars.⁴³ When hostilities resumed in 1521 as a Habsburg–Valois contest, hand-held firearms developed more quickly. At the siege of Parma,⁴⁴ the Spanish successfully deployed a new weapon, the heavier, longer-barrelled musket, mounted on a rest.⁴⁵

38 Mallett, *Mercenaries*, 255.

39 Taylor, *The Art of War*, 149.

40 Cesare Borgia captured the town – at the request of his father, Pope Alexander VI, who had a feud with the lords of Marignano, the Orsini family – after a thirty-eight day siege in 1503.

41 In the battle that closed the fourth war of the League of Cambrai, the newly-elected and highly ambitious king of France, Francis I, defeated the forces of Duke Massimiliano Sforza of Milan and his allies, who included the Republic of Venice, the Swiss, the pope and the Spanish: see a paper by Nicola Zotti: <http://www.warfare.it/campi/marignano.html> (accessed: 29.10.2019); see also the chapter by Attila Györkös in this book.

42 Taylor, *The Art of War*, 45–46.

43 *Ibid.*, 40–41.

44 The French-held town capitulated after only three days to the forces of Pope Leo X and Emperor Charles V.

45 Taylor, *The Art of War*, 46.

STRATEGY

The change in military technology in the Late Renaissance caused a complete change in the nature of war: among seemingly-endless sieges interspersed with raids in the surrounding countryside, open field battles were rare. Those that did occur, however, often decided the outcome of a campaign and sometimes a whole war, because they could end with the destruction of an entire army.⁴⁶

Until the middle of the sixteenth century, the objective of Italian warfare was not to completely destroy the enemy but to force him to retreat (battle for position) and to take captives that could be held for ransom. A fundamental factor in this kind of struggle was cavalry capable of moving fast and effecting sudden attacks. In our period, there was a shift to large armies and short, intensive battles and sieges (one third of the open field encounters in the two centuries between 1400 and 1600 took place in the period 1491–1530).⁴⁷ This resulted in the wider and more coordinated use of certain weapons and technologies and in a substantial improvement of coordination and cooperation between branches of arms: battles could no longer be won by cavalry alone, or by infantry alone, but only by joint, coordinated manoeuvres of light and heavy cavalry and mixed infantry. The Italians contributed to this tactical contest with smaller armies of more diverse composition, and with the tradition of attrition warfare, which concentrated above all on strategy and manoeuvre. The eventual winners of this competition were the Spaniards, who prevailed by combining the French and Italian innovations.⁴⁸

The surest way of overcoming the enemy was to obtain control of his territory.⁴⁹ This meant taking over transport routes and intersections (roads, bridges, rivers, high-capacity lake and sea ports) and capturing forts, towns and guard towers that served specifically to defend territory. Military action was thus concentrated on besieging, capturing or sacking minor towns and forts with the aim of paralysing the enemy by cutting off his supply lines. Commanders could then withdraw to autumn and winter quarters having incurred the least possible losses. Under these circumstances, difficulties were mainly confined to the supply of weapons and equipment, chiefly horses, because the armies were usually relatively small, numbering no more than 20,000 troops, and could find food locally during a campaign. Even lack of money was only a minor drawback, because in Italy, the pillaging of a town was enough to keep unpaid soldiers quiet.⁵⁰

46 Paoletti, *Gli Italiani in armi*, 16.

47 Pezzolo, 'La rivoluzione militare', 19.

48 Mallett, *Mercenaries*, 260.

49 Michael Mallett and Christine Shaw, *The Italian Wars, 1494–1559: War, State and Society in Early Modern Europe*. New York, 2012, 189.

50 Paoletti, *Gli Italiani in armi*, 16.

RENAISSANCE ITALY, THE CRUCIBLE OF EARLY MODERN EUROPEAN WARFARE

In the “military schools” established in the fifteenth and sixteenth centuries, the military arts, strategy and tactics underwent great developments. Military leaders received a thorough classical education which in principle provided a grounding in military arts, but Italian tactical development in reality followed European changes in every respect. The availability of military treatises were one means by which they learned of the innovations.⁵¹ Prominent among works by Italian authors were *Trattato di architettura civile e militare* by the Sienan architect, engineer, painter and sculptor Francesco di Giorgio Martini (1439–1502) and *Quesiti et inventioni* by the Brescia-born Venetian engineer, architect, accountant and mathematician Niccolò Tartaglia (1499–1557).⁵²

More effective in transmitting the new schools than treatises and ancient classics, however, was practical experience. Many Italians fought alongside French and Spanish soldiers, and a high degree of mobility also contributed to the learning process: many Italian nobles fought as mercenaries in various European theatres of war. Milanese and Venetian envoys to French, Burgundian and German lands also gathered relevant information, keeping their governments informed about the strength and condition of armies north of the Alps. All of this kept Italian captains abreast of the latest European military developments, and when they encountered the Swiss infantry or the French artillery, they were not caught unprepared.⁵³

Any military commander who gained a slight lead in tactics or technology therefore only had a short time to enjoy his advantage, because the rapid spread of innovations soon restored the balance. The commanders of the Renaissance era therefore rarely committed serious tactical errors, and defeats were usually the result of the enemy’s superiority in numbers or training rather than a higher level of tactical skill.⁵⁴ (This fact may also be due to the custom by which commanders fought in the front ranks, and so by a process of natural selection, only the most adept survived the battle and went on to a glorious military career.)⁵⁵

Campaigns were also becoming much better organized, with increasing use of maps and battle plans. The changes diminished the uncertain factors, leaving more time for preparations such as capturing and reinforcing defensive positions. Planning increasingly involved a series of complex strategic and tactical decisions.

⁵¹ Taylor, *The Art of War*, 154–179.

⁵² *Ibid.*, 165.

⁵³ Mallett, *Mercenaries*, 231–237.

⁵⁴ Pezzolo, ‘La rivoluzione militare’, 20.

⁵⁵ Paoletti, *Gli Italiani in armi*, 16.

THE BATTLE OF FORNOVO (6 JULY 1495)

In only two battles of the Italian Wars did a large Italian army encounter a foreign invader on open terrain. One of these was the Battle of Fornovo,⁵⁶ where the Italian side's brilliant tactical plan proved too complex to implement in all its details. The outcome was uncertain, and both sides declared themselves the victors.

The Italian campaign launched by Charles VIII of France in 1494 held out the prospect of glory and enormous gains. After he captured Naples, however, the Italian states joined together to revive the Italian League, which had been formed in Venice in 1454. This military pact stipulated mutual defence of the states of the League (Venice, Florence, Milan, Naples and the pope) in case of external attack. Accordingly, forces from members of the League marched against the French and attempted to cut off the homeward route of the armies of Charles VIII after they marched out of Naples.

As Charles was proceeding north, he clashed with Italian League forces at Fornovo di Taro, near Parma. Francesco Gonzaga, marquis of Mantua, leader of the combined Italian armies, stated that they were "the finest and strongest army in Italy for many years".⁵⁷ Most of the army comprised Venetian troops (about 25,000), with lesser contingents from Milan (5,000), led by Count Caiazzo, and from Bologna, led by Bentivoglio, and twenty artillery pieces. The Italians faced a French army numbering approximately 10,000.⁵⁸

The commander divided the army of the League into nine divisions, which he arranged along the river. In the first clash of the battle, the Venetians' Albanian, Dalmatian and Greek light cavalry, the *stradiotas*⁵⁹ repulsed the French vanguard, but since the defenders had abandoned Fornovo, Charles was able to march into the town on 5 July. Next morning, the French on the left bank traversed the dry gravel course of the low river and commenced their march.

Under Gonzaga's plan of battle, four separate formations were to cross the river: Gianfrancesco da Sanseverino's forces were ordered to tie down the French vanguard while two heavy cavalry columns led by Gonzaga and Bernardino Fortebraccio attacked the French right flank, the king and his household guard, while the Venetian light cavalry (*stradiotas*) went around the French army to strike the enemy left flank. In the tradition of Italian apprehensiveness, half of the League forces were kept in reserve on the other side of the river.

The plan did not work. Heavy rain put the river into flood, and the heavy cavalry could not cross in time. The *stradiotas*, after temporarily deflecting the

⁵⁶ Mallett, *Mercenaries*, 243–248.

⁵⁷ *Ibid.*, 243.

⁵⁸ Eight hundred French *lancias*, 2,400 heavy cavalry troops, 200 household cavalry troops, 100 pikemen, Swiss troops led by Trivulzio and Guasconi (3,000 each), and a few thousand Italian troops.

⁵⁹ The *stradiotas* employed as a border force in Friuli started to take over the role of the Venetian light cavalry in the late fifteenth century. They had a very good combat reputation and were also infamous for being largely recruited from among criminals.

French vanguard, turned round and started looting the baggage left behind by the enemy. Fortebraccio and Gonzaga, left to themselves, fought a brief but bloody engagement and then retreated, allowing the French to regroup their forces and continue their march.⁶⁰

Charles thus continued his progress towards France, leaving the Italians with war booty worth more than 300,000 ducats. The League army was slow to follow the French. The battle consisted of only a quarter-hour's combat and a French retreat of three-quarters of an hour, in which about 1,000 French and 2,000 Italian troops lost their lives. Although the Italians took many captives in addition to the booty, both sides claimed victory.⁶¹

The members of the League, however, had not attained their original objective. The main reason was that the army was too large for the commanders to achieve the accustomed smooth cooperation, which would have been essential for such a complicated battle plan. Nonetheless, the event was a turning point for Italy. Perhaps for the first time, Italians were fighting for the glory and freedom of Italy. The emergence of the national ideal and national feelings, however, proved insufficient for effective political and military collaboration: Florence was absent, the small states were afraid of losing their autonomy, and there were many conflicts of interest.⁶²

The death of Charles VIII did not fundamentally change French aims in Italy. His successor Louis XII (1498–1515), however, learned from Charles' experience and realized that the only way to hold on to the Kingdom of Naples in the long term without a powerful navy was to secure control of the Alpine passes and the Po plain. The battles at Cerignola (April 1503) and Garigliano (December 1503), where the Spanish army won decisive victories over the French forces in Naples, ushered in a new phase of modern warfare. The tactics of defence and counter-attack, which derived from Italian military arts and were developed further and exploited by Gonzalo Fernández de Córdoba, started to supersede the attacking tactic employed by the Swiss military.⁶³

THE BATTLE OF AGNADELLO (14 MAY 1509)

The German invasion of 1508 proved the effectiveness of the Venetian military organization. In defence of the border, the rapid and effective mobilization of troops, the combat readiness of experienced commanders and their troops and the cooperation between the army and the civil bureaucrats all contributed to the victory at the Pieve di Cadore,⁶⁴ where a Venetian army about 2,000 strong

60 Mallett and Shaw, *The Italian Wars*, 8.

61 The figures for losses do not, of course, agree: the sources give figures of between 100 and 1,000 on the French side, and between 1,500 and 4,000 on the Italian side.

62 Paoletti, *Gli Italiani in armi*, 16.

63 Pieri, *Il Rinascimento*, 431.

64 Mallett and Hale, *The Military Organization*, 210.

(100 heavy and 400 light cavalry and 1,500 infantry) defeated the German imperial forces.⁶⁵

In the following months, the Venetian forces also captured Pordenone, Gorizia, Trieste, Pisino, Fiume and Postumia. Having defeated Emperor Maximilian I and made these conquests, Venice became the strongest state in Italy, which immediately aroused the antipathy of the other states. On 10 December 1508, Pope Julian II brought together France, the Holy Roman Empire, Spain, Ferrara, Mantua and the Duchy of Savoy to establish a great anti-Venetian alliance, the League of Cambrai.⁶⁶

When the French invaded again, the Venetian forces, commanded by the old, wise and experienced Nicolò Orsini, count of Pitigliano, and the dynamic Bartolomeo D'Alviano⁶⁷ received the order to defend Veneto and stop the enemy advance. Accordingly, they set up a fortified camp near the French army. After a few days of hopeless skirmishing, the French deployed a well-trying Italian method, avoiding open battle and attacking the Venetians' supply and liaison lines. The Venetians responded, and eventually the two armies met at Agnadello on 14 May 1509.

The French army had 2,300 heavy cavalry, 8,000 Swiss, 12,000 French and Italian infantry, 3,000 engineers and sappers, and an alleged total strength of 30–40,000.⁶⁸ Facing them, the Venetians had 2,000 cavalry and 10,000 light cavalry troops, some of them *stradiotas*, and 22,000 infantry. (Among them were 9,000 Swiss-style pike-bearing infantry *militia* troops in red and white uniforms.) The Venetians' artillery, with 29 siege guns and 120 field guns, faced 67 large modern guns on the French side.

The French thus managed to displace the Venetians from their fortified camp in Treviglio. By the time the Venetian column reached the French army, it was so far stretched out that the vanguard and the rearguard were five kilometres apart. The French artillery opened fire on some infantry troops as soon as they came within range, but before artillery fire was returned, the Venetian infantry advanced on the French artillery and the surrounding Gascony arquebusiers. At that point, D'Alviano intervened with a heavy cavalry charge on the French cavalry, which went into a disorderly retreat. The Venetian infantry continued their advance, pushing back the Gascony troops and the artillery. D'Alviano's troops were by then threatening the French king, and routed his advance guard. Louis XII mounted a counter-attack, however, sending fresh Swiss troops and another 500 heavy cavalry into the centre of battle.

The Venetians did not send reinforcements, partly because they were far away and partly because they held the original command – that they may not attack – to be in effect. The attackers were forced back by the French artillery

65 Mallett and Shaw, *The Italian Wars*, 86.

66 Pieri, *Il Rinascimento*, 453–454.

67 Irace Erminia (ed.), *“Impaziente della quiete”. Bartolomeo d'Alviano, un condottiero nell'Italia del Rinascimento (1455–1515)*. Bologna, 2018.

68 Pieri, *Il Rinascimento*, 458.

and Trivulzio's orderly troops, and another French assault against the Venetians' ramparts sent the inexperienced Brescian peasant troops (*cernite*) into flight. Enemy cavalry units immediately entered the resulting gap and made their way to the rear of the other infantry units.

The few light cavalry tried in vain to rescue the situation: D'Alviano's infantry was left to itself, because Pitigliano's formation concentrated on saving the forces who had so far stayed out of the battle. D'Alviano's force was surrounded, and he himself was wounded and taken captive. Eventually, 4,000 Venetians were left to face the 3,000 Swiss and 2–3,000 Gascony infantry and 1,000 French heavy cavalry. The battle had finally turned round. And if this had not been enough, a sudden downpour turned the ground to slippery mud under the feet of the defending Venetian infantry. Having begun at one o'clock in the afternoon, hostilities ended at four o'clock, when the Venetians' square front was broken apart by the French cavalry.⁶⁹

The Venetians lost 8,000 men, and their towns in Lombardy and Veneto fell to the French. The Italian defeat showed many similarities to the Battle of Fornovo: the failure of a large army through inadequate coordination.⁷⁰ Another major cause was that the French managed to dislodge the Venetians from their well-fortified positions for defence and counter-attack, and forced them on to the attack.

This defeat presented Venice with new challenges, forcing a reassessment of its entire military system. The peasant-based army, trained in the Swiss style, could only operate on an all-or-nothing basis, while firearm-based infantry was much more mobile and flexible. A decision was taken to use their services only for "guerrilla warfare" (defence of roads and straits, harassing the enemy and ambushing convoys) and no longer for open battle. Although the Battle of Agnadello was very important in the history of the Republic of Venice, it displayed no military innovations.⁷¹ Although Italian forces and commanders continued to fight in subsequent battles on the Italian Peninsula, such as the Battle of Pavia in 1525, when there were 3–4,000 Italian soldiers on both sides, they never again did so as a full independent army. The Republic of Venice was the only Italian state to retain an army continuously up to 1530, carrying on its fifteenth-century traditions.⁷²

NAVAL WARFARE

The greatest challenge for naval warfare everywhere in the Mediterranean was the threat of piracy, which greatly increased in the early sixteenth century. The pirates came mostly from the region of Tripoli, Tunis and Algeria, and their method was the surprise attack. Defence against them was only possible with

69 Pieri, *Il Rinascimento*, 462–463.

70 Mallett, *Mercenaries*, 252–254.

71 Angiolo Lenci, 'Agnadello: la battaglia,' in Giuseppe Gullino (ed.), *L'Europa e la Serenissima: La svolta del 1509. Nel V centenario della battaglia di Agnadello*. Venezia, 2011, 75.

72 Pieri, *Il Rinascimento*, 603; Mallett, *Mercenaries*, 255.

small, light ships that could navigate in shallow coastal waters. Mediterranean, particularly Italian, navies therefore had light fleets designed for coastal action. These in general divided into two parts. The Venetians called these *squadre leggere* and *squadre pesanti*, i.e. light and heavy squadrons, while the Neapolitans used the more descriptive terms *squadra delle galere* (galley squadrons) and *squadra delle navi reali/vascelli* (royal sailing ship squadrons). The former were Latin-rigged ships with oarsmen, enabling them to move fast in both wind and calm, while the latter were square rigged and required larger crews of sailors than the galleys to execute combat manoeuvres. Unlike the galleys, they could carry more than four or seven days' supplies because they did not have to feed the oarsmen, and they could carry more and larger-calibre guns on their decks. Nonetheless, the *squadre leggere* were more numerous and more useful, so much so that some navies, such as the pope's, did not have any other type of ships.

The states most under threat from the pirates – Naples, the Kingdom of Sardinia and Sicily, the Papal States and the Republic of Venice (the latter being particularly concerned about its trade and its Levantine possessions) – set up coastal observation networks of towers with guns, garrisoned with infantry and cavalry units.⁷³

The Italian states built and maintained very few ships themselves. Instead, they hired ships for campaigns from their commercial owners or made long-term contracts with naval entrepreneurs such as the admiral of the Republic of Genoa, Andrea Doria (1466–1560),⁷⁴ who also gained a substantial reputation as a *condottiere*. The only large state-maintained navy was that of the Republic of Venice. In the early sixteenth century, its fleet of about a hundred galleys (apart from the Corfu squadron) was stationed in the great naval shipyard and weapons factory in Venice, the *Arsenale*, established in the twelfth century.⁷⁵ When needed, they could be supplied with crews and equipment and put into action extremely rapidly.⁷⁶ The number of ships in constant operation in the Venetian fleet thus varied from year to year: small galleys numbered 83 in 1504, 56 in 1518, and only 25 in 1525, while more than a decade later, because of the Ottoman–Venetian wars of 1537–1540, the number went up to 82 in 1537, 65 a year later and 72 the next year, before returning, on average, to the 1525 level in the 1540s.⁷⁷

SUMMARY

The Italian Wars between 1494 and 1559 exerted a very great effect on the development of the Italian states' military technology, tactics and strategy. The mode of warfare was transformed, whole state and political structures had to be rethought, and there were far-reaching economic consequences.

⁷³ Paoletti, *Gli Italiani in armi*, 19–20.

⁷⁴ Pierangelo Campodonico, *Andrea Doria*. Genova, 1997.

⁷⁵ Ennio Concina, *L'Arsenale della Repubblica di Venezia*. Firenze, 2006.

⁷⁶ Mallett and Shaw, *The Italian Wars*, 211–212.

⁷⁷ Pezzolo, 'The Rise and Decline', 4.

On the eve of the Battle of Mohács, in 1525, following Emperor Charles V's decisive victory over the French at Pavia, the Italian states seem to have come to their senses and realized the danger of losing everything they had. Diplomatic talks began among Venice, Rome, Milan, Lucca, Siena, Genoa and the recently-elected anti-Spanish Medici pope, Clement VII (1523–1534).⁷⁸ They did not succeed, however, in establishing a balance between Francis I of France and Emperor Charles V, largely because the parties distrusted each other and had a tendency to face both ways. The hostilities continued, and the idea of an Italy independent of the great European powers would only be realized centuries later.⁷⁹ The resumption of the conflict in Italy, however, distracted the European powers from the ambitious plans of Sultan Süleyman I (1520–1566) and set the international stage for the collapse of the Kingdom of Hungary in 1526.

The prolonged Italian Wars, in which Italian forces were fighting on both sides, ended with no gains for the French. Naples and Milan became a Spanish province, and Spain also established hegemony over the whole Italian Peninsula. The Republic of Venice and Savoy were the only states to retain at least a formal independence.

⁷⁸ Paoletti, *Gli Italiani in armi*, 37–38.

⁷⁹ The Kingdom of Italy was proclaimed in 1861, the result of the independence-seeking efforts of the Risorgimento movement following the Congress of Vienna of 1815.

Attila Györkös

LATE MEDIEVAL SWISS ARMED FORCES AND MILITARY ORGANIZATION

“Where are my Switzers? Let them guard the door.”
William Shakespeare: Hamlet. Act 4, scene 5.

INTRODUCTION

In Shakespeare’s Hamlet, the frightened Claudius, king of Denmark, orders soldiers to guard his door. The playwright takes it for granted that the royal guards are Swiss. Soldiers from the Swiss cantons, much valued for their loyalty and capabilities from the late fifteenth century onwards, were often employed as bodyguards, and not only in the great English author’s fictive “Denmark”. They were very familiar in the Papal and French courts. When the French revolutionary mob besieged the Tuileries on 10 August 1792, most of the defenders were Swiss.

Swiss infantry troops recruited among free peasants and townspeople had excelled in many wars of the Middle Ages. In 1315, the federal cantons won their freedom from the Habsburgs at Morgarten. In 1477, they defeated the Burgundian army at Nancy, and they came out victorious from several battles of the Italian Wars, notably at Novara in 1513. The Swiss cantons produced the most feared and respected military force in late medieval Europe.

TERRITORY AND POPULATION

“Rome and Sparta were for many centuries well armed and free. The Swiss are well armed and enjoy great freedom.”¹ Machiavelli’s observation highlights both the freedom and the military strength of the Swiss people. The cantons took several decades to gain their freedom, and it was during this struggle that they developed their formidable tactical skills. The beginnings of the confederation in the Alpine lands may be traced to the thirteenth century: in 1281, three Forest Cantons on the periphery of the Holy Roman Empire – Schwyz, Uri and Unterwalden – forged an alliance to thwart the ambitions of Rudolf I of Habsburg (1273–1291). At the Battle of Morgarten in 1315, they won the freedom to maintain their unique system of self-government.

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1 Niccolò Machiavelli, *The Prince*. Translated by Luigi Ricci. London, etc., 1921, Chapter XII, 49.

This Old Confederacy was joined in 1353 by five further cantons: Glarus, Zug, Luzern, Zürich and Bern, to form the Eight Old States (*Acht Alten Orte*), the core of the late medieval Swiss Confederacy. By the early sixteenth century, some independent cantons and their vassal territories had also joined.² Fribourg and Solothurn became members in 1481, Basel and Schaffhausen in 1510, and Appenzell in 1513. The abbey of Saint Gall, the city of Geneva, and the lands of Neuchâtel and Valais were associates rather than full members.³ The Confederacy, after freeing itself from imperial edicts through the Swabian War of 1499, became a de facto independent entity, and by 1513, it consisted of thirteen cantons. De jure independence for Switzerland, however, came only in 1648, after the Peace of Westphalia.

The individual cantons effectively had full autonomy, and the Confederacy had no common army, administration or budget. The only forum that to some extent coordinated the policies of the cantons was the bi-monthly meeting of the “diet” (*Tagsatzung*), consisting of delegates from every full member region. This always aimed for a consensus, but the Eight Old States reserved the right to exempt themselves. The network of cantons essentially consisted of bi- and multilateral contacts, and only occasionally did a common foreign policy emerge. This changed in the sixteenth century, when the cantons acted in unison to support or oppose some great power fighting in the Italian Wars.⁴

We have no reliable data on the population of the Confederacy in the early sixteenth century. Some historians put it at half a million,⁵ others at what I consider the more realistic figure of 800,000.⁶ At the end of the century, it is estimated that about five per cent of the population, i.e. 40–50,000 men, were serving in the armies of foreign states.⁷

ACTUAL MILITARY POTENTIAL

The number of troops that could be mobilized at the turn of the fifteenth and sixteenth centuries seem to have been lower than this. At Grandson in 1476, 20,000 Swiss troops fought against the army of Charles the Bold of Burgundy;⁸ the Battle of Novara in 1513 involved about 9,000 Swiss troops;⁹ and at Marignano two years later, a force of 23,000 attempted to prevent Francis I from capturing Milan. In 1522, about 16,000 Swiss troops served in the French army.

2 Albert Winkler, ‘The Battle of Murten: The Invasion of Charles the Bold and the Survival of the Swiss States’, *Swiss American Historical Society Review* 46:1 (2010) 11.

3 John Casparis, ‘The Swiss Mercenary System: Labor Emigration from the Semiperiphery’, *Review (Fernand Braudel Center)* 5:4 (Spring 1982) 594.

4 Amable Sablon du Corail, ‘Marignan. Triomphe de l’ordre monarchique sur les libertés médiévales’, *Commentaire* 156 (hiver 2016–2017) 834–835.

5 Clive Church and Randolph Head, *A Concise History of Switzerland*. Cambridge, 2013, 99.

6 Norman John Greville Pounds, *An Historical Geography of Europe 1500–1840*. Cambridge, 1979, 102.

7 Church and Head, *A Concise History*, 99.

8 Winkler, ‘The Battle of Murten’, 18–19.

9 Olivier Bangerter, *Novare (1513). Dernière victoire des fantassins suisses*. Paris, 2012, 67–69.

The Swiss historian Olivier Bangerter has established the regional breakdown of the troops that marched on the 1513 campaign. We will look at some highlights rather than going into the details. The cantons and associates each raised a hundred troops for the common army. The most populous cantons, Bern and Zurich, provided the most – 1,250 each – and most of the others, between 400 and 700. The subject territories sent only a few dozen each. The final number was greatly boosted by about 3,000 volunteers who went to war on their own account rather than by decision of the diet, and were not paid but hoped for booty.¹⁰

The volunteers were not an insignificant force. About 6,000 of them fought on the Swiss side at the Battle of Nancy on 5 January 1477, where the Burgundian army was defeated and lost their duke and commander, Charles the Bold. The wealthiest and most prestigious ruler in Europe, his frozen body was found two days later, stripped of his clothes and mutilated by wild animals.¹¹

ASPECTS OF MILITARY ORGANIZATION

The Swiss armed forces consisted essentially of lightly-armed infantry. There are no records of any significant cavalry or artillery, and their only use of cannons seems to have been in the Burgundian and Habsburg wars, for the defence of forts, never in open battle.

Swiss soldiers typically fought without armour. Most were armed with pikes and halberds, very few with firearms. A source from 1443 states that of the 2,760 troops from Zurich canton, 58% were halberdiers, 23% pikemen, 17% crossbowmen and only 2% arquebusiers.¹² The number of crossbows understandably declined in favour of the arquebus, but firearms did not become dominant in our period. Pikes, however, became more numerous at the expense of halberds. At the Battle of Marignano in 1515, about half of the Swiss troops carried pikes, 45% halberds and only 5% firearms.¹³ There was actually a downward trend in the proportion of arquebusiers. This was due to their relative expense. The problem was recognized at the time, and in 1499, Bern canton ordered increased pay for soldiers who could use firearms but did not possess them. The Swiss arquebusiers hired by the pope received half a ducat more than pikemen and halberdiers. The later Reformer Ulrich Zwingli, who often served as field pastor for Glarus canton in Italy in the 1510s (and was present at the battles of Novara and Marignano)¹⁴ wrote, “be particularly mindful that a third or a quarter of every unit should be equipped with arquebuses, because in future, battles will be fought with firearms.”¹⁵

10 Bangerter, *Novare* (1513), 68.

11 Henri Dubois, *Charles le Téméraire*. Paris, 2004, 439–440.

12 Douglas Miller, *The Swiss at War 1300–1500*. London, 1995 [1979], 16.

13 Sablon du Corail, ‘Marignan’, 836.

14 Stephen Brett Eccher, ‘Huldrych Zwingli: Reformation in Conflict’, *Perichoresis* 15:4 (2017) 34–35.

15 Bangerter, *Novare* (1513), 66.

Their battlefield formation was the square, in which pikemen stood in the outer ranks to defend against cavalry attacks and provide a secure position for the halberdiers and arquebusiers in the interior, who could easily shoot or advance to the front.¹⁶

According to the French military historian Sablon du Corail, the Swiss army's secret of success lay in three characteristics. First, the weaponry was simple but effective, providing defence and effective offensive capability against both infantry and cavalry. The second element was solidarity. The soldiers were recruited from small communities and fought under the standard of their own canton, shoulder to shoulder with relatives, neighbours, fellow villagers and guild members, helping each other on the battlefield. The valour or cowardice a soldier displayed in battle determined the esteem he was held in by the community after his return. This engendered the third factor, audacity, together with a level of brutality that was remarkable even at the time and spread fear among the enemy.¹⁷ According to records of the war against France in 1444, the Swiss soldiers had to be specifically prohibited from cutting out the hearts of fallen enemies.¹⁸ Thirty years later, after the Battle of Héricourt in the Burgundian Wars, the Swiss called their German and Lorrainian allies to account for having taken seventy of the enemy's nobles prisoner. The Swiss refusal to take prisoners was shockingly at odds with the military philosophy of the time. In 1476, the council of the Confederacy took a decision that troops should ensure "so far as possible to kill our enemies". In March of the same year, Swiss forces captured the fort of Grandson from the Burgundians, and hung every single one of the defenders.¹⁹

The astonishing bravado of the Swiss troops brought them failure as well as success. At the Battle of Novara in 1513, the Swiss defeated the numerically superior French army in a surprise attack.²⁰ The same audacity led to defeat at Marignano two years later. The Swiss again launched a surprise attack in the afternoon, and despite enormous losses, crushed the enemy artillery, but lost their momentum as night fell. The French managed to regroup, and came out victorious.²¹ At Bicocca in 1522, the Swiss, now in the pay of the French, irresponsibly went on to the attack, losing the battle and incurring enormous casualties.²²

16 Winkler, 'The Battle of Murten', 12.

17 Amable Sablon du Corail, '«Ce sont par nature des hommes féroces et rustiques». L'art de la guerre suisse au tournant des XV^e-XVI^e siècles', in Alexandre Dafflon, Lionel Dorthe and Claire Gantet (eds.), *Après Marignan, la paix de Fribourg entre la France et la Suisse*. Paris, Fribourg, 2018, 411-412.

18 Philippe Contamine, *War in the Middle Ages*. Oxford, 1986, 291.

19 Winkler, 'The Battle of Murten', 13, 19.

20 Laurent Vissière, 'Novare ou l'échec de Louis II de La Trémoille (1513)', *Bollettino storico per la provincia di Novara* 104 (2013) 228-230.

21 Didier Le Fur, *Marignan, 1515*. Paris, 2004, 114-132.

22 Sablon du Corail, 'L'art de la guerre suisse', 417.

There was another factor, however, that underpinned the great popularity of Swiss troops: loyalty. Unlike most companies of the era, the Swiss contingents would fight to the last breath for their paymasters, and betrayal was very strictly punished. Even though the soldiers were employed by a foreign army, they had been sent by decision of the diet and were effectively fighting for their own communities. By the above mentioned decree of 1476, the Swiss could not fight against each other. If the possibility arose, they would refuse to fight. A good example is the “Treason of Novara” of 1500. At the siege of the town of Novara (not to be confused with the 1513 battle), there were Swiss mercenaries among both the French besiegers and the Milanese defenders. All the Swiss troops were volunteers, and neither contingent was present by decision of the diet. Since the two companies were not willing to fight each other, the French army under Louis de La Trémoille offered free passage to the Swiss trapped in the city in return for the handing over of Duke Lodovico Sforza (Lodovico Il Moro). The defenders disguised the duke as a mercenary, but as they marched out, he was betrayed by the Swiss soldier Hans Turman and was taken captive. The French gave Turman a 200-*livre* reward, but upon returning to Uri canton, he was taken prisoner and executed for treason.²³

Another strength of the Swiss army was its speed. Despite being infantry troops, they could march at a speed that surpassed that of the other contemporary armies. This was clearly because their baggage train was very small, with no artillery and minimal victuals. The troops carried only a few days’ supplies and usually foraged in the land they passed through.

On 4 December 1476, at the request of the duke of Lorraine, the diet of the Confederacy granted permission for recruitment against the Burgundians. One month later, a formation of about 6,000 troops, despite the bad weather and difficult terrain, were ready for battle at Nancy.

In spring and summer 1513, the Swiss marched to defend Lombardy against a French attack. It took the 16,000-strong army of Louis XII twenty-one days to cross the Alps via the Mont-Cenis Pass (23 April – 17 May). Their Swiss opponents were considerably faster: at the request of the duke of Milan, the Swiss diet decided on 28 April to send 4,000 troops on 4 May. They were joined by about 2,000 volunteers. The companies from the east and west cantons united at Arona in North Lombardy on 18 May. Despite the late start, the Swiss infantry had reached the theatre of operations in time. On 21 May, the diet decided on further reinforcements, and six days later, another 8,000 troops started their march south to join their compatriots. Some travelled through the St Gotthard and Simplon Passes and arrived at the rendezvous point in Oleggio on 4 June. The forces of the eastern cantons, however, came through the St Bernard Pass and arrived too late for the Battle of Novara on 6 June.²⁴

23 Valentin Groebner, *Liquid Assets, Dangerous Gifts: Presents and Politics at the End of the Middle Ages*. Philadelphia, 2002, 99.

24 For the details, see Bangarter, *Novare* (1513), 77.

The outstanding mobility of the Swiss was not always to their advantage: in 1510, and again the following year, the infantry who came to the Duchy of Milan were so unprepared that “they dispersed themselves to their own Habitations, their own being reduced to the last Extremities for want of Bread, and vastly distressed for want of Money”.²⁵ Lacking substantial logistical backup, the Swiss aimed for a decisive battle as early as possible in a campaign, because a prolonged military operation would stretch their supplies beyond limit. As a contemporary, Niccolò Macchiavelli, put it: “The Swiss are reluctant to depart the frontier region for the plain, because they do not dare to leave behind their well-defended places and rightfully fear they will not find food and will be unable to make their way back to the hills from the flat country.”²⁶

SWISS INVOLVEMENT IN INTERNATIONAL CONFLICTS

The potential of the Swiss mode of combat, despite having developed during the fourteenth-century wars of independence, took a long time to come to the attention of the European great powers. The first king to get a taste of their courage, good organization and audacity was Louis XI of France (1461–1483). As heir to the throne, in league with the Holy Roman Empire, he led an army against the cantons in 1444. It was a period of truce during the Hundred Years’ War, and unpaid mercenaries known as *écorcheurs* (skinners) were ravaging the French countryside. Putting them to employment was as much an aim of the campaign as helping the Habsburgs. The 12,000-strong royal army encountered a Swiss contingent of no more than 1,500 or 2,000 at Sankt Jakob an der Birs, near Basel. In the bitter struggle, the Swiss did not abandon their positions and fell on the battlefield to the last man. It was not, however, an easy victory for the French, who lost about 4,000 men in the battle.²⁷

Louis learned his lesson and made an alliance with the Confederacy. Swiss foot soldiers served in his army throughout his rule and gained an international reputation in victories against the duke of Burgundy (Grandson, Morat/Murten and Nancy, 1476–1477). His successor, Charles VIII (1483–1498), at first broke off relations for financial reasons, but found Swiss support indispensable for his Italian campaign of 1494–1495.

Louis XII first made an alliance with the cantons as he prepared to take Milan in 1499, and he maintained good relations for ten years. The change came in 1510, when the Swiss diet allowed Pope Julius II (1503–1513) to recruit about 6,000 soldiers “for his own defence”, turning the Swiss from friends to enemies.²⁸

25 Francesco Guicciardini, *The History of Italy*. Vol. V. Translated by Austin Parke Goddard. London, 1763, Book IX, 75.

26 Niccolò Machiavelli, *Körkép a franciaországi állapotokról*. Translated by Norbert Iványi, in *Niccolò Machiavelli művei*. Vol. 1. Budapest, 1978, 663.

27 Paul Murray Kendall, *Louis XI*. «...l’universelle araigne...». Paris, 1974, 32–40.

28 Alain Marchandisse, ‘Les Français, les Suisses, l’Empire (1499–1516)’, in Marino Viganò (ed.), *Marignano 1515: la svolta. Atti del congresso internazionale Milano, 13 settembre 2014*. Milano, 2015, 310–313.

It took the tragic losses of the Battle of Marignano in 1515 to convince the cantons to resume their alliance with the French crown: in a treaty of “eternal peace” signed in Fribourg on 29 November 1516, Francis I (1515–1547) again secured Swiss military support.²⁹ Swiss soldiers fought on the French side at Bicocca (1522) and Pavia (1525), without success on either occasion.

As we have seen, a foreign government wishing to hire Swiss soldiers had to make diplomatic representations to the Confederacy. After the alliance was made (effectively, permission was granted), the foreign country could raise a contingent of the size set by the diet. The troops were recruited, mustered and commanded by the cantons, but the foreign country was required to pay the Confederacy an annual retainer over and above the soldiers’ pay. The diet then distributed this money among the cantons in proportion to the obligations they fulfilled.

Although the 1476 decree, which was confirmed several times, prohibited the Swiss from fighting against each other, the case of Novara in 1500 demonstrated that volunteers could enter the service of any power regardless of the treaties. An attempt to prevent this was the *Pensionsbrief* of 1503, which banned the employment of volunteers without permission and laid down rules for recruitment and mobilization.³⁰

“NO MONEY, NO SWISS”: FINANCIAL ISSUES

This comment by the seventeenth-century French dramatist Jean Racine³¹ was a reference to Paris concierges who collected gate money, and were largely Swiss, but it turned into a saying about the army. Finance did indeed play a prominent role in the employment of Swiss mercenaries.

In winter 1476, when René II, duke of Lorraine (1473–1508), sought assistance for his Nancy campaign, the Confederacy did not wish to take an official part in the military operation and permitted only the recruitment of volunteers. René promised 40,000 Rhenish guildens for permission to raise a Swiss army of about 6,000 troops. He paid the Confederacy one quarter in advance, with the promise to pay the remainder after the success of the campaign, which he duly did.³² Things did not always go so smoothly. Several thousand Swiss soldiers served in the French army during the first Italian campaign of 1494–1495, but several years passed before most of them received their pay.

Failure to pay soldiers, or lateness in payment, caused serious problems. In 1510, the Swiss, then in alliance with the pope, invaded French-controlled Lombardy but were unable to reach Rome, where they would have been paid. Neither was the money sent by the Fuggers, who were acting as agents for Julius II,

29 Sablon du Corail, ‘Marignan’, 841.

30 Casparis, ‘The Swiss Mercenary System’, 597–598.

31 *Point d’argent, point de Suisse*: Jean Racine, *Les Plaideurs*. Acte 1, scène 1.

32 Dubois, *Charles le Téméraire*, 435–438.

and the Swiss troops went home almost without engaging in combat.³³ At Bicocca in 1522, the motivation for their reckless (and fatal) attack was that their pay was conditional on the campaign having a successful outcome.

Otherwise, the Swiss were well-paid soldiers by contemporary standards. In the early sixteenth century, a soldier armed with pike or halberd earned four and a half Rhenish guldens per month. The rarer arquebusiers, with their expensive equipment and special training, received five guldens, as did the junior officers. This exceeded the pay of *landsknecht* by half a gulden or one gulden.³⁴ By comparison, an average Swiss artisan earned about half this much, and there was another factor that made military service attractive: the prospect of loot.³⁵

THE LAST MAJOR VICTORY OF THE SWISS INFANTRY: NOVARA, 6 JUNE 1513

Louis XII of France first acquired Lombardy in 1499, when he asserted his right to the territory through his grandmother, Valentina Visconti. After the suppression of an uprising against his rule the next year, French control of North-West Italy stabilized for more than a decade. In 1511, however, Pope Julius II formed the Holy League to stop the French from expanding their influence and to expel them from the Italian Peninsula. This embraced almost all the small Italian states, and had the support of the Spanish and the Holy Roman Empire. Even England attempted to harmonize its policies with the League.³⁶

As we have seen, the Swiss cantons were reliable allies of the French for a long time, but after 1510, they leaned towards support for the papal policy. In addition to many minor points of friction, their change of mind derived from longstanding Swiss interests in the Milan region, both economic and political-military. The Alpine lands largely depended on Lombardy for their supply of food and as a trading partner, and they looked with increasing suspicion on the French presence there.

The Swiss therefore stood to gain when the League forces went to war against the French in 1512. Louis XII's nephew, the young Gaston de Foix, faced the main Spanish-papal force at Ravenna on 11 April 1512. The outcome was a pyrrhic victory for the French. Although celebrating a triumph, they had lost their commander, who at the age of twenty-three was already the legendary "lightning of Italy". Overestimating the significance of the victory, Louis XII ordered much of his army home, a decision with expensive consequences. Encouraged by Julius II, the Swiss fell on Lombardy, capturing one town after another. By December, the French had to evacuate Milan, where Massimiliano Sforza, son of the former sovereign Lodovico Il Moro, proclaimed himself duke. The

33 Francesco Guicciardini, *Histoire d'Italie, 1492–1534*. Paris, 1996, 658–659 (Livre IX, chap. VII).

34 On this, see Bence Péterfi's essay in this book, p. 191.

35 Bangerter, *Novare (1513)*, 66.

36 On the diplomatic changes of the time: Didier Le Fur, *Louis XII. Un autre César*. Paris, 2001, 95–112.

Confederacy undertook military support for the new regime, securing Swiss interests in the region. Their immediate gain was the award of the towns of Lugano and Locarno and some other minor territory.

Julius II worked assiduously to organize the Holy League and keep it together. After his death in February 1513, his successor Leo X carried on his policies and endeavoured with all his strength to prevent the French from re-establishing themselves in North Italy. Although the exhausted Venice entered an alliance with France on 11 March,³⁷ the pope, threatened with another French invasion, attempted through the Treaty of Mechelen to hold on to the League's allies – the Swiss cantons, England, and the Holy Roman Empire. Louis' troops duly crossed the Alps in May, but Swiss forces also marched to defend the duchy, and arrived in May and June.³⁸

The French were led by Louis de La Trémoille, a veteran of the Italian Wars, who had taken part in every campaign since 1494. His army had a total strength of approximately 16,000, of which 1,375 were heavy cavalry, 670 light cavalry, 7,500 German *landsknechts*, and 6,500 other infantry (mostly from Gasconne and Picardy). He also had eighteen artillery pieces.³⁹ On 30 May, at the news of their arrival, an uprising broke out in Milan against Duke Massimiliano, who fled the mob to Novara, about fifty kilometres west of Milan. La Trémoille considered that Milan could wait, and as his first strategic objective, aimed to capture the duke, as he had captured Massimiliano's father Lodovico Il Moro in the same town thirteen years before. The French leaders also expected the arrival of their Venetian allies, giving them a substantial numerical superiority for the next stage of the campaign.

The French laid siege to the town on 4 June. Next day, after an unsuccessful assault, they learned that a Swiss army had set off from Milan to relieve the town. To avoid having to fight on two sides, La Trémoille decided to abandon the siege and retreat about ten kilometres to the town of Trecato. Following this late-afternoon decision, the army only had time, after striking camp, to march a few kilometres to the east somewhat short of Trecato. They pitched camp at Ariotta, an unfavourably situated area of marsh and forest, criss-crossed by channels. Not fearing an attack, they made no attempt to fortify the camp,⁴⁰ a decision that proved fatal.

The 9,000-strong Swiss force marching to relieve Novara were indeed on their way, and in the early hours of the morning, they surprised the unprepared French in their camp. The tactics were simple: most of the army, about 7,000 troops, attacked the French guns and the German *landsknechts* who were guarding them,

37 Le Fur, *Louis XII*, 106.

38 On this, see the discussion of logistics above.

39 Vissière, 'Novare', 225.

40 *Ibid.*, 228. We should note Kelly DeVries' view that the site was chosen deliberately (Kelly DeVries, 'Novara, 1513', in Kelly DeVries et al. [eds.], *Sorsdöntő csaták, melyek megváltoztatták a hadviselés arculatát*, i.e. 1457–i.sz. 1991. Budapest, 2009, 96). Speaking against this is the fact that the terrain prevented the French heavy cavalry from launching any charge during the battle.

while the two flanks, each numbering about 1,000, encircled the enemy from right and left and secured the field almost without meeting resistance. The suddenness of the attack and the unfavourable terrain prevented the French heavy cavalry from counter-attacking on the flanks.⁴¹ The battle was thus effectively concentrated on the charge against the guns. Taken by surprise, but quickly going into action, the French artillery started firing – almost blindly, in the dark, according to Guicciardini⁴² – and caused enormous casualties in the main Swiss force. The Swiss nonetheless reached and captured the guns and entered into bitter close combat with the defending *landsknechts*. La Trémoille was asleep when the attack came. He broke out of the ring of the enemy only with great difficulty, injuring his legs and face. The French forces fled, but the Swiss, lacking cavalry, did not pursue them and turned their attention to looting the French camp.

The casualties amounted to about a quarter or a third of the French troops: hardly any of the heavy cavalry, but a very great proportion of the German infantry, were lost. Between 1,000 and 1,300 Swiss soldiers were cut down by cannon fire, half of the Swiss losses.⁴³ The special significance of the battle was that La Trémoille was incapable of regrouping his fleeing troops and abandoned not only the battlefield but Lombardy itself.

The French-Swiss confrontation, however, did not come to an end at Novara. In September, a Swiss army invaded French Burgundy and besieged its capital, the city of Dijon. Louis XII managed to relieve the town only at enormous financial expense. He purchased peace by paying the Swiss forces a ransom of 400,000 *écus*, of which the city residents immediately put up 25,000 *écus*.⁴⁴ This marked the start of a new but brief phase in the complicated history of the Italian Wars, during which Milan was an independent duchy supported by Swiss military force. This lasted only two years and ended with the battle of Marignano, won by the new king of France, Francis I.⁴⁵

SWISS GUARDS

The quotation at the beginning of this study shows that for Shakespeare, a Swiss soldier meant a royal guard. This was not always the case. Although the cantons lent large military forces to certain European powers from the late fifteenth century onwards, Swiss soldiers were first employed for personal security only

41 According to the memoirs of an eye-witness, Martin du Bellay, “the heavy cavalry could not assist the infantry because of the channels and the large ditches between them”. Quoted in Bangerter, *Novare* (1513), 90.

42 Guicciardini, *Histoire d’Italie*, 868–870 (Livre XI, chap. XII).

43 Historians evaluating the losses have not given consistent figures. The French losses are put at 3,700 by DeVries and 5–6,000 by Bangerter, and the Swiss losses at 1,300 and 900–1,000 respectively: DeVries, ‘Novara’, 97; Bangerter, *Novare* (1513), 99–100.

44 Catherine Chédeau, ‘Le siège des Suisses à Dijon en 1513’, in Gabriel Audisio (ed.), *Prendre une ville au XVI^e siècle*. Aix-en-Provence, 2004, 21.

45 On the Battle of Marignano, see the essay in this book on the French military organization by Attila Györkös.

in 1496 or 1497, by Charles VIII of France. The mercenaries always served under their own commanders, but from the beginning, the 127-strong company of guards known as the *Cent-Suisses* were placed under French command.⁴⁶

The Swiss units of the royal guard only entered permanent service in 1616, by then as a separate regiment consisting of eight units each of 160 soldiers. The main tasks of the guard were to defend the royal palace, guarantee the personal safety of the monarch, and provide security for his retinue. When France was in ferment in the middle of the seventeenth century (the Fronde movement, 1648–1653), there was a great need for their services. The Swiss guards increased in number, and in the middle of the century were divided into an external guard (*garde du dehors*) and an internal unit that carried on the name *Cent-Suisses*. The former also went on military operations, while the latter continued as royal guards. During the French Revolution, in 1791, the Swiss guard regiments were dissolved, but 950 guards remained to defend the Tuileries. Six hundred of them died in the siege of the royal palace on 10 August 1792.⁴⁷

Pope Julius II (1503–1513) seems to have followed the French model when, in June 1505, he reached an agreement with the Swiss diet for the hiring of a permanent guard of two hundred foot soldiers. On 22 January 1506, however, only one hundred and fifty guards were in service in Rome, under Swiss commanders.⁴⁸ There was great need for their loyalty and courage in 1527, when they had to take Pope Clement VII (1523–1534) to safety during the Sack of Rome, when Habsburg mercenaries besieged and looted the city. It is characteristic of their determination that two-thirds of the guards lost their lives in the struggle.⁴⁹

Today, members of the approximately hundred-strong papal guard (*Pontificia Cohors Helvetica*) must be Catholic Swiss male citizens, more than 174 centimetres tall, with a military background. They increasingly (but not exclusively) have a protocol function, wearing ceremonial uniforms that follow the Renaissance fashion.

46 There is no consensus on the formation of the *Cent-Suisses* in the literature I am familiar with. Most recently, Patrick Villiers has dated it to 1496, mentioning Louis de Meuthont as the commander, while Potter claims it was formed one year earlier under Guillaume de la Marck: Patrick Villiers, 'La garde suisse, de Marignan aux Tuileries?', in Jean-Jacques Roche (ed.), *Des gardes suisses à Blackwater. Mercenaires et auxiliaires d'hier et d'aujourd'hui*. Paris, 2010, 32, and David Potter, *Renaissance France at War. Armies, Culture and Society, c. 1480–1560*. Woodbridge, 2008, 125.

47 Villiers, 'La garde suisse', 33–35.

48 *ducentos Elvetios pedites quos pro custodia palatii nostri tenere decrevimus*. Quoted in: Thomas Mür, 'Petermann von Hertenstein: Ein Prälatenleben am Beginn der Frühen Neuzeit', in Urban Fink, Hervé de Weck and Christian Schweizer (eds.), *Hirtenstab und Hellebarde. Die Päpstliche Schweizergarde in Rom 1506–2006*. Zürich, 2006, 71.

49 Remo Ankli, 'Zürich und die Anfänge der Schweizergarde', in Fink, de Weck and Schweizer (eds.), *Hirtenstab und Hellebarde*, 96.

SUMMARY

The Swiss mode of infantry combat was one driving force of the changes in the late medieval military arts. Swiss tactical innovations contributed to the fading of the heavy cavalry from European battlefields. After flourishing for a few decades, however, they proved unable to adapt to new military developments in the first third of the sixteenth century. As Zwingli warned his compatriots at the time, the future belonged to firearms. Paradoxically, this was already perceptible in the victory of Novara, but was subsequently to become much clearer. In the words of the great military historian Charles Oman: "At the time when the great struggle in Italy was serving as a school for the soldiery of other European nations, they [the Swiss] alone refused to learn."⁵⁰ Nonetheless, Swiss soldiers made an essential contribution to European armies for centuries, gradually losing their status as innovators but valued as reliable combatants.

⁵⁰ Sir Charles Oman, *A History of the Art of War in the Middle Ages*. Vol. 2. London, Pennsylvania, 1991, 273.

THE MILITARY ORGANIZATION AND ARMY OF THE KINGDOM OF FRANCE (1494–1534)

TERRITORY AND POPULATION

The Kingdom of France greatly expanded its territory and population at the turn of the fifteenth and sixteenth centuries, partly due to conquest and partly to the enormous demographic explosion that followed the end of the Hundred Years' War. We begin with the territorial expansion. French historians demurely call this process the "restoration of royal power". That is because the outcome of the Hundred Years' War had brought within the kingdom many great estates whose lords acknowledged fealty to the king only in principle, if at all. The largest of these were the two independent duchies of Burgundy and Brittany, but there were also aristocratic domains – duchies and counties – that enjoyed internal autonomy, such as Bourbon, Berry, Anjou, Orléans, Alençon and Armagnac.

These polities actively interfered in royal affairs and resisted the growing influence of the king. The tensions broke into several aristocratic revolts in the second half of the fifteenth century, including the Praguerie (1440),¹ the League of the Public Weal (1465)² and the Mad War (1487–1488).³ What all these conflicts had in common was that great feudal lords acted in league to block the increase of royal power, and this involved trying to reverse the economic-military

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- 1 After ordering a small standing army to be established by a decree of 2 November 1439, Charles VII faced a rebellion from Louis, heir to the throne and Louis' aristocratic allies. It took six months to suppress the rebellion.
- 2 After Louis XI of France (1461–1483) recaptured the Somme towns that had been awarded to Burgundy in the 1435 Treaty of Arras, Charles the Bold, duke of Burgundy, responded by establishing the League of the Public Weal, an alliance of the most powerful French aristocrats. The royal army was defeated by League forces at Montlhéry, obliging Louis XI, the following year, to sign the Treaty of Conflans, in which he returned the territories to Burgundy, extended with grants of further minor estates.
- 3 On this, see Attila Györkös, 'A „bolond háború” – avagy a francia monarchia és az arisztokrácia utolsó összecsapása a középkorban', in László Pószán and László Veszprémy (eds.), *Elfeledett háborúk. Középkori csaták és várostromok (6–16. század)*. Budapest, 2016, 100–112.

reforms. Although the king managed to suppress the rebellions militarily, he always had to make compromises to secure a supposedly lasting peace.

Time was on the side of the Valois dynasty: the ducal families of Burgundy, Anjou and Brittany all died out in the male line within a period of eleven years (in 1477, 1481 and 1488 respectively). Burgundy escaped complete control and became a source of conflict between the Habsburgs and the kings of France for centuries to come, but Louis XI (1461–1483) added extensive lands to the monarchy. In 1481, the crown took possession of the Angevin provinces in France and even of Provence, which lay on the territory of the Holy Roman Empire. The Angevin legacy also included a claim to the throne of Naples, on which the legitimacy of France's aims in the Italian wars was partially based. Brittany was acquired by marriage: the young Charles VIII (1483–1498) took Anne, the heiress to the duchy, as his wife (although he had to fight a war first).⁴ This finally ended the autonomy of the great feudal domains.

This territorial expansion partly accounts for the increase of population in the monarchy. The Kingdom of France covered an area of 450,000 km² in the early sixteenth century, less than that of modern France (551,000 km²).⁵ In addition, a considerable demographic increase may be perceived from 1453 onwards, lasting until at least the 1520s. The scale of the increase is difficult to pin down, and French historiography does not give definite figures.

Philippe Contamine claims that the country had about 10 million inhabitants in the last third of the fifteenth century,⁶ a figure that Emmanuel Le Roy Ladurie sees as true only for around 1450, at the end of the Hundred Years' War.⁷ Janine Garrisson mentions as a consensus view that the French population was 16 million in 1515, 17 million in 1547 and 20 million in 1560.⁸ Arlette Jouanna claims that a great population increase began after the Hundred Years' War and puts the number living within the borders of France in 1559 at 18 million (20 million within the present borders).⁹ Despite all of these uncertainties, one thing is sure: France was the most populous and densely-populated country of Europe at that time.

STATE REVENUES

French state revenues rested largely on four pillars: a tax on land or persons (*taille*), salt tax (*gabelle*), extraordinary tax on trade, known as "aid" (*aides*), and other revenues deriving from regalian rights, such as tolls. Originally intended to cover the military costs of the Hundred Years' War, the *taille* no longer depended on the provincial diets after 1439, although some provinces were exceptions. French kings collected their revenues with great efficiency by the

4 Emmanuel Le Roy Ladurie, *L'État royal. De Louis XI à Henri IV (1460–1610)*. Paris, 1987, 93–128.

5 Arlette Jouanna, *La France de la Renaissance*. Paris, 2009 [2001], 13.

6 Philippe Contamine, *War in the Middle Ages*. Oxford, 1986, 171.

7 Le Roy Ladurie, *L'État royal*, 23.

8 Janine Garrisson, *Royaauté, Renaissance et Réforme, 1483–1559*. Paris, 1991, 14.

9 Jouanna, *La France*, 163.

standards of the time, dividing the country into tax districts. This caused a constant rise in royal revenue: Charles VII had revenue of 1,800,000 *livres tournois* (one *livre tournois* was equivalent to about 0.6–0.4 Venetian ducats),¹⁰ but his son Louis XI and his grandson Charles VIII had considerably greater income: the treasury took in 2,700,000 *livres tournois* in 1474, 4,600,000 in 1481 (a special year by consequence of the wars) and 3,900,000 in the more average year of 1490.¹¹ Under Louis XII (1498–1515), revenues initially decreased somewhat, but they amounted to 4,830,000 *livres* in 1514 and continued to grow steadily – at the annual rate, according to some calculations, of 2.38%. By the time Francis I died in 1547, revenue reached 7.4 million *livres*.¹²

As we will see, the increase in revenue took effect on military potential, enabling French monarchs to keep pace with other states and even with state alliances and the Habsburg Empire, which expanded enormously after 1519.

ESTIMATED MILITARY POTENTIAL

The state of affairs at the time, and the nature of available historical sources, cause great difficulties in gathering objective data on military potential. Narrative sources tend to under- or overestimate troop numbers, and other, more objective documents (such as accounts of soldiers' pay) are somewhat sporadic. Nonetheless, the information we have points to a doubling of French military potential over about a hundred years following the middle of the fifteenth century. This was due to the above demographic increase, the strengthening of the crown (particularly the increase in royal revenues) and the increasing role of the infantry.

In 1465, during the League of the Public Weal rebellion, Louis XI stated that he had 20,000 soldiers. The probable reason for such a low figure was that he was denied the military strength of the great feudal lords who had risen against him (the duke of Brittany and the count of Anjou). In the wars of the Burgundian succession, there were about 45,000 troops fighting on the French side, many of them garrisoning the forts along the border. Contamine also notes that by the

¹⁰ The *livre tournois* was a money of account, equivalent to 240 minted silver denars. In conversion to Venetian ducats, the French *écu d'or* or *écu au soleil* coin was taken as having a similar gold content and fineness to that of the ducat (the former 3.55 g, the latter 3.496 g). The exchange rates of the *écu* and the *livre* are known, from which the value of one *livre* may be calculated as: 1 ducat = 0.6 *livre* in 1475, 0.55 in 1483, 0.5 in 1516, and 0.44 in 1533. On this, see Natalis de Wailly, *Les variations de la livre tournois depuis le règne de Saint Louis jusqu'à l'établissement de la monnaie décimale*. Paris, 1857, 76–77. The figures given there still recur in historiography: Colin Martin, 'Du cours des monnaies françaises au pays de Vaud – 1530–1798', in *Mémoires et documents publiés par la Société d'Histoire et d'Archéologie de Genève*. Tome XL. Genève, 1961, 241; Robert Jean Knecht, *Renaissance Warrior and Patron: The Reign of Francis I*. Cambridge, 1994, XX; David Potter, *A History of France, 1460–1560: The Emergence of a Nation State*. London, 1995, XVI (Note on Money and Measures).

¹¹ Michel Mollat, 'Az újjáépítés', in Georges Duby (ed.), *Franciaország története*. Vol. 1. Budapest, 2005, 465.

¹² Jouanna, *La France*, 412–413.

end of the century, the king was able to keep about 20,000 men under arms even in peacetime, implying (to use his own figure of 10 million inhabitants) that about one per cent of the adult male population served the king as a soldiers.¹³

Narrative sources can be deceptive. According to Italian sources, the attacking army of Charles VIII in 1494 was 50,000 strong, while the king himself stated his strength at 18,000 cavalry and 12,400 infantry. Of course, by the time they reached Naples, his army had dwindled somewhat, because he left substantial garrisons in various Italian states. In 1523, Francis I declared before foreign envoys that he had 50,000 soldiers at the ready to retake Milan, but this number seems like an exaggeration, even if most of them were said to be infantry (about 36,000). Nonetheless, in the wars against the Habsburgs in the 1540s, the king was indeed able to keeping about 85,000 men under arms on various fronts (again including garrisons).¹⁴

ASPECTS OF MILITARY ORGANIZATION – THE STANDING ARMY OF CAVALRY

The standing heavy cavalry was the core – and for a long time the most powerful component – of the French armed forces, established by decree of Charles VII (the *grande ordonnance*) in 1445. This gave rise to a military unit, the lance, comprising one man-at-arms and five more lightly-armed subordinates. The lances were arranged into companies (*compagnie d'ordonnance*) with active combat duties. The lance was a tactical unit centred around a fully-armoured man-at-arms, assisted by two mounted bowmen, one light horseman called a *coutillier* (after the long thin sword he carried, although he sometimes also carried a spear) and two pages.¹⁵

Since the text of the royal decree has not survived, we have to depend on chronicle entries by Thomas Basin for the initial number of these units. He stated that the king was initially served by 1,500 lances. This number seems to have increased rapidly, to 1,800 in the 1460s and possibly more than 2,500 by the end of the century. The *compagnies* into which the lances were assembled did not always consist of 100 heavily armoured knights, as historians have often stated. Companies of only 50–80 lances were not uncommon. It was a great honour for a captain when the king increased the size of his company (and the pay that went with it).

This all implies that Louis XI had 11–15,000 or even more soldiers permanently ready for combat. To put this in proportion, we may compare it with the military strength of one of his great opponents, Duke Francis II of Brittany, who had 200–300 lances and could not maintain them all year round. Duke

13 Contamine, *War*, 169–171. Here we see that the country's population may have been greater, and so the proportions may also vary.

14 David Potter, *Renaissance France at War: Armies, Culture and Society, c. 1480–1560*. Woodbridge, 2008, 63–64.

15 Jean Favier, *La guerre de cent ans*. Paris, 1980, 588–591.

Charles the Bold of Burgundy also assembled a force of 1,250 lances (on the French pattern) in 1471, but he was unable to pay them continuously.¹⁶

When Charles VIII set out on his Italian campaign in 1494, he was served by 2,423 lances. This number increased to 3,010 at the time of the Battle of Marignano in 1515 and about 3,600 at the time of his Pavia campaign in 1524. Not all of these, of course, went on the campaign, because the home country also had to be defended.

Potter has calculated the average monthly pay of a lance: 35 *livres* in 1494, for example, and 40 *livres* in 1515 and 1520. These are nominal sums, and their purchasing power depended on the value of the currency. We must also bear in mind that this money covered the pay of six (assorted) soldiers.¹⁷

One of the weaknesses of the French armed forces was the lack of separate light cavalry. The Italian wars, even in the mid-1490s, showed how difficult it was to contend with the Venetian-hired *stradiotas* – Albanian, Greek and other Balkan-born light cavalry. The *stradiotas* had a weakness of their own, and that was indiscipline. At the 1495 Battle of Fornovo, they were the first to engage with the enemy, but very soon started to loot the French camp, somewhat diminishing their combat effectiveness.¹⁸

We do not know exactly when the French armed forces started to use the *cheveu-légers* (light cavalry). It is certain that in 1513, Louis XII appointed Jean Fontrailles, count of Astarac, as commander of the cavalry force then known as “Albanians”, who were obviously recruited in Italy.¹⁹ The same year, 1,200 *stradiotas* (or “Albanians”) were stationed in North-East France, which was being threatened by the English. The local residents lived in fear of them, not sure they were even Christians. But at the Siege of Théroutanne, only they succeeded in breaking through the English lines and taking reinforcements into the town.²⁰

REFORM AFTER REFORM – THE INFANTRY

The other weakness of the medieval French military was the lack of good-quality infantry. The great battles of the Hundred Years’ War – Crécy (1346), Poitiers (1356) and Agincourt (1415) – were all victories for the English foot archers over the cavalry-dominated French army. It was clearly the experience of these battles that led Charles VII to establish the institution of free archers (*francs archers*) in a decree of 28 April 1448. This force was most comparable to the Hungarian

16 Philippe Contamine, *Guerre, État et Société à la fin du Moyen Âge. Études sur les armées des rois de France*. Paris, La Haye, 1972, 285–289.

17 Potter, *Renaissance France*, 214, 360–361.

18 Antonio Santuosso, ‘Anatomy of Defeat in Renaissance Italy: The Battle of Fornovo in 1495’, *The International History Review* 16:2 (1994) 221–250.

19 Potter, *Renaissance France*, 87.

20 Attila Györkös, ‘Logisztika az itáliai háborúk korában’, László Pósan and László Veszprémy (eds.), *„A hadtáp volt maga a fegyver”. Tanulmányok a középkori hadszervezet és katonai logisztika kérdéseiről*. Budapest, 2013, 160.

militia portalis. Every parish had to raise one archer for every eighty households.²¹ These men were free in the sense that they were exempted from direct taxes, especially the poll tax (*taille*), and they received pay of four francs when on active service. This decree theoretically expanded the strength of the French standing army by 8,000 foot soldiers.

In reality, the system never worked properly. The contemporary pamphlet *Franc-archer de Bagnolet* savagely satirizes the free archers: village loafers and vagabonds joined the companies, and instead of practising archery, they drank wine and held forth in arrogant tones, boasting of their distinguished status.²² Their combat value was very low, and after defeat in the Battle of Guinegatte in 1479 against Maximilian of Habsburg (largely due to the indiscipline of the archers), Louis XI effectively put an end to the system.²³ Nonetheless, there are reports of free archers being deployed as late as the 1520s, such as in the Battle of Pavia, where they also fought with little effect. Francis I finally abolished the institution in 1535.²⁴

Charles VII was also responsible for creating another section of the standing army, the garrison forces (*mortes-payes*). The name (literally “death-paid”, but actually meaning low-paid) indicates that these troops, being obliged to defend, could not leave the forts (*mortes*), and their income was less than that of *compagnie d'ordonnance* troops. They were organized in a similar way to the main army, in units of only four men (without the *coutillier* and one of the pages) who, apart from the man-at-arms, served on foot.

Recognizing the unsuitability of the free archers, French rulers later mainly employed infantry from Picardy, Normandy and Gascony. Their main weapon was the pike, on the Swiss pattern, but some carried a halberd, a crossbow or – later – an arquebus.²⁵ Neither in their training nor their discipline, however, were they comparable to Swiss or German mercenaries. The employment of the latter greatly depended on political relations among the states.

The Swiss mercenaries played the key role in the French infantry during the reigns of Charles VIII and Louis XII (the conquest of Naples and Milan),²⁶ but after 1511, the Swiss cantons joined the anti-French Holy League established by Pope Julian II (1503–1513). They therefore fought against the French at the battles of Ravenna (1512), Novara (1513)²⁷ and Marignano (1515).²⁸ Francis I later won over the Swiss Confederacy, and Swiss soldiers fought on the French side in the

21 Or every fifty households, according to Michel Mollat, but few other historians agree. Mollat, ‘Az újjáépítés’, 454.

22 Louis Petit de Julleville, *Répertoire du théâtre comique en France au Moyen Age*. Genève, 1967, 269.

23 Favier, *La guerre*, 591.

24 Potter, *Renaissance France*, 104–105.

25 *Ibid.*, 103, 105–106.

26 Amable Sablon du Corail, ‘«Ne debatez pas avecques eulx, se non ainsi qu’ilz voudront». Les Suisses au service de la France, de Louis XI à François I^{er}’, in Alexandre Dafflon, Lionel Dorthe and Claire Gantet (eds.), *Après Marignan, la paix perpétuelle entre la France et la Suisse*. Paris, Fribourg, 2018, 301–317.

27 Olivier Bangerter, *Novare (1513). Dernière victoire des fantassins suisses*. Paris, 2012.

28 Didier Le Fur, *Marignan, 1515*. Paris, 2004.

Battle of Bicocca (1522), a French defeat, and in the Italian campaign of 1524–1525, including the Battle of Pavia.²⁹

The other foreign mercenary force were the *landsknechts*, from the Holy Roman Empire. They fought on the French side at Novara (1513) and Marignano (1515). After Charles V became Holy Roman Emperor, German mercenaries became less available to French kings, and at Bicocca, they served Habsburg interests, although about 3,000 *landsknechts* marched with the French army at the Battle of Pavia, where they fought their own compatriots.³⁰

Realizing that the requirement for infantry would not be satisfied by the free archers, and faced with the expense and the uncertain availability of foreign mercenaries depending on the political situation, the French army, in the early 1500s, tried out several short-lived ideas for creating a more effective force of standing infantry. Finally, by a decree of 23 July 1534, Francis I created an institution known as the *légion*. As the name implies, it was an attempt to create an infantry on the model of the ancient Roman army. The *ordonnance* set up seven legions in border and coastal regions (Brittany, Normandy, Picardy, Burgundy-Champagne, Dauphiné-Provence, Guyenne and Languedoc). Each legion had 6,000 troops, making a total of 42,000. Both the officers and the rank-and-file had to be recruited within the region. Each legion was led by a colonel and five noble-born captains appointed to the post by the king.

Légionnaires were either arquebusiers or pikemen. The number of the former was set at 12,000, but they were distributed unevenly by region. In Brittany, only 10% carried firearms, as against 50% in the southern provinces, a good indication of the kind of force the king wished to present in different directions. The rank-and-file were exempt from paying *taille*, and during campaigns, the pikemen were paid five *livres* and arquebusiers six. Units of 6,000 men soon turned out to be difficult to manoeuvre, and they were divided into 300–500-strong companies.

The legions were no more able to fulfil the hopes invested in them than the free archers had been. Although they stood up well in the Italian campaign of 1536–1537, they later proved to be as undisciplined as the archers. The main reason lay in recruitment: the rank-and-file were mainly drawn from the peripheries of society, and there are records of many of them being murderers and highwaymen, who were difficult to discipline. In 1536, for example, the legion stationed in Arles attacked the foreign soldiers of the garrison, and at other times, they robbed merchants and murdered civilians. They do not seem to have been employed in foreign campaigns after 1547 and were confined to border defence duties.³¹

29 Angus Konstam, *Pavia 1525. The Climax of the Italian Wars*. London, 1996, 20–21.

30 *Ibid.*, 35.

31 Potter, *Renaissance France*, 112–117.

THE DEVELOPING ARTILLERY

There were two major technical innovations in French artillery at the turn of the fifteenth and sixteenth centuries. Firstly, stone cannonballs gave way to metal projectiles (lead, but most commonly iron), and secondly, cannons became smaller and lighter, making them much easier to transport in the baggage train. This brought a considerable improvement in French mobility and effectiveness, especially during the Italian wars.

Contemporaries quickly recognized the significance of these innovations. In *The History of Italy*, Francesco Guicciardini wrote: “To join [Charles VIII and his invading army of 1494,] there arrived by Sea at Genoa a great Quantity of Field Pieces and battering Cannon. [Compared with Italian guns,] the French brought a much handier Engine, made of Brass, called Cannon which they charged with heavy Iron Balls, smaller without Comparison than those of Stone made use of heretofore, and drove them on Carriages with Horses, not with Oxen, as was the Custom in Italy; and they were attended with such clever Men, and on such Instruments appointed for that Purpose, that they almost ever kept Pace with the Army. They were planted against the Walls of a Town with such Speed, the Space between the Shots was so little... Such Artillery rendered Charles’s Army very formidable to all Italy...”³²

There are more technical details in a letter that Florentine envoys in Lyon wrote in 1494 about the preparations for the Italian campaign and the culverins: “They have brought with them an enormous strength of artillery, each gun transported by carriage. The guns are not very large, weighing 300–400 pounds, but they use heavy iron balls for them. For the purpose of giving the guns greater firepower, the size of the gunpowder chamber or lock has been increased, while the barrel tapers towards the end and is very small at the mouth. In the centre of the body there are wings to allow the barrel to be mounted and fixed on the gun carriage. Every gun has its own carriage, its own artillerymen, cannonballs and a large number of pre-dispensed gunpowder bags.”³³

Although the decisive Battle of Castillon, which closed the Hundred Years’ War, is usually regarded as a victory for the French artillery,³⁴ French use of lighter artillery firing metal projectiles seems to have started only in the 1480s.³⁵ Italian sources highlight as one of the strengths of the French army in Italy the “light artillery”, which meant culverins and falcons.

32 Francesco Guicciardini, *The History of Italy. Vol. I*. Translated by Austin Parke Goddard. London, 1763, 148–149.

33 Letter from Guidantonio Vespucci and Piero Capponi to Piero II de Medici, Lyon, 8 June 1494: Abel Desjardins and Giuseppe Canestrini, *Négociations diplomatiques de la France avec la Toscane. Vol. 1*. Paris, 1859, 401–402.

34 Contamine, *War*, 199.

35 Emmanuel de Crouy-Chanel, ‘Précision, création et circulation du vocabulaire de l’artillerie à la Renaissance: qu’est-ce que le « basilic » de Rabelais?’, in Marie Madelaine Fontaine and Jean-Louis Fournel (eds.), *Les mots de la guerre dans l’Europe de la Renaissance*. Genève, 2015, 30.

We do not have reliable information about the numbers of artillery pieces in specific campaigns. At the Battle of Fornovo during the retreat from Italy in 1495, the French used forty-seven guns, of which at least fourteen were heavy cannon (*quatorze pièces de grosse artillerie et puissante*).³⁶ It should be added that their effect was more to frighten than to kill.³⁷ Jean d'Auton, Louis XII's chronicler, mentions twenty-four falcons and twelve heavy guns in the army that marched on Naples in 1501.³⁸ The falcon and falconet (*faucon, fauconette*) were artillery pieces of varying size that shot cannonballs weighing between about half a pound and six pounds. The heavy cannon (*gros canon*, or in other texts, *canon royal*) also varied widely in size, from twenty-pounders to eighty-pounders. In the battle near Genoa in 1507, the French set up eight heavy cannon and thirty culverins (*couleuvrines*).³⁹ This was another term that covered firearms of varying calibre. They shared the general characteristic of having longer barrels than either heavy guns or falcons, and so were more powerful and accurate (as we read in the letter of the Florentine envoys). Culverins fired balls weighing between five and eighty pounds.⁴⁰

In 1508, Louis XII ordered a survey of artillery pieces in his lands, which meant Italian as well as French territory. The report states that the kingdom had 483 guns of all sizes (except arquebuses), but we do not know how many of these could be mobilized for a campaign and how many served defensive purposes. The breakdown lists six old-type guns (*bombarde, bombardelle*), which fired stone balls, eighty-eight *serpentes* or heavy cannon, thirty-eight large culverins (*grande couleuvrine*, heavy guns of relatively small calibre) and 256 falcons in the royal arsenal.⁴¹

In the Battle of Novara of 1513, the French force had twenty or twenty-five cannons, but the sources do not specify their types.⁴² At the Battle of Marignano (1515), the French had much greater firepower: at least seventy-two cannons (of unknown types) and 3,000 light firearms (mostly arquebuses).⁴³ At Pavia, however, Francis I's artillery had only fifty-three cannons, also of unknown composition.⁴⁴

There is another kind of information on the development and spread of the artillery. In his study of weapons manufacture and gunpowder use, Philippe Contamine demonstrates that there were forty *canoniers* (gun founders) in service to the crown in 1469, increasing to more than 100 in 1491 and 275 in 1541.

36 *Mémoires de Philippe de Commines*. Vol. 2. Éd. par Mlle Dupont. Paris, 1843, 453.

37 Santosuosso, 'Anatomy of Defeat', 235.

38 *Vingt et quatre faulcons et douze gros canons*: René de Maulde la Clavière (éd.), *Chroniques de Louis XII par Jean d'Auton*. Vol. 2. Paris, 1891, 13.

39 Potter, *Renaissance France*, 155.

40 That is why there are distinctions among *grande, bâtarde* and *moyenne couleuvrines* during the period. See De Crouy-Chanel, 'Précision, création', 30.

41 Philippe Contamine, 'Les industries de guerre dans la France de la Renaissance: l'exemple de l'artillerie', *Revue Historique* 271 (1984) 271.

42 Bangerter, *Novare*, 54.

43 Le Fur, *Marignan*, 80.

44 Konstam, *Pavia*, 24.

About 20,000 pounds of gunpowder was used in 1442, during the Hundred Years' War, but the annual figure rose to 100–150,000 pounds by the 1490s and underwent a further five-fold increase up to the 1540s.⁴⁵

THE "BATTLE OF GIANTS": MARIGNANO (14–15 SEPTEMBER 1515)

The title of this battle is due to French Marshall Trivulzio,⁴⁶ and derives from two of its features: the forces that met on the battlefield of Marignano were bigger than had ever been seen, and in the two-day struggle, both the French army and their Swiss opponents displayed extraordinary determination.

In early 1515, the newly-crowned Francis I (1515–1547) saw as his most urgent task the recovery of the Duchy of Milan, lost three years previously. The Holy League, set up in 1511 to terminate French influence in Italy, comprised Milan, the papacy of Leo X, Florence, and the Spanish-ruled Kingdom of Naples. Francis thus could only look to the Republic of Venice for assistance.

With a view to avoiding the errors of the previous campaign, in 1513, when the French were defeated by Swiss mercenaries at Novara,⁴⁷ France first attempted to secure the support of the cantons, but his diplomatic approaches were rejected. On the contrary, the Swiss cantons allied with the League closed off the main Alpine passes to obstruct the French march into Italy.

The next problem to be solved was thus logistical: how could a 40,000-strong royal army cross the Alps? Although a small army in the south set off towards Genoa, the main forces made the journey to the Lombard plain through the narrow Col Argentière, which was considered unsuitable for the purpose. The royal sappers had to blast a road through the mountains, and did so with perfect efficiency. The difficult but rapid march took its desired effect: the French appeared unexpectedly in North Italy and took the forces of the League by surprise. The attack by the French advance guard led by La Palice and Bayard on the 1,500-strong Roman cavalry defending the south of the passes was so swift that their captain, the renowned *condottiere* Prospero Colonna, was effectively taken captive at his dining table.⁴⁸

Since the Italian armies of the League were marching from the south to Milan, where the Swiss had already arrived, Francis I set out to prevent them from uniting. The Italian forces coming from Florence, consisting of about 3,000 infantry, were led by Lorenzo de' Medici, brother of the pope. From the direction of Verona, Ramón de Cardona, the Spanish viceroy, threatened to surround the French with 700 heavy and 600 light cavalry and 6,000 infantry, but in the event, he never left the city.⁴⁹

45 Contamine, 'Les industries de la guerre', 278.

46 The Milan-born Gian Giacomo Trivulzio, in French service, is quoted by Guicciardini, *The History of Italy*, VI. 357.

47 Bangerter, *Novare*, 77–86.

48 Le Fur, *Marignan*, 95–99.

49 Kenneth M. Setton, *The Papacy and the Levant (1204–1571)*. Vol. 3. Philadelphia, 1984, 160.

The French were also expecting the arrival of allied Venetian auxiliaries from the east. Given this situation, the French took up a position fifteen kilometres south-east of Milan, at Marignano (now Melegnano). Francis was aware of dissatisfaction among the Swiss because of arrears of pay, he entered negotiations with them and persuaded those from the western cantons (Bern, Fribourg and Solothurn) to leave. The other cantons, with some 23,000 troops, stayed loyal to the duke of Milan, Massimiliano Sforza.⁵⁰

The overall strength of the French army has been estimated at 40,000. The 25,000 infantry troops comprised 9,000 Germans, 6,000 Gascons, 4,000 other French (probably Picardian or Norman) and 6,000 Guelderns (known at the time as the *Bande noire*). There were about 2,500 sappers and artillerymen, and the remainder were cavalry of unknown composition. The army was supported by seventy-two artillery pieces.⁵¹

Despite their numerical inferiority, the Swiss, led by Cardinal Matthäus Schiner, bishop of Sion, decided to attack, and marched out of Milan on 13 September 1515. They reached the enemy lines in the afternoon. The French were encamped along the road between Lodi and Milan and were not expecting an attack. Nonetheless, they managed to line up in battle order before the Swiss arrived. The right flank, under Prince Charles de Bourbon and Marshall Trivulzio, a veteran of the Italian Wars, was pushed out in front. Their own cavalry companies were accompanied in the formation mainly by infantry – German *landsknechts* and about 6,000 Gascons. The main force of heavy cavalry in the centre was led by the king himself, together with the highest barons of the kingdom, the renowned Bayard and the commander at the Battle of Novara, La Trémoille. The artillery was dug in at the front line, defended by *landsknechts*. The main forces were arranged along the Lodi–Milan road, which provided them with some protection. As a rearguard, on the left flank, were further heavy cavalry led by the king's nephew, the duke of Alençon, reinforced with pikemen and crossbowmen.

The infantry strength on each side was therefore more or less balanced, between 23,000 and 25,000. The French, however, also had artillery and heavy cavalry. It should be noted that two years previously, the Swiss had dealt the French a devastating defeat at Novara from a similar position. The battle commenced when the Swiss infantry attacked the main force. When they came within range, the French opened fire, but inflicted only minor losses on the Swiss, who reached the line of the artillery and engaged in close combat with the defending *landsknechts*. The Germans and Swiss had been in competition with each other on the battlefields of Europe for a long time, and had a deep mutual hatred. The clash was therefore extremely bloody.⁵² Eventually, the Germans withdrew, leaving some of the cannons behind.

50 Amable Sablon du Corail, 'Marignan. Triomphe de l'ordre monarchique sur les libertés médiévales', *Commentaire* 156 (hiver 2016–2017) 841.

51 Potter, *Renaissance France*, 7, 43, 107, 133, 205.

52 *Ibid.*, 134.

On the right flank, the advancing Swiss were attacked by the duke of Bourbon's cavalry. An illustration of the brutality of the fighting is that the duke of Tallemont received sixty-two pike wounds before being taken from his horse. After the failure of the attack from the flank, Francis I personally took the main-force cavalry into the fray, and another desperate struggle developed, continuing into the night, until the moon went down from the sky and darkness forced sides to suspend the action. Francis I allegedly received multiple piercing wounds during the fray.⁵³

During the night, the French put their lines in order, reloaded their guns and awaited the following day's combat in battle order. The Swiss attacked again at dawn, but the artillery was by then better prepared and took a devastating toll. Then came a charge by Bayard's heavy cavalry. Forced on to the defence, the Swiss march slowed, allowing the artillery to wreak further destruction. Seeing that they could not reach the artillery this time, the Swiss right flank attacked the French left led by the duke of Alençon, but they were unable to break through the lines and came under lateral fire from the artillery. In the middle of the fighting, before midday, the first formation of the Venetian auxiliary force led by Bartolomeo d'Alviano arrived, about 1,400 *stradiota* light cavalry, who launched themselves at the enemy with loud cries of "San Marco! San Marco!"⁵⁴ The psychological effect finally decided the outcome of the two-day battle. The Swiss nonetheless maintained their closed ranks and made an orderly retreat. Although some straggling units were attacked by the French cavalry, the tired French did not pursue them and they managed to reach Milan.

This was the bloodiest battle of the period, especially on the Swiss side, where casualties were at least fifty per cent. Potter quotes an eyewitness who claimed that the Swiss lost 15,000 troops in the battle.⁵⁵ French losses must also have been very high, but there are no numerical estimates. The defeat took effect. A few days later, the Swiss left the capital of Lombardy, and the French marched in. Duke Massimiliano, left to himself, resigned his rule and Francis I was crowned duke,⁵⁶ opening a new chapter in the Italian Wars, which lasted until 1559.

French-Swiss hostilities, however, did not last long. One year later, on 29 November 1516, the cantons signed an eternal alliance with Francis I in Fribourg,⁵⁷ after which the Swiss infantry fought on the French side.

There are several parallels between Marignano and the French defeat at Novara two years previously. In both battles, the Swiss made a surprise night/afternoon attack and despite suffering huge losses from the French artillery, carried on the struggle in disciplined order. In Novara, however, the night ambush was more unexpected and panic broke out. The terrain conditions

⁵³ Guicciardini, *The History of Italy*, VI. 354.

⁵⁴ Robert Jean Knecht, *Francis I*. Cambridge, 1982, 46.

⁵⁵ Potter, *Renaissance France*, 210.

⁵⁶ Jean Jacquart, *François I^{er}*. Paris, 1981, 85.

⁵⁷ Sablon du Corail, 'Marignan', 841.

prevented the deployment of the heavy cavalry. At Marignano, Francis I had time to regroup his forces, the Swiss did not manage to capture the artillery, and an opportunity arose for a cavalry counter-attack on the flanks.

THE NAVY

“[He spent some of] the money he had collected ... towards his fleet, in which he placed great hope of victory...”, wrote Guicciardini of Charles VIII’s plans in 1494.⁵⁸ The history of the French navy at that time, however, is today one of the least-researched subjects in French historiography. The archives have a wealth of information, chiefly in account books and censuses, but only in one or two cases have they been subjected to a thorough treatment. Therefore, lacking an overall survey, we can only mention some tendencies and specific cases.

By the end of the fifteenth century, France had coastlines on the Atlantic Ocean and the Mediterranean. It did not, however, have a very substantial fleet to defend these coasts or to launch attacks from them. During the Hundred Years’ War, the French navy concentrated on the English Channel, from where it launched attacks on the English coast or tried to defend French land and prevent the English army from crossing the Channel.⁵⁹

The navy retained this role in the late fifteenth and early sixteenth centuries. When the English prepared for invasion in 1513, Louis XII himself started the preparations for the expected attack. His main objectives were to reinforce the ports in Brittany and Normandy threatened by the English and to defend the Channel. In June 1512, the king ordered many of the galleys stationed in the Mediterranean ports to Bretagne for defence of the coast, and they arrived in Brest that autumn. These ships, unknown in the north, attracted great attention, and the lack of oarsmen presented a serious problem. Louis ordered the inmates of Angers prison to do forced labour on the ships.⁶⁰ Thomas Spinelly, an agent of the king of England in the Netherlands, reported on 27 February 1513 that commercial ships had been banned from sailing on pain of death and confiscation of property.⁶¹ A few weeks later, on 21 March, Spinelly made a quantitative assessment of North French naval capacity. He found that in the four large ports of the region (Eu, Honfleur, Dieppe and Brest), there were sixty-one sailing ships and ten galleys, and a further fourteen were expected.⁶²

We may thus see that the French fleet could only stand up to enemy attack if it also deployed its Mediterranean forces and civilian ships – unsuccessfully, in this case. In England, too, it was standard practice to charter and requisition merchant ships. In this campaign, Henry VIII made use of every ship of more

58 Guicciardini, *The History of Italy*, I, 133–134.

59 Favier, *La guerre*, 94–99.

60 Guy Le Moing, *La Sainte Ligue et la guerre franco-anglaise (1512–1514)*. Paris, 2011, 89.

61 *a esté mandé sur paine de confiscation de corps et de biens de non partir nulz navires de leurs havres*: Alfred Spont (ed.), *Letters and Papers Relating to the War with France, 1512–1513*. [London,] 1897, 75–76.

62 Spont (ed.), *Letters and Papers*, 90–94.

than 100 tons to transport his troops, and also chartered ships from the Netherlands.⁶³

When Charles VIII was preparing for his campaign against Naples in 1494, although most of his troops marched to their destination across Italian peninsula, some of the munitions and firearms and a quarter of the troops had to be transported by sea. For this, Charles had only twenty-one ships, of which nine were in Normandy and twelve in the Mediterranean, and he needed eighty-six. He therefore effected the transport using galleys chartered from Genoa. The French southern fleet was then stationed in Marseille, but the arsenal there had burned down in 1494 and shipbuilding was transferred (initially temporarily) to nearby Toulon.⁶⁴ Toulon has remained one of France's largest naval bases ever since.

The burning of the port of Marseille brought other changes. The king also ordered ships to be built in Brittany in the north. The *Marie-la-Cordelière*, for example, the pride of the French fleet, was built in Morlaix. Its tragic fate was a favoured subject of Renaissance poets.⁶⁵ The 200-gun, three-masted ship was first deployed in 1501, when a French-Venetian fleet attempted (unsuccessfully) to liberate the island of Lesbos from the Ottomans. This venture required the deployment of all naval resources, clearly indicating the relative weakness of the French fleet. Six galleys joined seven ships from Brittany and six from Normandy in Toulon.⁶⁶ The ships built in the north were obviously less manoeuvrable than the galleys, which were built for local conditions, although that was not the cause of the failure. The fort of Lesbos held out for three weeks, and without the prospect of reinforcements, the allies had to retreat.

This fleet then served in Italian waters, where it transported reinforcements for the royal army fighting in Naples. The *Marie-la-Cordelière* was lost in 1512, on the eve of the above war with England. While defending the port of Brest, it sank two smaller English ships but could not contend with a third, the *Regent*, a ship of similar size to itself. It was grappled, and in the ensuing close combat, the magazine of the *Cordelière* exploded. Both ships were lost (and divers and archaeologists have been looking for them ever since).⁶⁷

As we have seen, the French frequently requested the aid of Genoa when they had supply problems. Genoa probably had the greatest trading and military strength in the waters of the western Mediterranean, and also helped the French militarily: for nearly twenty years, starting in the 1510s, the renowned Andrea Doria, commander of the Genoese navy, was in service to the French. Francis I appointed him admiral of the fleet, and it was in this capacity that he relieved

63 Györkös, 'Logisztika', 160–162.

64 Charles de la Roncière, *Histoire de la marine française*. Vol. 3. Paris, 1906, 3.

65 Humbert de Montmoret, Germain de Brie and Pierre Choque, *L'incendie de «La Cordelière»: l'écriture épique au début de la Renaissance*. Textes prés. et trad. par Sandra Provini. La Rochelle, 2004.

66 Roncière, *Marine française*, 46–47.

67 Max Guérout, 'Recherche archéologique de l'épave de la Cordelière (1512)', in *Le dernier combat de la Cordelière*, 2017, 1–2, <https://hal.archives-ouvertes.fr/hal-01616207> (accessed: 11.03.2019).

Marseille when the city was besieged by imperial forces in 1524. It was an enormous loss for French naval power in the southern waters when Doria changed his allegiance to Charles V in 1528. From then on, he fought against his former allies. The resulting loss of naval strength was partly what caused Francis I to put out feelers towards the Ottomans.⁶⁸

SUMMARY

France had greater military capability than almost any other European state in the first half of the sixteenth century. Its success was partly due to the ability of the crown to centralize control of the kingdom's resources. The most powerful branches of arms were the cavalry, which was organized and maintained as a standing army, and the modern artillery. The French were unable, however, to keep up with the rising combat significance of the infantry, and several attempts at reform in this respect failed. Nonetheless, France remained the predominant force on the battlefields of Europe for half a century.

⁶⁸ Édith Garnier, *L'Alliance impie. François I^{er} et Soliman le Magnifique contre Charles Quint*. Paris, 2008, 16–17.

THE MILITARY ORGANIZATION AND ARMY OF THE SPANISH MONARCHY (1492–1537)

TERRITORY AND POPULATION

The capitulation of the city of Granada on 2 January 1492, after ten years of war, marked the end of the last Moorish principality in Iberia. After the completion of the Reconquista (711–1492), the peninsula was divided into four Christian kingdoms. The Kingdom of Portugal, building on its voyages of discovery in the Atlantic Ocean, established bases in Africa and gained a foothold in India. Castile was the main power on the mainland, and after the fall of Granada its attention shifted to the other side of the Straits of Gibraltar, the Moorish territories of North Africa. Aragon, the naval power in the Mediterranean, was increasingly engaged with the Kingdom of France in a contest for the throne of Naples. In the frontier region of French, Aragonian and Castilian influence on the north and south of the Pyrenees, Navarre attempted to preserve its independence on a much smaller area. When the Habsburg dynasty acquired control of what had been separate Christian kingdoms in Iberia, they left the existing autonomous structures of government, estates and society in place. Nonetheless, the ascent to the throne of Charles I/V in 1516/1519 made Spain into the first global power in history. Its territories, listed according to geographical distribution rather than ruling titles, were:

1. Castilian crown possessions:
 - 1.1 From the pre-1492 period, Galicia, the Cantabrian coast, Asturias, Castile and Leon, Extremadura, New Castile and the areas of Andalusia without Granada;
 - 1.2 After 1492, Granada;
 - 1.3 Canary Islands;
 - 1.4 Colonies in Central and South America (Caribbean islands, Viceroyalty of Mexico, Viceroyalty of Peru);
 - 1.5 After 1515, Navarre (centred on Pamplona);
 - 1.6 Bases in North Africa: Oran, Melilla, Vélez de la Gómera, etc.

2. Aragonian crown possessions:
 - 2.1 Kingdoms of Aragon, Catalonia and Valencia;
 - 2.2 Viceroyalties of Naples and Sicily (“Trastámara inheritance”);
 - 2.3 Sardinia and the Balearics;
 - 2.4 Navarre (centred on Pamplona) between 1512 and 1515;
3. Burgundian inheritance:
 - 3.1 Franche-Comté;
 - 3.2 Netherlands;
4. Milan / Lombardy.

The empire incorporated several major European centres and spanned four continents.¹ The overall territory and population of the Catholic Monarchy, including colonial lands, is difficult to estimate. Even for the European core lands, the available data is approximate and inconsistent.

According to figures compiled by Joseph Pérez for the population of the Iberian Peninsula (of total area 594,700 square kilometres) around 1492, there were 5,470,000 inhabitants in the lands of the Spanish crowns. Of these, about 4.2 million lived in Castile, with an area of 355,000 km² (similar to that of the Kingdom of Hungary), 850,000 in Aragon, 120,000 in Navarre, and 300,000 in Granada. A further 1 million lived in Portugal.² The actual numbers were probably somewhat lower in Spain, but the figure for Portugal is approximately correct. John Lynch has proposed a population of 3,856,199 in Castile in 1530 and more than 1 million in Aragon in the period 1550–1560, so that by the middle of the sixteenth century, the whole of the Kingdom of Spain had a population of 4.8–5 million.³ John Casey claims that Spain had a population of 4,698,000 in 1534.⁴ Spanish history books usually give the figure of 4.2 million around 1500, three-quarters of which lived in the lands of the Castilian crown.⁵ The trend is shown in Figure 1.

After 1492, the provinces of the Spanish crown displayed the demographic characteristics of a frontier land being gradually settled or resettled from north to south. From 4.2 million around 1500, the population grew up to the middle of the sixteenth century but decreased in the first half of the seventeenth century. Castile’s political and economic predominance may be attributed to demographic factors. The population density of Andalusia and Old Castile grew from 10.78 to

1 Agustín Jiménez Moreno, ‘El primer imperio mundial de la Historia. La monarquía de España en los siglos modernos (1492–1796)’, in José Manuel Azcona Pastor, Ricardo Martín de la Guardia and Guillermo A. Pérez Sánchez (eds.), *España en la era global (1492–1898)*. Madrid, 2017, 13–90.

2 Ladero Quesada, *La España de los Reyes Católicos*. Madrid, 1999, 28; Joseph Pérez, *Isabel y Fernando. Los Reyes Católicos*. Fuenterrabía, 2001, 16, https://es.wikipedia.org/wiki/Evoluci%C3%B3n_de_la_poblaci%C3%B3n_espa%C3%B1ola_en_la_%C3%A9poca_precensal#1492:_los_Reyes_Cat%C3%B3licos (accessed: 02.03.2019).

3 John Lynch, *Los Austrias (1516–1598)*. Barcelona, 1992, 122–123.

4 James Casey, *Early Modern Spain: A Social History*. London, New York, 2001, 21.

5 Alfredo Floristán (ed.), *Historia de España en la Edad Moderna*. Barcelona, 2004, 23.

15.85 per square kilometre, while the corresponding figures for Granada and New Castile remained below 8 and 15 respectively. In the middle of the sixteenth century, Catalonia had a population density of 10.8 per square kilometre, compared with 34 in France and 44 in some parts of Italy. In our period, the most densely populated area was the land between the rivers Tajo and Duero, where half of the Castilian population lived. The Mediterranean coastal areas, exposed to attack from North African pirates, were – apart from Valencia – the most sparsely populated.⁶

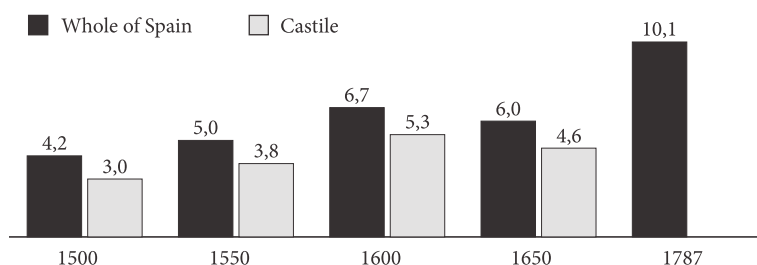


FIGURE 1: THE POPULATION OF SPAIN AND OF CASTILE BETWEEN 1500 AND 1800 (MILLIONS)⁷

There was a very high rate of urbanization by European comparison. In the sixteenth century, nearly every sixth Spaniard lived in a town – 14.4% of the population as against 8.2% in Europe as a whole.⁸ Another individual factor in Spanish demography was the real or presumed effect of the expulsion of the Jews in 1492 and of the Moors in 1609. Historians can make only a very rough estimate of the number of Jews who were expelled – between 50 and 150,000. Some of these – perhaps 50,000 – seem to have returned to Spain as converts or “new Christians” (*converso*, *cristiano nuevo*) in the following decades. The expulsion did not affect the 300,000-strong *converso* community, many of whom practised their ancient religion in secret. There must also have been several hundred thousand Moors in the sixteenth century. Their fate was determined by the fall of Granada and by a series of events involving rebellions by the Moors and coastal raids by their co-religionists, North African pirates. These caused increasing numbers of people to be resettled to the Iberian interior from the province of Granada and later from the southern coastal region. The demographic structure of Granada and Andalusia underwent substantial changes as Christian inhabitants from the north took the place of emigrating and resettled Moors.⁹ Colonization also had a population-draining effect. Some 200,000 people from the Iberian Peninsula, mainly young Spanish men, sailed

6 Casey, *Early Modern Spain*, 20–23; Floristán (ed.), *Historia de España*, 20–28.

7 Compiled from the above data. On the seventeenth century, see José Ojeda Nieto, ‘La población de España en el siglo XVII. Tratamiento demográfico de la bula de la Santa Cruzada’, *Revista història moderna i contemporània* 2 (2004) 77–117, particularly 103.

8 Floristán (ed.), *Historia de España*, 25.

9 Casey, *Early Modern Spain*, 9–21.

from Seville and Cádiz between 1492 and 1600. On average, 4–5,000 people emigrated to the American colonies each year.¹⁰

To understand the dynastic structure of the Catholic Monarchy, we should look at the demographic and territorial distribution of the major provinces of the other European possessions.

The Viceroyalty of Naples, which belonged to the Aragonian crown, covered an area of about 73,000 km². It had a population of 950,000 in 1447, 1.2 million around 1500 and 1.8 million around 1532.¹¹ The other viceroyalty of the crown, Sicily, extended over about 26,000 km² and had a population of 500–600,000 around 1500 and, according to the sources, 730,770 around 1595.¹² Milan was a possession of strategic significance in Italy: it linked the Italian Peninsula with the Spanish possessions in the Netherlands and stood in the way of French aspirations in Italy. The population of city (without the other areas of the duchy) stood at 100,000 around 1500, but was subsequently reduced by the wars to 80,000 in 1542, after which it increased steadily to 112,000 in 1595.¹³

The northern territory of the Netherlands, with an area of 41,000 km² (out of the total 74,000 km²), the later Dutch Republic, had about 940,000 inhabitants around 1500. Holland was by far the most populous province, where 29% of the total (about 270,000 people) lived in 1500.¹⁴

STATE REVENUES

After 1492, the Spanish Empire fought continuous wars, often on several fronts, with very few years of peace. During our period, with the burgeoning of the empire, state revenues increased rapidly. The economic policy of Spanish monarchs, like other European rulers of the time, was driven by the needs of expenditure rather than the pursuit of financial balance. State endeavours were mainly directed at dynastic, political and military goals without immediate regard to financial resources. Questions of revenue, balance and indebtedness were thus of secondary concern.¹⁵ Fiscal policy developed under the influence of three main factors.

10 On the Jews and Moors and Latin-American migration, see Casey, *Early Modern Spain*, 25; Floristán (ed.), *Historia de España*, 39–40; Ramón Carande, *Carlos V y sus banqueros*. Vol. 1. Barcelona, 1999, 69–71; José Luis Martínez, *Pasajeros de Indias. Viajes transatlánticos en el siglo XVI*. Ciudad de México, 1990, 165–190.

11 Sergio Tognetti, 'L'economia del Regno di Napoli tra Quattro e Cinquecento. Riflessioni su una recente rilettura', *Archivio storico italiano* 170:4 (2012) 757–768.

12 Maurice Aymard and Giuseppe Giarrizzo (eds.), *Storia d'Italia. Le Regioni dall'Unità ad oggi: la Sicilia*. Torino, 1987, 219; Giuseppe Restifo, *La popolazione siciliana del Seicento*. Bologna, 1999, 188.

13 Peter Clark, *European Cities and Towns, 400–2000*. Oxford, 2009, 37–39.

14 Robert Siebelhoff, 'The Demography of the Low Countries 1500–1990. Facts and Figures', *Canadian Journal of Netherlandic Studies* 14 (1993) 125–133; Maarten Prak, *Hollandia aranykora*. Budapest, 2004, 220–230.

15 For the details, see Zoltán Körpás, 'A fiskális-katonai állam és a Katolikus Monarchia a 16–17. században', *Századok* 152:5 (2018) 981–1012.

1. Habsburg rule and the increasing imperial dimension put the Spanish royal revenues at the disposal of a global power, and local (Castilian, Aragonian, Neapolitan, etc.) needs were subordinated to dynastic high politics. Quite simply, the Kingdom of Spain, and Castile in particular, became the greatest financial sponsor of imperial enlargement.¹⁶

2. The reform of state administration and the emergence of modern bureaucracy greatly enhanced revenue flows. Reform of the medieval *Contaduría Mayor de Cuentas* (State Audit Office) started under the Catholic Monarchs (Ferdinand of Aragon, 1479–1516 and Isabella of Castile, 1474–1504). The two chief auditors and his officials supervised the royal treasury, set the taxes to be levied in each area, handled the mortgaging of royal assets, and inspected the accounts of royal revenues (taxes, tolls, etc.). They were also responsible for ensuring that state monies reached the places they were allocated to. The process continued during the reign of Charles V. In 1523, the two auditors were joined by two members of the *Consejo de Castilla* (Council of Castile) to establish the *Consejo de Hacienda* (Financial Council). This was the highest body of fiscal affairs, supervising both income and expenditure and providing advice to the monarch through regular and ad hoc written reports on financial affairs. Unlike the *Contaduría*, the *Consejo de Hacienda* did not (until 1554) have any jurisdiction or authority in financial administration. Its main tasks were to inspect, supervise and plan income and expenditure, including the areas of military expenditure concerned with soldiers' pay, border defence, and forts.¹⁷ Another functional council with military relevance was the *Consejo de las Ordenes Militares* (Council of the Military Orders), set up in 1498 to supervise the four Spanish orders of chivalry (Santiago, Calatrava, Alcántara and Montesa). The orders of chivalry had a prominent place in Spanish society and played an important part in the defensive system of the Iberian Peninsula. They raised the militias, which were a component of the home defence forces, together with the *Guardas de Castilla* and border defence units. The orders of chivalry had considerable economic strength, deriving from their interests in the *Mesta*, the guild of transhumant sheep farmers in Castile. The *Consejo de las Ordenes Militares* provided administration of the orders and appointed their members, and it also managed and controlled their estates and income.¹⁸ Another aspect of institutional reform was connected with military organization, covered in the next section. As regards state revenues, the important outcome of the Habsburg dynasty's institutional reforms was the spectacular increase in the efficiency, income and military strength of the empire achieved through an extremely complex system consisting of functional elements (such as the Council for the Inquisition, the Financial Council, the Council of the Military Orders, the Council of the

16 On the Castilian economy: Carande, *Carlos V*, particularly vol. 2: *La Hacienda Real de Castilla*.

17 Carlos Javier de Carlos Morales, *El Consejo de Hacienda de Castilla, 1523–1602*. Valladolid, 1996.

18 Enrique Martínez Ruiz, *Los soldados del Rey. Los ejércitos de la Monarquía Hispánica (1480–1700)*. Madrid, 2008, 673–676; Floristán (ed.), *Historia de España*, 220–236.

Crusades, the Military Council and the State Council) and geographical elements (Castilian Council, Council of the Indies, Aragonian Council, Neapolitan Council, Flandrian Council, etc.).¹⁹

3. The empire was not the only beneficiary of the burgeoning revenues. The wealth of the Spanish crowns themselves also greatly increased. Isabella and Ferdinand increased their revenues by a factor of three from the time they came to the throne in 1474 up to the end of the Granada War in 1492, and by a factor of four by the time of the Neapolitan wars with the French (see Tables 1 and 2).²⁰ Although the first colonial institutions were set up a few years after Columbus's discovery, and the conquests were accompanied by the apparatus of colonial government, several decades were to pass before colonial gold, and increasingly silver, began to flow in, first as a trickle, but soon swelling to a torrent. According to calculations by Lynch, about 12.6 million ducats-worth of precious metal came into Spain from the colonies between 1503 and 1560.²¹ Its significance lay primarily in filling gaps in the dynastic finances and maintaining liquidity.

TABLE 1: REVENUES AND DEBT OF THE CATHOLIC MONARCHS

Year	Income (<i>maravedi</i>)	Expenditure (ducats) (1 ducat = 350 <i>maravedis</i>)	Debt (ducats)
1474	73,250,000	209,286	
1480	94,401,000	269,717	
1493	214,166,916	611,905	
1501	271,146,190	774,703	
1504			3,295,968
1510	320,000,000	914,286	
1515			3,881,210

TABLE 2: REVENUES OF THE SPANISH CROWN IN THE SIXTEENTH CENTURY
(FROM FIGURES BY KÖRPÁS, GARCÍA-HERNÁN AND CARLOS MORALES)

Year	Income (ducats)	Expenditure (ducats)	Gross debt including interest (ducats)
1552			13,916,817
1554	2,515,818		15,298,747
1559	2,900,000	2,930,000	
1560			23,127,783
1561–1562	4,330,000	3,230,000	
1572–1573	6,400,000	7,810,000	43,337,462

19 Santiago Fernández Conti, *Los Consejos de Estado y Guerra de la Monarquía Hispánica en tiempos de Felipe II. (1548–1598)*. Valladolid, 1998.

20 Pérez, *Isabel y Fernando*, 93.

21 Lynch, *Los Austrias*, 152–161; Körpás, 'A fiskális-katonai állam', 1000.

Year	Income (ducats)	Expenditure (ducats)	Gross debt including interest (ducats)
1588	8,800,000	10,490,000	
1598	10,220,000	13,710,000	84,674,469
1601	12,560,000	12,010,000	
1623			118,167,000

The available information on revenues under Charles V does not enable an accurate overall estimate of imperial income. An approximate guide is the distribution of contributions to the annual income in the 1530s. Of about one million ducats in total, the smallest contribution came from the wealthy Netherlands (9.9%), while the Italian states (Naples, Sicily and Milan) contributed 25.8%.²² The Spanish crowns thus provided 74.2% of the income, and Castile alone, 69.1%. Castile thus generated ninety per cent of Iberian income and seventy per cent of total imperial income.

Despite what by European standards was very high annual income, growing under Charles V from about one million ducats to 2.5–3 million, the greatest problem of the Habsburg Empire was maintaining liquidity. The constant wars proved impossible to finance. The dynastic regime looked on Spain, and particularly Castile, as a cash cow, and in the long term, imperial glory proved to be an expensive experience for the Spanish elite. Through bills of exchange, loans and markets, Charles V took out loans of more than 28 million ducats between 1526 and 1556 and paid interest that has been calculated by some historians as 28.69% on average. He thus had to repay more than 38 million ducats.²³ The insurmountable problems of chronic debt effectively sacrificed the Spanish, and particularly the Castilian, economy on the altar of dynastic ambition.

ESTIMATED MILITARY POTENTIAL

A good starting point for an assess of the Spanish crowns' military potential during our period is the reform of the military under the Catholic Monarchs. Queen Isabella carried out a wide range of governmental, economic and social reforms, which notably included an attempt to establish, after the civil wars, a standing army independent of the nobility and the Castilian *cortes* (diet). The *Santa Hermandad* (Holy Brotherhood), set up at the Madrigal *cortes* of 1476, was an instrument of military reform based on the *Hermandads* (urban policing militias) and was intended to make military force available to the monarch at all

22 Quoted in Korpás, 'A fiskális-katonai állam', 99; Francisco Comín Comín and Bartolomé Yun-Casalilla, 'Spain: From Composite Monarchy to Nation-State, 1492–1914. An Exceptional Case?', in Bartolomé Yun-Casalilla and Patrick K. O'Brien with Francisco Comín Comín (eds.), *The Rise of the Fiscal States: A Global History, 1500–1914*. Cambridge, 2012, 235.

23 Mario Crespo López and Óscar Portugal García, *El Imperio de Carlos V. Cuatro ensayos*. Madrid, 2001, 164.

times. The *Santa Hermandad* proved to be a dead end, however, and the idea was dropped after 1493. The militias then reverted to their previous function of urban policing. Experiences of the Italian Wars, however, showed the necessity of a standing heavy cavalry on a par with its French counterpart. A decree of 1493 (*Ordenanza de las Guardas de Castilla*) ordered the establishment of the 2,500-strong *Guardas de Castilla*, consisting mainly of heavy cavalry. They constituted the first Spanish standing military force.

Building up a standing army remained one of the main political objectives of the Catholic Monarchs. The Castilian *cortes* held in Medina del Campo in 1496 ordered a census of the property of all inhabitants of the land as the basis for raising a reserve force, again of a militia nature. Under these decrees, 83,000 men were registered as foot soldiers (*peón*) and 2,000 as light cavalry (*jinete*). They had to muster only upon being summoned by the king. They were paid wages on campaigns, but had to bring their own weapons, which thus varied according to individual means.²⁴

We can estimate the military potential of Spain in the sixteenth century from local information connected with campaigns and mentioned in decrees, but we lack accurate data on the full military potential of the Habsburg Empire, which – particularly during the Universal Monarchy of Charles V – also included contributions from the Netherlands and territories of Italy and the Holy Roman Empire. It is not enough to determine the size of the imperial army, because there were also garrisons installed in Naples, Sicily and Milan, the defence forces of the Iberian Peninsula, smaller garrisons in North Africa, and defence forces and militias of a few thousand troops stationed in the colonies. According to research by military historian Enrique Martínez Ruiz, about 20,000 Spaniards may have been fighting in royal armies outside Spain in the middle of the sixteenth century, and 10,000 may have been defending the home country or serving on one of the fleets.²⁵ Of course, not all of the troops of the imperial army were Spanish. There were similar numbers of German *landsknechts* and Italian mercenaries in Charles V's imperial army, and smaller numbers of light cavalry from the Netherlands and – at the time of the 1547 Battle of Mühlberg – from Hungary.²⁶

It is also important to note that this duality persisted into later times: the Spanish Empire effectively maintained two types of army. The core of the professional army serving imperial expansion consisted of the *tercios*. They – together with the Spanish light cavalry (*jinete*) – constituted what the eminent researcher of Spanish military history, Enrique Martínez Ruiz, has called the “foreign army”. A separate organization was set up to defend the Iberian Peninsula, although it did not have to face a serious attack until the second half of the seventeenth century. This – described by Martínez Ruiz as the “homeland

24 Enrique Martínez Ruiz, ‘El ejército de los Austrias y sus ordenanzas’, *Revista de Historia Militar* 61: Número Extraordinario 1 (2017) 106–107.

25 Martínez Ruiz, *Los soldados del Rey*, 885–886.

26 Barnabás Guitman, ‘Fejezetek a schmalkaldeni háború történetéből’, *Világtörténet* 36 (2014) 259–317.

army” – was the sum of military units of varying quality and quantity. The *Guardas de Castilla*, effectively a standing army, formed the most prominent component. Special royal garrisons were maintained in forts on the coast and in the frontier regions most threatened by the French (Pyrenees) and the Portuguese (Extremadura, Castile and Galicia). Between the forts and local garrisons, particularly in frontier and coastal regions, a system of guard towers served to signal any military threat. Additional forces that could be called out in case of attack, such as the common raids by Moorish pirates, were the local urban police militias (*Hermendads*). The *Hermendads* were of dubious military value but in many places were the only force available.²⁷ Perhaps surprisingly, the defence of the enormous Iberian Peninsula primarily depended on the small standing army of *Guardas*. Expensive heavy cavalry, always small in number, was seldom deployed to good effect.²⁸ In terms of demographics, about 0.5–0.7% of the Spanish population, corresponding to 3% of the young male population, were in arms during the sixteenth century. Interestingly, this was about one third the number of clergy and nuns in Spain.²⁹

The Spanish army varied little in strength during the sixteenth century, but made great progress in professionalism and organization. Indeed – at least as regards infantry combat – it served as the model for sixteenth- and seventeenth-century European powers and influenced military developments in the Netherlands, France, England and Sweden.

MILITARY ROADS AND LOGISTICAL DIFFICULTIES

The geographical extent of the Spanish Empire placed particular demands on naval logistics. The main theatres of war – except when the Iberian Peninsula was attacked from the north – were accessible by sea. Ships transported troops from the north-western ports (A Coruña, Gijón, Santander, etc.) to the Dutch provinces, for example, several decades before the Dutch Revolt.³⁰ Consequently, the changeover from the French to the Spanish side by Andrea Doria and the Genoese fleet in 1528 was of enormous significance for the empire. Troops sailing from Spain, particularly through Barcelona, could easily reach Milan via Genoa and travel on in relative safety to Naples and Sicily. Overland, the “Spanish Road” became one of the major sixteenth-century military routes of Western Europe. It led northwards from Milan to the Netherlands possessions through Savoy or alternatively through the Valtellina Valley, and eastwards from

27 On the foreign/homeland armies, see Martínez Ruiz, *Los soldados del Rey*, and on the militias in particular, 308–318.

28 Magdalena de Pazzis Pi Corrales, ‘Las ordenanzas de las Guardas de Castilla. La forma de conocer su existencia vital’, *Revista de Historia Militar* 61: Número Extraordinario 1 (2017) 85–100.

29 Martínez Ruiz, *Los soldados del Rey*, 887.

30 Raymund Fagel, ‘El camino español por mar: Los soldados españoles en los Países Bajos durante la época de Carlos V’, in *Congreso Internacional “Carlos V y la quiebra del humanismo político en Europa (1530–1558)”* (Madrid, 3–6 de julio de 2000). Vol. 1. Madrid, 2001, 363–376.

Switzerland. The complex network of roads connecting the Netherlands with Milan and Genoa developed into a sophisticated logistical system. They were already in use in the first half of the sixteenth century, but the system attained its full state of development only after our period.³¹

The sea routes also influenced the composition of the Spanish army: large numbers of cavalry were impossible to transport, owing to the difficulties of providing accommodation, food and water for the horses. This is one of the reasons why – apart from historical traditions and the development of the *tercios* – there were so few Spanish light horsemen in the foreign army, while there were a substantial number of *jinetes* in the homeland army. A good illustration of the problems is the 1535 Tunisian campaign, when more than 25,000 infantry and 2,000 cavalry troops (a surprisingly high number) were transported, requiring an enormous fleet of about seventy-five galleys and more than 300 sailing ships.³²

STRENGTH OF ARMIES IN THE FIELD

We begin with the armies that fought on the Iberian Peninsula. In the campaigns to reconquer Granada, the Catholic Monarchs maintained a force of 50–70,000 troops for several years,³³ and an 80,000-strong army besieged Granada in 1491.³⁴ By contrast, in 1503, when a war was being waged against the French on several fronts, the “Great Captain”, Gonzalo Fernández de Córdoba, had an army of about 15,000 troops in Naples and Ferdinand of Aragon faced a French offensive on the Pyrenees front with approximately 17,000 infantry and 7,000 cavalry troops.³⁵ On the Italian front in 1525, the decisive Battle of Pavia was fought between the king of France with an estimated 29–32,000 troops and Charles V, whose army probably numbered 24,300 to which may be added the 6,300 troops of the garrison led by Antonio de Leyva that defended Pavia itself. In the imperial army, Georg von Frundsberg commanded about 13,000 *landsknechts*, and Fernando d’Ávalos commanded 6,000 Spanish and 3,000 Italian infantry troops and about 2,300 light horsemen. In the number of artillery pieces, the French held a more than threefold advantage.

The army of the Holy Roman Empire assembled to defend Vienna in 1532 was a unique and unrepeatable historical constellation. The government of Charles V mobilized the whole empire and its system of alliances to raise an

31 Raymund Fagel, ‘Las vías de comunicación entre España y Flandes durante la época de Carlos V’, in Bernardo José García García (ed.), *El imperio de Carlos V. Procesos de agregación y conflictos*. [S. l.], 2000, 253–268; Geoffrey Parker, *El Ejército de Flandes y el Camino Español 1567–1659*. Madrid, 2006; Fernando Martínez Laínez, *Una pica en Flandes. La epopeya del Camino Español*. Madrid, 2007.

32 James D. Tracy, *Emperor Charles V, Impresario of War: Campaign Strategy, International Finance and Domestic Politics*. Cambridge, 2010, 145–157.

33 Martínez Ruiz, *Los soldados del rey*, 54; Javier García de Gabiola, ‘Los ejércitos en la guerra de Granada (1482–1492)’, *Medievalia* 47 (2015) 34–41.

34 Martínez Ruiz, *Los soldados del rey*, 54.

35 *Ibid.*, 46–56, particularly 54.

armed force commensurate with the army of Sultan Süleyman. The imperial commanders – as we know from their correspondence – put the numerical strength of their forces at 90,000. The various contingents, however, arrived at different times and with great delays, and the planned strength was not reached. An army of this size demanded the resources of half of Europe: the German imperial estates, the Spanish crowns, the kings of Hungary and Bohemia, the pope, and even the king of Portugal and – against his will – the king of France all contributed to the expenses of the venture. According to contemporary sources, 25–30,000 infantry and 5,000 cavalry troops were expected from the Holy Roman Empire. Charles V promised 7–10,000 Spanish and 10–13,000 Italian foot soldiers, 12,000 *landsknechts*, 4–6,000 cavalry troops and 40–70 cannons. The pope was to pay for 10,000 Hungarian soldiers, and Ferdinand I was expecting 35,000 troops and more than 100 cannons from the estates of Bohemia and Moravia. Some authors, quoting a contemporary plan, state the unrealistic figure of 148,000 troops, but even the above figures would have made up a Habsburg force of 90–95,000 troops if all of them had been present at the same time before the Ottomans drew back from the gates of Vienna.³⁶

CHANGES IN MILITARY ORGANIZATION

The army of the early modern Spanish Empire was born in the wars against Granada and the contest for the Kingdom of Naples. It preserved the several-hundred year traditions of the Reconquista, combining them with the experiences of Granada and Naples to produce a force which in both tactics and weaponry surpassed the most feared Christian military forces of contemporary Europe: the French heavy cavalry and their frequent collaborators, the Swiss infantry. Military reforms were instituted above all by King Ferdinand and his courtier Gonzalo de Ayora, whose decrees transformed the medieval Spanish military organization. At the level of practical combat, the “Great Captain”, Gonzalo Fernández de Córdoba, and one of the greatest experts in siege warfare at the time, Pedro Navarro, introduced tactical innovations that enabled the Spanish infantry to overcome the French cavalry, hitherto regarded as the invincible lords of the battlefield. The Great Captain also showed his tactical abilities in recognizing the destructive force of continuous fire from a mass of infantry armed with a new type of muzzle-loading matchlock arquebus, and the flexibility of the *jinete* light cavalry against a heavy cavalry charge or the robust Swiss infantry squares. Overall, the Spanish army underwent many changes after the turn of the fifteenth and sixteenth centuries, and the innovations that emerged under the Catholic Monarchs were to define the course of European military development.³⁷

36 Zoltán Korpás, *V. Károly és Magyarország (1526–1538)*. Budapest, 2008, 142–143; Tracy, *Emperor Charles V*, 149–151. Cf. Bence Péterfi's study in this volume.

37 Antonio José Rodríguez Hernández and Eduardo de Mesa Gallego, ‘Del Gran Capitán a los Tercios: la herencia de Gonzalo Fernández de Córdoba en los Ejércitos de los Austrias (siglos

INSTITUTIONAL CHANGES

In 1496, the *Tesorería de Guerra* (War Treasury) was established to oversee military affairs. Its function was to provide the soldiers' pay and other finance for the royal armies, particularly the only formation regarded as permanent at that time, the *Guardas de Castilla* cavalry. An important aspect of these changes was the establishment of the posts of *veedor* (overseer), *pagador* (paymaster) and *contador* (comptroller).³⁸

Another major step in the reforms was the establishment of the War Council. Throughout the sixteenth century, the king often consulted military experts in his direct orbit, typically members of aristocratic families. The title of *consejero de guerra* (war counsellor) was first used in 1517, during the second regency of King Ferdinand,³⁹ but many decades were to pass before there emerged any more than the germ of the "real" War Council. The king convened the "members of the war council" in 1519, but it did not operate as an institution, having no defined functions or decision-making powers. The king was merely asking the opinions of his military experts on the current war with the French and on North African affairs. In the 1520s, a circle of Burgundian and Castilian confidants gave Charles V ad hoc support in matters of high politics, and these meetings gradually became institutionalized. A key development was the official establishment of several councils such as the Council of the Indies and the Financial Council in 1523, and the Council of Navarre in 1525. The function of the Council of the Military Orders was also overhauled. Even then, however, there was no actual War Council. Indeed, the first documented meeting of Spain's highest legal and administrative body, the State Council, was prompted by the news of the Battle of Mohács. The *consulta* made in the matter of the Hungarian crown is the first official source on the existence of that institution.⁴⁰ The formation of the State Council in 1526 also had implications for military affairs, because its members, some of the foremost individuals of the Castilian political elite, were also frequently called upon for military counsel. Although we know of war council instructions from 1523 and subsequent years, discussion

XVI y XVII), *Revista de Historia Militar* 59: Número Extraordinario 2 (2015) 143–188; Eduardo de Mesa Gallego, 'Innovaciones militares en la Monarquía hispánica durante el siglo XVI. Origen y desarrollo', in Enrique García Hernán and Davide Maffi (eds.), *Guerra y sociedad en la monarquía hispánica: política, estrategia y cultura en la Europa moderna (1500–1700)*. Vol. 1. Madrid, 2006, 537–552; Jesús Martínez de Merlo, 'La organización de los ejércitos en los Austrias', *Revista de Historia Militar* 61: Número Extraordinario 1 (2017) 135–186.

38 Francisco José Corpas Rojo, 'Evolución de la organización económica militar de los Austrias', *Revista de Historia Militar* 61: Número Extraordinario 1 (2017) 187–240.

39 Fernández Conti, *Los Consejos de Estado y Guerra*; Santiago Fernández Conti, 'El gobierno de los asuntos de guerra en Castilla durante el reinado del Emperador Carlos V', in José Martínez Millán (ed.), *Instituciones y élites de poder en la monarquía hispánica durante el siglo XVI*. Madrid, 1992, 54–55. The first military counsellor, who served until 1521, was the marquis of Aguilar.

40 Zoltán Korpás, 'A spanyol Államtanács a mohácsi csatavesztésről', in Gábor Ujváry and Dóra Kerekes (eds.), *Lymbus. Magyaraságtudományi Közlemények 2004*. Budapest, 2004, 5–17.

of military affairs of the Spanish crowns usually involved members of the State Council merely “putting on another hat” and acting as military counsellors. The main functions of the War Council were to maintain the military strength on the Iberian Peninsula, issue military decrees, and oversee the *Guardas de Castilla*, which formed the core of the defence of Castile. The council had legal and military-judicial functions and was responsible for appointing officers and inspecting the payment of soldiers’ wages.⁴¹ Overall, despite the instruction of 1523, the State Council often suppressed the autonomy of the War Council in military affairs, and the members of the two bodies were mainly the same persons. The further stages in its development took place after our period, and involved such significant changes that some authors date the formation of the War Council to 1586 rather than 1523.⁴²

CHANGES IN BATTLEFIELD ORGANIZATION

During the Granada War (1482–1492), the units that made up the armies of the Catholic Monarchs varied in quality. They retained many medieval elements, but new features were constantly added. The main military force, effectively the standing army, paid directly by the crown, was the heavy-cavalry *Guardas de Castilla*. To this was added the household guard, the *continuos*, and the light cavalry (*jinete*). The vassals, upon receiving the royal summons, brought to the army their own cavalry, who received their pay from the king during a campaign. Finally, the urban militias of the *Santa Hermandad*, until the kings abandoned that attempt at reform, also formed part of the army.

The changes set in motion by the wars of the Reconquista ushered in a new era after 1500. The Spanish suffered many defeats at the hands of the Moors during the Granada War, prompting the monarchs to transform the entire institutional, financial and organizational system of military affairs. Important lessons were learned from the approximately 1,000 Swiss foot soldiers who served as mercenaries in the royal army. Their long pikes and closed battle order served as the model for the modern Spanish infantry.⁴³

The changes raised the status of infantry in the Spanish battle order. In a tradition that lasted until 1503, foot soldiers were known as *peón* (related to the Latin *pedites*, “pedestrian” but also expressing the medieval dependence on the knight). A *peón* was a soldier who carried a lance, sword or crossbow and supported the knight in battle. By contrast, the 1503 decree referred to foot soldiers as *ynfantes*, signifying the novelty and combat autonomy of foot soldiers who were armed with pikes and arquebuses and fought in closed formation.⁴⁴

41 Conti, ‘El gobierno de los asuntos’, 68–72.

42 On the Military Council, see Conti, ‘El gobierno de los asuntos’; Idem, *Los Consejos de Estado y Guerra*.

43 René Quatrefages, *Los Tercios*. Madrid, 1983, 52–54.

44 On the 1503 decree, see Quatrefages, *Los Tercios*, passim; Martínez Ruiz, ‘El ejército de los Austrias’, 107–110.

One special feature of late medieval Spanish mode of combat was the absence of archers from the battle order. Before the advent of firearms, Spanish foot soldiers fought with crossbows. The years of war between 1482 and 1492 showed the Spanish infantry to be effective in sieges of towns, but to be less suitable – owing to the militia-like organization – for field encounters, which they avoided if possible. The experience there and in the Italian wars led to qualitative changes, particularly through the determined efforts of Gonzalo Fernández de Córdoba during the Neapolitan campaigns. He improved the training and discipline of pikemen and handgunners, integrating them into cohesive infantry formations and setting the course for the future development of the professional Spanish infantry.

Cavalry

The early modern Spanish mode of combat rested in many respects on traditions developed in the struggle against the Moors, the light cavalry tactic – which predominated on both sides during the Reconquest, and was also well known in Central Europe – of sudden charge, ambush and harassment by lance-carrying horsemen. It was known in the Spanish tradition as *guerrilla*, “little war”. The typical Spanish horseman of the time was the lightly-armed *jinete*. Set against the country’s opponents, the striking weak point of the Spanish military organization was the lack of heavy cavalry that could stand up to the French knights. The establishment of the *Guardas de Castilla* only partly made up for this. At the turn of the fifteenth and sixteenth centuries, the cavalry made up only 10–15% of the Neapolitan armies of Gonzalo Fernández de Córdoba, and only a minority of them were armoured knights.⁴⁵ This meant that the heavy cavalry was always secondary to the infantry in Spanish warfare, and never approached the dominant role it held in – for example – the French army.

As we have seen, the first permanent military formation in Spain was patterned on the French heavy cavalry (*compagnie d’ordonnance*). From the time of its establishment by decree in 1493 until it was disbanded in 1703, the *Guardas de Castilla* consisted of between 2,000 and 2,500 men-at-arms, organized into twenty-five companies each with 100 horsemen. The details of the organization were laid out 1494. Four fifths of its troops were to be armoured knights (*hombres de armas*) modelled on their French counterparts, and five companies of light cavalry (*jinete*) under five captains were armed with lances “in the Moorish manner”. The decree required every horseman to march with two horses, one a charger adorned with the armorial bearings of Castile and Leon, and the other a reserve horse ridden by the armour-bearer.

The *Guardas de Castilla* were based on medieval traditions. Their ranks were mainly filled by men of noble and aristocratic birth, and the captains and the captain-general were all aristocrats.⁴⁶ From an initial strength of 2,000 the

45 Rodríguez Hernández and Mesa Gallego, ‘Del Gran Capitán a los Tercios’, 32–34.

46 Pazzis Pi Corrales, ‘Las ordenanzas de las Guardas’, 85–100.

Guardas progressively dwindled in number, first to 1,500, and after 1525, to 1,000. The proportion of heavy cavalry diminished at the same time, while the number of light horsemen increased from 500 to 1,000. The *Guardas* were poorly paid and had mainly defensive duties, not being sent abroad to fight in the Spanish Empire. Nonetheless, they were the main standing defence force of the Iberian Peninsula and fought in all of the main military events, such as the *comunero* uprising of 1520–1521 (on both sides). Originally intended as an elite army, the expensive chivalrous mode of combat gradually lost ground to modern firearm-carrying infantry formations.

Infantry

As we have seen, the greatest changes took place in the infantry. The tactical innovations employed by Gonzalo Fernández de Córdoba during the Granada War, and even more so in the Italian Wars, provided the experience through which the modern, firearm-carrying infantry attained undisputed dominance on early modern battlefields. Following the Swiss model, the *peón* became *infante*, fighting with arquebus and pike. The large number of infantry that were a legacy of the Reconquista greatly facilitated the adoption of the Swiss model.⁴⁷ The Italian campaigns led by the Great Captain brought further experience and changes into Spanish military development: the expeditionary force he led against the French cavalry consisted overwhelmingly of infantry troops: 5,000 infantry and 600 cavalry in 1495, and 3,042 infantry – consisting of 750 *espingardero* gunners, 2,058 crossbowmen and lancers, 20 *rodelero* (heavy infantry with round shields) and 97 convicts conditionally sentenced to death – and 300 *hombres de armas* and 300 *jinete* (light horsemen) in 1500.⁴⁸

A memorandum of 1511 specified how the 10,000 Spanish foot soldiers to be raised for the Holy League were to be recruited, trained, brought into line with military regulations, paid and, where necessary, punished. This memorandum has the further significance as the first document that mentions a kind of punishment, usually resulting in death, that Spanish soldiers also used in Hungarian castles, the “lance run”.⁴⁹ By the 1520s, around one third of Spanish foot soldiers carried firearms, a higher proportion than the German, French and Swiss infantries.⁵⁰ In the early sixteenth century, Spanish infantry troops were grouped into 6,000-strong regiments (*coronelia*) led by *coronels*. The *compañía* emerged in the 1510s. Each *coronelia* had ten mixed companies each of 500 troops (200 pikemen, 200 shield-bearers and 100 arquebusiers), and a further two purely pike companies of 500 troops. These were led by twelve captains. Two *coronelías* made up the 12,000-strong infantry army, and were joined by 300 heavy and 300 light cavalymen. The army

47 Martínez Ruiz, *Los soldados del Rey*, 835.

48 Quatrefages, *Los tercios*, 67–70.

49 On the lance punishment: Martínez Ruiz, ‘El ejército de los Austrias’, 110. On its use in Hungary: Géza Pálffy, *Katonai igazságszolgáltatás a királyi Magyarországon a XVI–XVII. században*. Győr, 1995, 63.

50 Rodríguez Hernández and Mesa Gallego, ‘Del Gran Capitán a los Tercios’, 24.

was led by the captain-general. These were the figures on paper, but we find much smaller numbers for the strength in the field. Companies were in reality smaller, and a *coronelía* usually consisted of three or four companies and about 1,000 troops. Its purpose was mainly to provide more effective control of the large number of companies through an intermediate level of command.⁵¹ The *coronelía* was later joined by the *tercio*. By the middle of the sixteenth century, division into *coronelías* had largely been dropped, and companies had radically shrunk. The term *tercio* was first used for the infantry of Zamudo in 1509 and then for the standing Spanish force stationed in Naples (*Tercio de Nápoles*). The Sicilian and Lombardian Tercios (*Tercio de Sicilia*, *Tercio de Lombardia*) were established by decrees of 1534 and 1536 respectively. Historians also mention a fourth, referred to in recent literature as the Malagan or Nicean Tercio (*Tercio de Málaga*, *Tercio de Niza*). The four *tercios* established under Charles V are known collectively as the Old Tercios (*Tercios Viejos*).⁵²

There is still no consensus as to why the word *tercio*, meaning “third”, was used for Spanish infantry units after 1534–1536. The most widely-held view is that it refers to the three categories of foot soldier that were integrated into the infantry force:⁵³ pikemen, who provided stability and tenacity, shield-bearers, carrying swords as well as large round shields and fighting in close combat under or beside the forest of pikes, and handgunners, who cut down the enemy from a distance and maintained continuity of fire. This mutually-reinforcing trinity surpassed the capabilities of the Swiss infantry and provided a high degree of tactical and battlefield independence and flexibility. Nonetheless, the model underwent changes in the opening decades of the sixteenth century. One of its three components, the shield-carrying soldier (*rodadero*, *escudero*), gradually disappeared from the ranks and the pay lists, and pikemen were divided into two types, those wearing breastplates (*colete* or *pica*) and unarmoured “dry pikemen” (*pica seca*). Remaining as the third element were the handgunners, by then arquebusiers. The dry pikemen were the “plebeians” of the *tercio*, who through poverty, youth or inexperience were unable to bear armour.⁵⁴

According to the 1534 and 1536 decrees, the *tercios* were to have 3,000 troops divided into ten companies of 300, but their actual strength in the field was much lower. This is demonstrated by examples in Hungary. There were about 2,400 troops in the Lombardian Tercio that fought under *maestre de campo* Álvaro de Sande in 1545, and 1,400 in the Neapolitan Tercio under

51 Ignacio Notario López and Iván Notario López, *The Spanish Tercios 1536–1704*. Oxford, 2012, 5–6; Quatrefages, *Los tercios*; Martínez Ruiz, ‘El ejército de los Austrias’, 110–113; Martínez de Merlo, ‘La organización de los ejércitos’, 140–143.

52 Martínez Ruiz, *Los soldados del Rey*, 837; Corpas Rojo, ‘Evolución de la organización’, 209–211.

53 Martínez Ruiz, *Los soldados del Rey*, 834–835; Idem, ‘El ejército de los Austrias’, 107; Martínez de Merlo, ‘La organización de los ejércitos’, 146–148.

54 On the *tercio* structure in detail: Martínez Ruiz, *Los soldados del Rey*, passim; Quatrefages, *Los Tercios*, passim; Martínez Ruiz, ‘El ejército de los Austrias’, 113–115.

maestre de campo Bernardo de Aldana that was stationed in Hungary between 1549 and 1553.⁵⁵

Eight of the companies were to be made up of pikemen, consisting of 11 officers, 135 *coseletes*, 44 *pica secas*, 90 arquebusiers and 20 musketeers. The other two companies were considered to be firearm units with 39 *pica secas*, 239 arquebusiers and 15 musketeers and their officers.⁵⁶ The companies divided into 25-strong squads (*escuadras*), each led by a corporal (*cabo*). The coherence of the units, the famous fighting spirit of the *tercios* was to a large extent determined by the platoons of 8–10 men within the squads, where the idea of camaraderie (*camarada*) was consciously nurtured. These few soldiers were billeted together and were the strongest core unit of the *tercio*. This fundamental element of professional soldiery was far ahead of its time, and unknown in other armies. It was the key to the combat value and tenacity that elevated the Spanish *tercios* to a level above all of their enemies.⁵⁷

The infantry staff also became more complex with time. The *tercio* was always led by a *maestre de campo* who reported to the army general and captain-general (*maestre de campo general, capitán general*). The *maestre de campo* was usually also the captain of a company, and all companies were led by captains (*capitán*). The major (*sargento mayor*), the captain's right hand and deputy, was appointed by the captain-general at the *maestre de campo*'s recommendation. Other staff officers were the quartermaster (*furriel mayor*), the chaplain-general (*capellán mayor*), the military bandleaders (*pifano mayor, tambor mayor*) and the head of the military police (*capitán de barrachel*). Every *tercio* also had a chaplain and a physician (*cirujano*). The officers of the company, in order of rank, were: captain, ensign (*alférez*) and his subordinate, standard-bearer (*abanderado*), sergeants (*sargento*), between one and three musicians, corporals (*cabo de escuadra*), who led the squads, and the company quartermaster (*furriel*). In the sixteenth century, only Spaniards could serve in a *tercio*.⁵⁸ Among the rank-and-file, "private soldiers" (*soldado particular*) had a special status deriving from an outstanding service record or family background, and they received higher wages. There were only a few of them in a company. Another special category were the "reformed soldiers" (*reformados*), who had come from other, disbanded units but retained their soldier's honour and were welcomed in the new company. Then there were "entertained" soldiers (*entretenidos*), who served as aides to senior officers and

55 Zoltán Korpás, 'Egy spanyol zsoldosvezér levelei a XVI. század közepén vívott magyarországi háborúkról. Adalékok Bernardo de Aldana magyarországi tevékenységéhez (1548–1552)', *Fons* 6:1–2 (1999) 3–129; Idem, 'Álvaro de Sande hadjárata Trencsén vármegyében, 1545', in Lilla Krász and Teréz Oborni (eds.), *Redite ad Cor. Tanulmányok Sahin-Tóth Péter emlékére*. Budapest, 2018, 199–210.

56 Martínez Ruiz, *Los soldados del Rey*, 843; Idem, 'El ejército de los Austrias', 113–115; Notario López and Notario López, *The Spanish Tercios*, 12–14; Rodríguez Hernández and Mesa Gallego, 'Del Gran Capitán a los Tercios', 170.

57 Martínez Ruiz, *Los Soldados del Rey*, 857; Rodríguez Hernández and Mesa Gallego, 'Del Gran Capitán a los Tercios', 149–151, 159; Notario López and Notario López, *The Spanish Tercios*, 21.

58 Martínez Ruiz, *Los Soldados del Rey*, 846–854; Idem, 'El ejército de los Austrias', 113–116; Corpas Rojo, 'Evolución de la organización', 210–211.

were assigned special duties (missions, embassies, liaison, etc.). The army was frequently joined by “adventurers” (*aventureros*), veterans who joined single expeditions as volunteers.⁵⁹

The *tercio* soldiers were not mercenaries. They were a professional standing army recruited from volunteers, the first in Europe since the Roman legions. Spain was the only country in Europe to raise troops by voluntary recruitment or conscription rather than through military entrepreneurs or mercenary leaders. Neither did the *tercios* become the private property of aristocrats as frequently occurred in France and even in the Eastern Habsburg Empire. A senior officer under royal commission, together with his captains, raised recruits within Spain and usually sent them to Italian garrisons for training, from where they went to the battlegrounds. Although the *maestre de campo* and the captains carried out the recruitment under a St Andrew’s Cross banner, the soldiers were individually contracted to the monarch and there were detailed regulations under which they entered his service and performed their obligations to him. The regulations covered term of service, pay, weaponry, promotion and demobilization. Even desertion and mutiny were controlled by written rules, not always successfully.⁶⁰ Volunteer soldiers either brought their own weapons, or the price was deducted from their pay. Another aspect of the uniqueness of the *tercios* is that the Spanish public, and particularly the lower nobility, had a greater respect for infantry in the *tercio* than in the *Guardas de Castilla*, where the emphasis was on the cavalry tradition, or in other horse units. Soldiers in a *tercio* could become officers regardless of their birth if they served long enough (typically ten years for non-nobles and five or six for nobles), and could even acquire titles in the highly reputed Spanish orders of knights (Santiago, Calatrava, Alcántara and Montesa). Soldiers of noble birth, even veterans, often served as heavy infantry, i.e. rank-and-file armoured pikemen. Officer rank was not linked to birth, and the *tercio* did not reflect the early modern structure of the estates. The poorest troops of the *tercio* were the “dry pikemen”, and not surprisingly were usually the first to rebel when the soldiers did not receive their pay. This army model enabled a high level of efficiency, because the *camarada* of the *tercios* cut through the hierarchy of feudal society, cementing commitment and raising morale for men of both *hidalgo* and low birth. The *tercio* also provided opportunities for social advancement.⁶¹

The social attitudes reflected in the *tercio* organization, together with the tactical and psychological factors, took effect on Spanish battleground tactics.

59 Martínez Ruiz, *Los soldados del Rey*, 853–854; Idem, ‘El ejército de los Austrias’, 128. On non-commissioned and senior officers, see Quatrefages, *Los Tercios*, 257–291, 295–308.

60 On recruitment, see Rodríguez Hernández and Mesa Gallego, ‘Del Gran Capitán a los Tercios’, 155–157; Martínez Ruiz, *Los soldados del Rey*, 845–846; Quatrefages, *Los Tercios*, 423–448. On the mutinies: Martínez de Merlo, ‘La organización de los ejércitos’, 151–152. On the mutiny of the Spanish *tercio* in Hungary: Zoltán Korpás, ‘Ami a magyarországi hadjárat után történt. Bernardo de Aldana és a spanyol zsoldosok sorsa 1552 után’, *Fons* 12:3 (2005) 379–398.

61 Quatrefages, *Los Tercios*, 257–291; Martínez Ruiz, ‘El ejército de los Austrias’, 113–114; Notario López and Notario López, *The Spanish Tercios*, 18–19.

In the ethos of the time, to serve in the front line as a “bullet stopper” was an honour rather than a punishment. The veterans were usually placed in the front ranks of the pikemen, while novices were to be found in the centre and the rear ranks. This arrangement was not just a matter of morale, because the veterans were usually armoured *coseletes* who could better withstand the weight of heavily-armed attackers, and unprotected pikemen were kept further back. This attitude generated levels of combat morale, strength and stability that for a long time assured the *tercios* superiority on the battlefield. Their ability to retreat in good order and with their standards held high when defeated, as occurred several times in the sixteenth and seventeenth centuries, says much about their cohesiveness on the battlefield. It was not until Rocroi in 1643 that a Spanish *tercio* first suffered annihilating defeat, when it was unable to break out of encirclement and was completely ground down by artillery fire and infantry and cavalry attacks. The only military force with a fighting morale comparable to the Spanish infantry at that time were the Ottoman janissaries.

Perhaps the finest example of this historical tradition is the continuity of the Old Tercios ever since their establishment in the first half of the sixteenth century, making them the longest-standing military units in the world. The direct descendant of the Neapolitan Old Tercio, originally called the Zamudo Tercio in 1509, is now the 9th Soria Infantry Regiment. The Sicilian Old Tercio, founded in 1534, survives as the Sicilian Old Tercio infantry regiment. The Lombardian Old Tercio, founded in 1534, lives on as the 64th Mountain Rifle Infantry Regiment. An important footnote in the history of the *tercios* is that the Spanish also created the first permanent force of marines. The Neapolitan Galleys Tercio (*Tercio de las Galeras de Nápoles*), also known as the Neapolitan Sea Tercio (*Tercio de la Mar de Nápoles*), was a unit of professional marines on the galley fleet stationed permanently on the territory of the Kingdom of Naples.⁶²

Artillery

Central to the Spanish artillery and tactics of siege warfare were the large number of siege guns that played a significant part in the capture of Moorish towns under the Catholic Monarchs. Around 1490, the artillery captain-general and royal counsellor Francisco Ramirez de Madrid organized a force of artillery with nearly 200 medium and large cannons, supplied by five gunpowder and cannon workshops.⁶³ In the 1540s, types of artillery pieces were reduced in number and standardized, resulting in eight categories.⁶⁴ An illustration of the

62 Korpás, ‘A fiskális-katonai állam’, 986–995; Notario López and Notario López, *The Spanish Tercios*, 14; Ricardo Cerezo Martínez, *Las Armadas de Felipe II*. Madrid, 1988.

63 Quatrefages, *Los Tercios*, 74; García de Gabiola, ‘Los ejércitos en la guerra’, 36–40; Javier López Martín, ‘La evolución de la Artillería en la segunda mitad del siglo XV. El reinado de los Reyes Católicos y el contexto europeo’, in Auerlio Valdés Sánchez (ed.), *Artillería y fortificaciones en la Corona de Castilla durante el reinado de Isabel la Católica*. Madrid, 2004, 115–157.

64 Mesa Gallego, ‘Innovaciones militares’, 538. In 1552, the calibres were standardized; see Fernando González de León, ‘Spanish Military Power and the Military Revolution’, in Geoff

advance of the Spanish artillery was the 1500 Siege of Cephalonia, where Pedro Navarro became the first European commander whose forces successfully used gunpowder mines to breach a castle wall.

ASPECTS OF WEAPONRY

As we have seen, changes in weaponry went hand in hand with innovations in military organization. The army of the Catholic Monarchs consisted of infantry armed with lances, swords and crossbows, light cavalry equipped with lances and crossbows, and a relatively small proportion of heavily armoured cavalry. In the early sixteenth century, however, there were major changes in weaponry.

The *jinete* light cavalry, who originally fought “in the Moorish manner” with shield, sword and lance or as mounted crossbowmen, went through a complete metamorphosis. By the middle of the sixteenth century, the crossbow had given way to the short-barrelled arquebus, although the lance persisted. In the Spanish historical tradition, mounted arquebusiers were first employed by the Catholic Monarchs. Attacking in the form of an unravelling spiral, they broke up the edges of closed infantry squares, a tactic called *caracol*, the Spanish word for snail.⁶⁵

The main changes in infantry tactics were:

1. During the war in the Pyrenees, in 1497, lances were replaced by Swiss-style pikes.⁶⁶

2. After 1488, as an adjunct to the crossbow, the Spanish infantry began to use an early type of firearm, the *espingarda*, used mainly in sieges.⁶⁷ One of the most important tactics introduced by Gonzalo Fernández de Córdoba during the Neapolitan campaigns was to replace a large proportion of the crossbowmen with *espingarderos*. Although these primitive firearms gradually disappeared in favour of the much more sophisticated arquebus after 1500, the *espingardero* category, implying the use of the earlier weapon, finally disappears from the sources only around 1529.⁶⁸ Crossbowmen were typically retrained as pikemen, and the number of arquebusiers was also increased. Around 1500, a quarter of the Spanish infantry were handgunners, a strikingly high proportion in contemporary Europe. The effectiveness of this tactical development was demonstrated in the victory at Cerignola in 1503, where the firepower of the handgunners – who made up one fifth of the infantry troops – was decisive in breaking the French cavalry charge.

3. The change in weaponry brought a change in combat skills, because foot soldiers were divided into three mutually-supporting categories: pikemen

Mortimer (ed.), *Early Modern Military History, 1450–1815*. Basingstoke, 2004, 32.

65 Rodríguez Hernández and Mesa Gallego, ‘Del Gran Capitán a los Tercios’, 177–178.

66 ...con lanzas, como las que los Alemanes los trayan, que se llamaron picas... Cf. Rodríguez Hernández and Mesa Gallego, ‘Del Gran Capitán a los Tercios’, 158; Martínez Ruiz, ‘El ejército de los Austrias’, 107.

67 Rodríguez Hernández and Mesa Gallego, ‘Del Gran Capitán a los Tercios’, 147–149.

68 Martínez Ruiz, *Los soldados del Rey*, 836; Rodríguez Hernández and Mesa Gallego, ‘Del Gran Capitán a los Tercios’, 164.

(*piquero*), shield-bearers (*escudado*, also known as *rodelerero*) and crossbowmen/handgunners (*balletero/espingardero*), formed into closed squares. They were the foundations of the outstanding success of the early modern Spanish infantry.

The basic infantry weapon, standardized in 1503, was the five-metre (or longer) pike. Although there was an attempt to establish a 26-hand (5.46-metre) version as a standard, it was not highly successful. In addition to their utility against cavalry or attacking ranks of infantry, pikes were useful for scaling castle walls. The primary task of the pikemen was to defend and support the handgunners. Pikemen typically carried a sword, helmet, shield and shoulder and breast armour (*coselete*); they may be regarded as heavy foot soldiers of low mobility, carrying a weight of 22–23 kilograms in addition to the pike, and were effective fighters when combined with the others into a massed, cohesive infantry unit. The *coselete* represented in the early modern Spanish *tercios* the ideal of the medieval knight, possessing “the queen of weapons” (*reina de las armas*), fighting as a nobleman, by contrast with the “base killer” who fought with a firearm.⁶⁹ A separate type of Spanish foot soldier in the early sixteenth century was the *rodelerero* or *escudero* – armed with round shield and sword and wearing chest, arm and shoulder armour and helmet. The *rodeleros* fought alongside the pikemen with the function of cutting down the enemy during close combat. The third element of the infantry was the fast-moving handgunner, protected only by a leather jacket. By the time of the *tercios*, the shield-bearing foot soldier had disappeared and pikemen were designated as armoured pikemen (*coselete*, *pica*) and light-infantry “dry pikemen” (*pica seca*). Arquebusiers usually also carried a thrusting weapon, but wore light attire rather than armour, because on the battlefield, in addition to supporting the forest of pikes, they had to be highly mobile. The first muskets appeared in the third decade of the sixteenth century, and Prince Alba officially standardized them in the *tercios* in 1567. Muskets had longer barrels than arquebuses, making them heavier but more accurate, and the barrel was supported on a fork to enable precise aiming. The musketeers were typically set in several ranks in front of the pikemen and employed the countermarch, firing in volleys to reduce the charging enemy. The most common sword in the Spanish army was the *espada ropera* or rapier. The Toledo-blade rapier held a particular prestige among soldiers even outside Spain.⁷⁰

BATTLEFIELD TACTICS

Firearms and massive infantry gradually established their dominance in Spanish warfare. The first major success was Gonzalo Fernández de Córdoba's victory over the army of the king of France on 28 April 1503. He faced the 9,500-strong French force, which included about 3,000 Swiss infantry and 2,000 heavy cavalry

69 Rodríguez Hernández and Mesa Gallego, ‘Del Gran Capitán a los Tercios’, 166–169; Mesa Gallego, ‘Innovaciones militares’, 545.

70 Martínez Ruiz, *Los soldados del Rey*, 38; Mesa Gallego, ‘Innovaciones militares’, 545; Rodríguez Hernández and Mesa Gallego, ‘Del Gran Capitán a los Tercios’, 162–164; González de León, ‘Spanish Military Power’, 27–28.

troops, with an army of much different weaponry. The Great Captain's 8,500–9,500 troops included about 2,500 pikemen, 2,000 crossbowmen and 1,000 arquebusiers, but he was outnumbered in heavy cavalry by more than two to one. The decisive feature of the battle was Gonzalo de Córdoba's placement of the crossbowmen and arquebusiers behind earth ramparts reinforced with obstacles, enabling them to decimate the French attackers almost undisturbed. The continuous fire from Spanish arquebusiers and crossbowmen destroyed two French companies of knights and four Swiss pike formations. The Battle of Cerignola may be seen as the first battle where hand-held firearms proved their superiority through effective tactical placement.⁷¹

In contrast with the widespread view in Western European historiography, influenced by English-language historians, the use of the countermarch to provide continuous volleys, greatly increasing the effectiveness of muzzle-loading firearms, did not start with the Dutch commander Maurice of Nassau in the late sixteenth century.⁷² It was at Bicocca in 1522 that the countermarch was first employed – by the Spanish. In that battle, the 18,000-strong army of German *lands knechts* and – decisively – Spanish infantry overcame the French army of Lautrec. Set behind earth ramparts, the Spanish handgunners used the countermarch to create continuous fire, breaking the charges of the Swiss pikemen and French knights.⁷³ The countermarch tactic of the Spanish arquebusiers was also a decisive factor in the Battle of Pavia on 24 February 1525, Charles V's twenty-fifth birthday. A further misfortune for the French in that battle was the obstruction of their artillery by their own heavy cavalry, who charged in the firing line. By contrast, the imperial army used the arquebusiers to great effect, causing enormous destruction in the ranks of French knights.⁷⁴

THE NAVY

The American conquests in the first half of the sixteenth century (Caribbean, Mexico and Peru) unavoidably elevated Charles V's empire into a global power, requiring him to organize a permanent fleet to defend the strategic points against his competitors. This costly system was eventually completed under Philip II (1556–1598) and Philip III (1598–1621), but the first steps were taken

71 On these two battles, see Antonio Jiménez Estrella, 'Don Gonzalo de Córdoba: el genio militar y el nuevo arte de la guerra al servicio de los Reyes Católicos', *Chronica Nova* 30 (2003–2004) 191–211; Martínez de Merlo, *La organización de los ejércitos*, 144–145.

72 Körpás, 'A fiskális-katonai állam', 986–988; Martínez Ruiz, *Los soldados del Rey*, 31–32.

73 Jeremy Black, *European Warfare, 1494–1660*. London, New York, 2002, 75–76.

74 González de León, 'Spanish Military Power', 27–28. Certainly, it was a Spanish author the first to write about the theory of the countermarch. In 1586, several years before its use by Maurice of Nassau, Martín de Eguiliz wrote the military treatise *Discurso y regla militar*, which included a detailed account of how the countermarch worked; see Martínez Ruiz, *Los soldados del Rey*, 33; Notario López and Notario López, *The Spanish Tercios*, 15; Körpás, 'A fiskális-katonai állam', 986–988.

during our period. There were three major strategic challenges faced by the navy during the reign of Charles V.

1. Ottoman expansion in the Mediterranean. The Royal Galley Armada (*Armada Real de Galeras*) on the Mediterranean was set up very early, starting in 1492, financed by royal revenues. That fleet, which until the 1540s consisted of no more than four to eight galleys, patrolled the sea between the Spanish and North African coasts. Similar permanent galley fleets were established in the early sixteenth century to defend the coasts of the Viceroyalty of Naples and the Viceroyalty of Sicily. They were commanded by captains-general appointed by the viceroys, and also initially consisted of only a few ships. The Spanish royal Mediterranean fleets became the predominant naval power in the Western Basin after 1528, when the Genoese Andrea Doria changed allegiance from the French to the Spanish. Doria's abilities and the size of the Genoese fleet brought a breakthrough in quantity and quality that enabled Charles V and his allies to mount naval campaigns with fleets of 300–400 galleys and sailing ships against the Ottomans and their allies (Tunis 1535; Preveza 1538; Algiers 1541).

2. The other geostrategic area where a system of permanent fleets was established very early was the Bay of Biscay. There are records from 1493 of the Biscay Armada, known in other sources as the Galicia Armada, defending the coasts against the Portuguese following the voyage of Christopher Columbus. It was based in A Coruña. Over the years, the armada assumed the further tasks of defending against French pirates (from Brittany and Normandy) and protecting the sea routes leading to the Netherlands. Unlike the Mediterranean fleets, it consisted mainly of roundships, which meant caravels, carracks and naos. A new kind of sailing warship, the galleon, was developed later.

3. With colonization, especially when precious metals started to be taken from the conquered Aztec (1519–1521) and Inca (1529–1535) Empires, transatlantic navigation had to become increasingly organized to protect the high-value cargoes and deal with (French) pirates seeking plunder. Immediately after Columbus's first voyage, special permission was required to cross the ocean, issued after 1503 by the House of Trade (*Casa de Contratación*). In 1522, an order was issued that ships were to cross the ocean only in convoys. Thus was born the most important marine trading institution in European history, the Treasure Fleet, also known as the Indies Fleet (*Carerra de las Indias*, *Flota de las Indias*). In 1525, twenty-two naos and caravels crossed the Atlantic, and eight of them returned loaded with gold and silver. In 1543, it was decided that two convoys of at least ten ships should set out from Seville for America each year. The "New Spain" fleet sailed for Veracruz in Mexico in March, and the Tierra Firme, composed of galleons, left for Cartagena de las Indias and Nombre de Dios in September. The system became increasingly regulated over the years, with the number, size and weaponry of the ships all being specified. In mid-century, the characteristic merchant and naval ship of the fleet and transatlantic navigation was the Spanish-developed galleon. The threats to the trade routes needed more than for ships to sail in convoy, giving rise to the first standing navy on the Atlantic Ocean. In 1521, the Coast Guard Armada of Andalusia (*Armada de Guardacostas de Andalucía*) was set up to

control the enormous expanse of ocean between the Canary Islands and the Cape of St Vincent. It bore several different names over the years (Sea-Ocean Armada [*Armada del Mar-Océano*], Armada of the West [*Armada de Poniente*] and Guard Armada of the Indies Fleet [*Armada de la Guarda de la Carrera de las Indias*]), and had the principal task of defending the merchant convoys sailing out of Seville. Between 1521 and 1548, it consisted mostly up to six (usually three) privately-owned carracks and caravels from Cadiz and Seville and was maintained by taxes levied on colonial trade. Its operation was supervised by officials appointed by the House of Trade.⁷⁵

SUMMARY

In the closing decades of the fifteenth century, the Aragonian-Castilian personal union, through wars and dynastic marriages, permanently united all of the crowns of the Iberian Peninsula except Portugal. This set off a distinctive historical development in the region, starting with the establishment of a major regional power. The second stage of development was the emergence of imperial dimensions after Charles I/V ascended to the throne. Under the supranational Habsburg dynasty, this regional power became the centre of an empire, and its New World conquests made the Spanish Monarchy the first global power in the world in the second half of the sixteenth century.

The new Spanish great power status was built on major military changes, in which the Spanish army gained strength out of necessity. While the army at home retained its medieval traditions and was dominated by the cavalry, the core of the armies that marched to other parts of Europe was a new kind of infantry. The reforms – which became the most successful of the period – involved the adaptation and combination of various foreign precedents, leading to the Spanish model army of the early modern age, the *tercio*. Changes in the army were accompanied by reforms of military institutions and new fiscal and financial systems. The empire “came of age” on the battlefield and in international politics when the “Universal Monarchy” of Charles V was replaced by the “Catholic Monarchy” of Philip II.

75 On the ocean armadas and Mediterranean galley fleets, see Cerezo Martínez, *Las Armadas*; Esteban Mira Caballos, *Las Armadas Imperiales. La guerra en el mar en tiempos de Carlos V y Felipe II*. Madrid, 2005. On the transatlantic voyages in particular: Martínez, *Pasajeros de Indias*.

THE MILITARY ORGANIZATION AND ARMY OF THE KINGDOM OF PORTUGAL (1495–1541)

THE POLITICAL AND DEMOGRAPHIC BACKGROUND TO PORTUGAL'S OVERSEAS EXPANSION

The rule of the Avis dynasty, starting with John I (1385–1433) and lasting until 1580, brought fundamental changes to the Kingdom of Portugal. An alliance with England lifted Portugal out of two centuries of power balance known in Iberian historiography as the “Epoch of the Five Kingdoms” (*Época de Cinco Reinos*).¹ The new royal house faced the political and economic problems that are generally known as the “late medieval Western European crisis,”² and lacking opportunities for expansion on land, they developed a strategy suited to the country’s geographical position, thereby setting the political direction that the Kingdom of Portugal was to follow for several centuries.

The first stage was to establish a base in North Africa by taking Ceuta (Sabta), in 1415, after which the policy divided into two branches: the Maghreb conquest, which may be interpreted as the Lusitanian continuation of the Reconquista,³ and exploration of the coast of Africa. The latter had a far-reaching outcome in the sixteenth century: a trade monopoly that extended across the Indian Ocean all the way to the Far East, traditionally known as the *Estado da*

1 Neither Castile, intent on isolating the Emirate of Granada from Africa, nor the Kingdom of Aragon, oriented for a long time towards the Mediterranean, nor little Navarre, prevented from expanding southwards by the other two, nor the fifth, Portugal, had sufficient strength to fulfil its ambitions to superiority over the others. This view by L. García de Valdeavellano is quoted in Julio López and Davalillo Larrea, *Atlas histórico de España y Portugal*. Madrid, 2000, 117.

2 These included the struggle between the feudal monarchy and royal power and the increasing tense relations resulting from gulf in standard of living among firstly the inhabitants of coastal towns prospering from long-distance trade, secondly the peasants (many of them effectively destitute) in interior regions that were struggling with shortage of labour, and sometimes famine, as agricultural productivity stagnated with medieval technology, and thirdly the landowning nobility between these two poles. For more detail, see A. H. de Oliveira Marques, *História de Portugal*. Vol. 1. Lisboa, 1985, 205.

3 In Portugal, the spirit of the Reconquista survived even after its land border with Islam was eliminated in the thirteenth century. After 1415, the house of Avis went ahead of Castile by investing this with new momentum on the African continent, and Portugal maintained this ideological charge until the fall of the dynasty. On the concept and scope for study of the Reconquista, see Levente Imre Igaz, *Háborúzó államok a IX–XIII. századi Ibér-félszigeten és a Kárpát-medencében. Az európai középkori hadtörténet két útjának összehasonlító elemei*. PhD Dissertation. Szeged, 2013, 2–4, 57–64.

Índia (State of India). Portugal thus became the sole European power in the region for three quarters of a century. Added to these two main branches was westward expansion involving the conquest and colonization of the Atlantic islands. This brought Portugal into conflict with another country that embarked on overseas expansion slightly later, its neighbour Castile, but also resulted in Portuguese ships reaching the coasts of Brazil.⁴

The creation and maintenance of the *Estado da Índia* was undoubtedly the most distinctive achievement of the Kingdom of Portugal during its age of glory at the turn of the fifteenth and sixteenth centuries. Here, however, we concentrate on an area of endeavour by the smallest Iberian country that is usually overshadowed by its overseas expansion. This is Ceuta in North Africa, the legacy of the very first conquest,⁵ which also reached its zenith at this time. The king during this period, Manuel I (1495–1521), appropriately nicknamed the Fortunate (*o Venturoso*), is regarded as the country's most successful ruler, primarily because the opening of the sea route to India and the establishment of the Asian monopoly took place under his reign. These unprecedented achievements followed on a century of preparations, and the expansion to both east and west brought enormous wealth and international prestige. The mercantilization of the state opened up astonishing perspectives for what had been a peripheral country only a century before.

Manuel's rule, however, also marked a turning point. It was a time when Portugal came up against the limits of its true potential, including its military capabilities. The Portuguese realized that their advantage over the regional powers of Asia lay to a very large extent on their naval artillery. The territories they held in North Africa over-extended their resources and proved increasingly difficult to hold on to. Having burgeoned under Manuel, the kingdom began to stagnate under John III (1521–1557), just when its increasingly powerful competitors, particularly the Ottoman Empire, began to cast an ominous shadow over Portugal's interests in the East.⁶ The Kingdom of Spain was embarking on its own North African expansion⁷ and enjoyed enormous revenues from the New World. For the Portuguese elite, these developments,

4 On the possessions that for a long time maintained the image of Portuguese great-power status after the Asian monopoly-illusions of the sixteenth century ("Indian smoke") and the reality of expansion in the Maghreb were dispelled: José Hermano Saraiva, *Portugália rövid története*. Budapest, 2010, 146; Oliveira Marques, *História de Portugal*. Vol. 2. Lisboa, 1984, 52–62.

5 On the role of Ceuta and the Ceuta question, see István Rákóczi, *Portugália első gyarmatbirodalma Európa ege alatt*. Pécs, 2005, <http://afrikatudastar.hu/en/database/item/1515-portugalia-elso-gyarmatbirodalma-europa-ege-alatt-first-colonial-empire-of-portugal-under-the-sky-of-europe-rakoczi-istvan> (accessed: 23.05.2019).

6 On the Portuguese–Ottoman conflict, see Salih Özbaran, 'The Ottomans in Confrontation with the Portuguese in the Red Sea after the Conquest of Egypt in 1517', *Studies on Arab–Turkish Relations* (1986) 207–214; Jean-Louis Bacqué-Grammont and Anne Kroell, *Mamlouks, Ottomans et Portugais en Mer Rouge. L'affaire de Djedda en 1517*. (Supplément aux Annales Islamologiques, 12.) Cairo, 1988.

7 The Treaty of Sintra of 1509 required Portugal to give up some of its forts on the African coast between the Straits of Gibraltar (from Ceuta) and Peñón de la Vélez de Gomera (Bādīs) and thus

coupled with the domestic realities of their own country, suggested that the best solution to their problems lay in the old idea of Iberian unity. The sovereign saw things somewhat differently, and pursued his own way of rationalizing the borders of the over-extended empire: as the problems mounted, John III ordered the withdrawal from most of the Portuguese bases in North Africa in 1541.

POPULATION

The population of the Kingdom of Portugal during our period was unequally distributed. The north was densely populated, and the towns on or near the coast were in many cases overcrowded (in addition to Porto and Lisbon, these included the non-coastal Coimbra, Leiria, Braga and some others),⁸ while the interior and southern areas were more sparsely populated and afflicted to various extents by emigration. The first official Portuguese census, a count of hearths, was ordered by John III in 1527. Multiplying the number of hearths by 4.3 gives the number of inhabitants as 1,216,000.⁹ Despite the low reliability of the method employed in that census, historians hardly differ in their estimates of the late medieval–early modern population of the Kingdom of Portugal, putting it between 1 and 1.3 million, and even at the end of our period, not more than 1.4 million. It is generally noted, however, that precise figures are difficult to obtain because of increased social mobility.¹⁰

Castile, even without Granada, already had about 6.5 million inhabitants, nearly four times as many as Portugal, and they were more densely distributed. After the annexations of Granada in 1492 and Navarre in 1512, the number grew to about 10 million.¹¹ Dwarfed by the Kingdom of Spain, Portugal was in a peculiar demographic situation as its expansion began. The people who migrated from the interior either to the coastal towns or directly to the overseas possessions were difficult to replace, causing a chronic shortage of labour and even as the

finally ended Portuguese presence in the Mediterranean. All that remained was a fort (little more than a lookout tower) at Beni Boufrah (Beni Būfrā).

8 Lisbon, the largest city, had 50–70,000 inhabitants in the early sixteenth century, and Porto had about 15,000. The Portuguese capital was therefore about the same size as London, Prague and Granada at this time, and only Paris, Istanbul and some Italian cities were substantially larger. Teresa Rodrigues, *Portugal nos séculos XVI e XVII. Vicissitudes da dinâmica demográfica*. Porto, 2004, 4, <http://www.cepese.pt/portal/pt/publicacoes/colecoes/working-papers/populacao-e-prospectiva/portugal-nos-seculos-xvi-e-xvii.-viciais'situdes-da-dinamica-demografica> (accessed: 23.05.2019); Jorge M. Pedreira, 'As consequências económicas do império: Portugal (1415–1822)', *Análise Social* 32:2–3 (1998) 449.

9 This gives a population density of 13.6/km², not far from the Iberian average of 13–15/km² but well below the estimates of 27–31/km² for contemporary Italy, France and the Netherlands: José Vicente Serrão, 'População e rede urbana nos séculos XVI–XVIII', in César Oliveira (ed.), *História dos municípios e do poder local (dos finais da Idade Média à União Europeia)*. Lisboa, 1996, 63–77, https://www.academia.edu/3182212/Popula%C3%A7%C3%A3o_e_rede_urbana_em_Portugal_nos_s%C3%A9culos_XVI-XVIII (accessed: 23.05.2019).

10 Rodrigues, *Portugal*, 21–24.

11 López and Larrea, *Atlas histórico*, 119; another estimate puts the total Iberian population around 1500 at 7.5 million: Rodrigues, *Portugal*, 2.

country flourished and became a maritime power. Neither did the situation improve after the middle of the sixteenth century, when the House of Avis went into decline. The Kingdom of Portugal simply did not have enough people for expansion, and right from the beginning was obliged to draw on other sources.¹² The hiring of Italian, Spanish and – increasingly – North European sailors and soldiers, and the employment of African slaves and inhabitants of Asia, became increasingly widespread and acknowledged practice in the Portuguese navy, and even in the army.

Internal migration considerably predated overseas expansion, and migration to newly-discovered lands in Portuguese possession started in 1415. The initial direction of migration was to the African coast, gradually shifting to the Atlantic islands, and subsequently to the eastern side of the “Dark Continent” and the Indian Ocean region. In the second half of the sixteenth century, however, migration was again predominantly in the Atlantic direction. An annual average of about five hundred people left the country during the fifteenth century, less than fifty thousand in total, but there was an annual loss to the domestic population of 3,500 under the reign of Manuel, and the total was more than a quarter of a million. Around 1534, Garcia de Resende reported the global dispersal of the Portuguese: the annual emigration of between two and four of every thousand inhabitants had almost completely depopulated some areas of the kingdom.¹³ Exacerbating the emigration losses was the departure of more than 10,000 Jews and converts, mainly to French and Dutch lands, at the end of the fifteenth century. They never returned, unlike some of the Christians who left for the colonies. The return of emigrants, together with natural increase and, after the middle of the fifteenth century, the deliberate effort to make up for the decline in the labour force by bringing in African slaves (at an annual rate that eventually reached 2–3,000) balanced out the migration losses. The overall outcome was thus a regional redistribution of population, because despite the emigration, the population of the country grew by twenty-five per cent in the first quarter of the sixteenth century. This was an increase equal to that of France and greater than that of neighbouring Spain.¹⁴

In North Africa, the area of most interest here, the number of Portuguese settlers at any time was proportional to the size of the *praças*, the frontier zones defended by the garrisons of Portuguese-held forts. These amounted to only a few hundred Portuguese soldiers and civilians until 1470, after which the conquest of Tangier and Arzila (Aṣīla) caused the number to grow steadily, reaching a peak of 5,000 soldiers and 15,000 civilians in 1541, when the area of Safim (Safi) alone had 4–5,000 Christian inhabitants. Subsequently, as local political entities grew in strength and successfully moved against the European incomers, there was a continuous decline.

12 Pedreira, ‘As consequências’, 447.

13 Rodrigues, *Portugal*, 99–109. The Spanish Monarchy suffered depopulation on an even greater scale: Jordi Nadal, *La población española (siglos XVI a XX.)*. Barcelona, 1988.

14 Pedreira, ‘As consequências’, 448.

ECONOMIC BACKGROUND

Geographical expansion accelerated after Manuel came to the throne, and the discoveries in East Africa, and subsequently in India, led to a complete change in scale. The geographical compass of the eastern trade monopoly continued to grow until the discovery of Japan in 1543. Manuel's reign thus also marks a new economic era, a distinct break from the preceding decades.¹⁵ The constant extension of its physical reach was instrumental in transforming the medieval Portuguese monarchy into a modern state, with major changes to the administration of the royal court. The old court institutions gradually yielded their authority to bureaucratic state bodies and their officials, and the same was true for financial and of course military affairs.

Despite specialization and other institutional changes, there were no far-reaching changes in the Portuguese tax system during the fifteenth century. At the turn of the fourteenth and fifteenth centuries, three quarters of the total income of about 83 million *reals* came from various taxes on trade (*sisá*). This proportion did not substantially change between the capture of Ceuta and the discovery of the sea route to India.¹⁶ In 1473, during a decade of decline in crown income due to the North African campaign and the War of the Castilian Succession, in which Portugal was also involved (1475), taxes on trade still made up 78% of the total income of 47,268,500 *reals*.¹⁷ Income from port trade at that time accounted for 16% of the total.

Change began late in the reign of John II (1481–1495), as illustrated by a radically different figure: between 1490 and 1496, immediately before the opening of the sea route to India, crown income was about 170,000 gold *cruzados* (*cruzado de ouro*), of which 120,000 came from African gold.¹⁸ The proportions of income from different sources clearly changed after the trading centre and

15 Some historians consider the pre-Manuel period to have preceded the empire proper: its closing act was the opening of the sea route to India and the establishment, in 1505, of the *Estado da Índia*. This was followed by the “First Empire” of up to 1825: Angelo Carrara Alves, *As receitas imperiais portuguesas; estrutura e conjunturas, séculos XVI–XVIII*. Brasil, 2011, 3–5, <http://www.ufjf.br/hqg/files/2009/10/Relat%C3%B3rio-de-pesquisa.pdf> (accessed: 23.09.2019).

16 Carrara Alves, *As receitas imperiais*, 3. The *real branco* was introduced in 1433 to replace previous currencies (*morabitino*, *tornez*, etc.) and became the basic unit of finance in Portugal. John I minted it from Ceuta gold, putting an end to the severe financial crisis during the period of dynastic changeover. See João Pedro Vieira, *A história do dinheiro*. Lisboa, 2017, 27.

17 Not including the queen's incomes, the tax on produce from farmland (*jugada*), land rents (*reguengos*) and the “English quarter” (*quarto dos ingleses*). The latter was paid by English traders as compensation of the losses inflicted on the Portuguese by English subjects (such as privateers). It was collected for a while even after its abolition in 1471: João Marques da Silva, *Descobrimentos Portugueses. Suplemento ao. Vol. 1*. Lisboa, 1944, 525, 547.

18 At the conversion rate of 1496, this was equivalent to 66,300,000 *reals*. The coin was based on 3.5 grams of Guinea gold and minted by Afonso V after 1457. A smaller denomination coin, the *ceítal* (derived from the name of Ceuta), made of good quality copper, was used right up to the reign of Sebastian. The value of the gold *cruzado* declined steadily until 1517, when John III fixed it at 400 *reals*. For an overview of the monetary history of our period, see Vieira, *A história do dinheiro*, 28–31.

fort (*feitoria*) of São Jorge da Mina (El Mina), on what is now the territory of Ghana, was established in 1482.

This process continued into the following century, when goods traded by the *Estado da Índia* accounted for the salient items of state revenue. These primarily comprised customs duties, revenues of the central institution that coordinated the overseas activities of the viceroyalty and the state of Portugal, the *Casa da Índia*. A good indication of political and financial developments in Portugal is that the crown already had exclusive rights to the trade in overseas commodities (primarily gold, slaves and spices) before John II ascended the throne. Despite the paucity of data from this period, there are some further conclusions we can draw regarding overseas trade enterprises and – by implication – state revenues. Historians have found wide fluctuations in the overall income of the Kingdom of Portugal even during the peak period of the early sixteenth century. In 1506, during the reign of Manuel, total income was 200 million *reals*; in 1527, at the start of John III's reign, it was 156.94 million;¹⁹ and in 1534, towards the end of our period, the ordinary income of the kingdom reached 279.5 million *reals*.²⁰ Revenues from sea trade made up 65% of total income in 1506 and 68.2% in 1518–1519. After 1495, the income of the Lisbon customs office more than doubled up to 1527, and increased by a factor of more than eight up to 1557, when it stood at 50.5 million *reals*.²¹

The surviving accounts for state revenue, even from the same time, use different currencies of inconstant value, and the amounts tell us little in themselves. Some figures for expenditure, however, give a clearer picture. Military expenditure was already high between 1415 and 1471: the campaign to capture Ceuta used up 280,000 *dobras*,²² much more than the entire estimated income of the kingdom in 1401 (about 204,000 *dobras*). The first attempt to take Tangier is estimated to have cost 57,000 *dobras*, and the second – successful – attempt in 1472, 104–112,000 *dobras*, equivalent to more than half of the following year's total income (180,000 *dobras*). This meant that the ordinary crown revenues, starting in the late 1460s, were effectively used up to finance the Maghreb war. For those who fought there, that war brought prestige and social elevation, and indeed wealth, partly through the privateering and smuggling that was much favoured by the Portuguese.²³ Therefore, at least for a while, the

19 António Baião, Hernâni Cidade and Manuel Múrias (eds.), *História da expansão portuguesa no mundo*. Lisboa, 1937, 400. To illustrate the proportions: a little before this, in a contract dated 9 September 1520, the king hired twelve “good artillerymen” for the annual pay of 12,000 *reals*: Anselmo Braamcamp Freire, ‘Maria Brandoa’, in *Arquivo Historico Portuguez*. Vol. 6. Lisboa, 1908, 397–398, 400.

20 Carrara Alves, *As receitas imperiais*, 38.

21 António Henriques Maria Braga de Macedo de Castro, *State Finance, War and Redistribution in Portugal, 1249–1527*. PhD Dissertation. York, 2008, Appendix 2.

22 Also known as the *dobra cruzada* or *Dona Branca*, issued by Peter I of Castile (1350–1369). It was used in Portugal for a long time before being replaced by the *cruzado*. One *dobra* was worth 150 *branco reals* in 1438 and 327 in 1472: *Portugal–Dicionário histórico*, entry for ‘Dobra’, and Infopedia: [https://www.infopedia.pt/sdobra-\(moeda\)](https://www.infopedia.pt/sdobra-(moeda)) (accessed: 23.05.2019).

23 Henriques, *State Finance*, 259–285.

Portuguese presence in the Maghreb was not in conflict with the interests of the state, despite the obvious deficit it caused.

We also have good reports of the prices of war-related consumer goods, raw materials and services related from the pre-Manuel period. There were striking differences in prices in some articles of weaponry used in the area of most interest here, North Africa: in 1475, a full suit of armour cost 6,600 *reals*, a small-calibre field cannon (*colobreta*) 4,400, and a suit of Genoese body armour (*couraça*) 1,320–1,760 *reals*. A mortar cost 3,000 *reals*, a mortar ball 600, and a hundredweight (*quintal*, 48.95 kg) of gunpowder 3,000. A Portuguese-made crossbow with a steel lever cost 800 *reals* and its bolt 1.5 *reals*. A lance could be purchased for 30 *reals*, and the price of a helmet with chinguard and mail coif was 1,000 *reals*.²⁴

THE LUSITANIAN PRACTICE OF THE ART OF WAR: MILITARY ORGANIZATION, MILITARY POTENTIAL AND WEAPONRY

The military forces of the early modern Kingdom of Portugal followed the old pattern of feudal military service and municipal obligations. The former was the source of cavalry troops – knights (*cavaleiros*) and shield-bearers (*escudeiros*) arranged into “lances”. These were supplemented by the orders of chivalry and the “townsmen’s cavalry” (*cavalaria-vilã*), and accompanied by various infantry units.²⁵ According to Oliveira Marques, there were at most 3,200 lances in the early fifteenth century, 500 raised by feudal landowners and 340 by the orders of chivalry, and there were probably about 5,000 infantry troops.²⁶ The Portuguese army raised for the War of the Castilian Succession (1475–1479) was undoubtedly largest of the pre-Manuel era: all sources agree that it consisted of some 5,700 cavalry and 14,000 infantry.²⁷ By contrast, Gouveia Monteiro puts the number

24 The figures of the chronicler Álvaro Lopes de Chaves (1438–1489) have been converted to *reals* by A. H. de Oliveira Marques, ‘A arte da guerra’, in Joel Serrão and A. H. de Oliveira Marques, *Nova história de Portugal (Portugal na crise dos séculos XIV e XV)*. Vol. 4. Lisboa, 1987, 335–357.

25 In Spanish, *caballería villana*. The name is misleading, because they were free cavalry troops from different social backgrounds. Their common feature was that for their part in the Reconquista, they received various privileges throughout the Iberian Peninsula, with a prestige equivalent to that of the nobility of lower ranks (*infanzones*), although they were not actual nobles. Carlos Astarita, *Del feudalismo al capitalismo. Cambio social y político en Castilla y Europa occidental, 1250–1520*. Valencia, 2005, 29–66.

26 Oliveira Marques, ‘A arte da guerra’, 350. The largest group were the *besteiros do conto*, units of infantry crossbowmen raised by town councils and municipalities, first organized into an elite militia in the late thirteenth century. They retained their role in the military for a long time after overseas expansion began: Leandro Ribeiro Ferreira, *De homens-comuns a força de elite: os besteiros do conto em Portugal na Idade Média (1385–1438)*. Porto, 2015, https://www.academia.edu/5302716/De_homens-comuns_a_for%C3%A7a_de_elite_os_besteiros_do_conto_em_Portugal_na_Idade_M%C3%A9dia_1385-1438 (accessed: 23.05.2019).

27 Rui de Pina, *Crônicas de Rui de Pina*. Introdução e revisão de M. Lopes de Almeida. Porto, 1977, cap. CLXXVII, 832. To illustrate the relative strengths of the two countries: when Ferdinand of Aragon pressed the forces of Afonso V from two sides at Toro, which was

of troops that sailed in 270 “sailing ships” (which meant any seagoing vessel) to take Ceuta at 20,000, of which 5–6,000 were cavalry.²⁸ The army taken on one of the largest campaigns of the Manuel era, the conquest of Azamor (Azmūr) in 1513, is estimated by all of the sources to have comprised 18,000 infantry and more than 2,000 ship-transported cavalry troops.²⁹ Azamor was not nearly as significant as Ceuta, but considering the extent of the territory the crown had acquired in the meantime, and bearing in mind that – for various reasons – it took substantially fewer troops into the great field battles in the late sixteenth century, the enterprise was a remarkable demonstration of strength.³⁰

Since the inception of the Kingdom of Portugal, its borders had been defended by a system of forts, although the only enemy they faced after the middle of the thirteenth century was Castile. There is some uncertainty concerning the garrisons of these forts, as there is in the case of forces involved in the naval war. Once again it was landowners, municipalities and orders of chivalry who provided the garrisons of a few dozen to a few hundred men in the forts guarding the eastern frontier zone.³¹

From the middle of the fourteenth century through the reign of Afonso V, Portugal went through a series of changes in the raising of troops, the military framework and senior military positions, and in the area of legislation. These changes correspond to the modernization processes that were going on in Western Europe at that time.³² Some Portuguese authors, however, see Portuguese military modernization as having lasted throughout the reign of the Avis dynasty, and thus envision a two-hundred-year-long process. This involved a

currently under Portuguese siege, his army was twice the size of Afonso's: Luís Miguel Duarte, '1449–1495: o triunfo da pólvora', in Manuel Themudo Barata and Nuno Severiano Teixeira (eds.), *Nova história militar de Portugal. Vol. 1*. Lisboa, 2003, 376.

28 João Gouveia Monteiro, 'A campanha militar de Ceuta (1415) revisitada', *Revista de História da Sociedade e da Cultura* 17 (2017) 66–67. Important factors when Ceuta was captured was the peace recently signed with Castile and the social consensus that enabled an army of this size to be sent.

29 Among them was Fernão de Magalhães, i.e. Magellan, who was seriously wounded during the Portuguese attack: Pedro de Mariz, *Diálogos de varia história*. Lisboa, 1749, 474–475.

30 At Alcácer Quibir, only 12,000 of the 23,000 troops were Portuguese. The rest were Spanish volunteers, European mercenaries and Moorish allies: David Lopes, *A Expansão em Marrocos*. Lisboa, 1989, 86. There were 11,000 Portuguese troops in that fought the battle beside Alcântara against the Spanish troops of Prince Alba in 1580. For more on this, see Rafael Valladares, *A conquista de Lisboa: violência militar e comunidade política em Portugal (1578–1583)*. Lisboa, 2010.

31 The *Livro da Fortalezas* (Book of Forts) that survives from the period 1509–1510 is a source of incomparable documentary and iconographic richness. It describes fifty-seven forts and their surroundings, although it does not give the strength of garrisons; see Edison Bisso Cruxen, 'O livro das fortalezas: fonte iconográfica para o estudo da fronteira luso-castelhana quinhentista', *CLIO – Revista de Pesquisa Histórica* 29:2 (2011), <https://periodicos.ufpe.br/revistas/revistaclio/article/view/24284> (accessed: 23.05.2019).

32 For more on this, see João Gouveia Monteiro, 'Cavalaria montada, cavalaria desmontada e infantaria – para uma compreensão global do problema militar nas vésperas da expansão portuguesa', in *Descobrimientos, expansão e identidade nacional*, in *Revista da História das Ideias* 14 (1992) 143–193.

fundamental change in all branches of arms, but not all to the same extent or at the same rate.³³ As with Portugal's medieval "war state",³⁴ the fifteenth century saw the emergence of two main factors that drove military reforms and modernization: the broadening dimensions of overseas expansion and the need to keep pace with its ever-stronger Christian neighbour. These obliged Portugal, with its limited human resources, to pursue systematic innovations and maintain a high level of quality. The crown maintained control of military modernization, just as it asserted its interests in overseas expansion. In the early fifteenth century, the Avis dynasty was already reforming the system for compensating troops that marched on campaigns (*contias*), and entering into innovations and developments that formed the basis of expansion, such as the modernization of the navy and the standardization of firearms.

THE ARMY

An epochal theme in Portuguese military history is the constant shortage of army troops in the home country, contrasting with the number of soldiers constantly serving in the colonies: in North Africa there were 5,000, and in the lands of the *Estado da Índia*, there were initially (in 1513) 2,500 and a maximum of 6–7,000 up to the middle of the sixteenth century.³⁵

Even during its zenith Manuel era, and for the entire remainder of Avis rule, the Kingdom of Portugal relied on soldiers hired as mercenaries, fighting mostly in small units and using conventional weapons and firearms, both to maintain the colonial presence and defend the homeland. In the early sixteenth century, feudal forces were still used by the crown in many military operations, but after the 1520s, like the orders of chivalry, they gradually lost their military significance. They – at least the infantry element – could have been replaced by the Portuguese adoption of the *ordenança*. In principle, this meant reorganizing the infantry militias on a regional basis, following modern European models, where units of pikemen and swordsmen and firearm units were made up into companies divided into squadrons and battalions. The first signs of the *ordenança* appeared under Manuel. In 1518, the experiences of military operations in India and North Africa prompted him to issue a regulation (*Regimento da Gente de Ordenança*) concerning soldiers equipped with hand-held firearms (*espingardeiros*). At that time, however, only some of the household troops were reformed, and so the regulation cannot be considered part of the later moves to set up a standing

33 General Gabriel Augusto do Espírito Santo, 'As resistências em Portugal à Revolução Militar Quinhentista', *Revista Militar* 2537–2538 (2013) 602–604.

34 A key factor in this was the Muslim model, which apart from being retained in the military vocabulary of the Iberian languages right up to the present, made independent Portugal a true war state in its first century. On war-organized Iberian society, see Elena Lourie, 'Society Organized for War: Medieval Spain', *Past and Present* 35:2 (1966) 64–76; James F. Powers, *A Society Organized for War: The Iberian Municipal Militias in the Central Middle Ages*. Berkeley, 1989.

35 Rodrigues, *Portugal*, 103.

army.³⁶ Not even John III, however, who did address the question of raising troops as part of his military reforms, was able to take any real action in this direction, partly owing to the resistance of the traditional military sections of society, particularly the nobility and the orders of chivalry.

Like their peers in other countries, the Portuguese aristocracy preferred traditional warfare based on the superiority of the heavy cavalry, although the tradition was never as prominent in the Iberian Peninsula as it was elsewhere in Western Europe. In the overseas expansion, it was deployed only in North Africa, and limited even there, because the war against the Muslims confirmed the experience of the European Reconquista, where the lance-carrying light cavalry (*ginete*) was the answer to the Moorish mode of combat.³⁷

There was also a demand in Portugal for Swiss mercenaries, veterans of the Italian wars with special skills, and although there were never large numbers of them in the country, they served as a kind of reference. As we will see, the deployment of infantry units raised and trained *à soiça* – in the Swiss mode – was successful, if not in final outcome, and contemporary sources lament their absence.³⁸

Changes also proceeded slowly in the Portuguese infantry, as is manifested by the lack of an official military institutional background, so that the training and exercising of the troops got no further than teaching by imitation and repeating certain exercises.³⁹ Put differently: the shift of emphasis to training rather than the abilities of individual soldiers did occur in Portugal, too, so that military modernization followed the European route, but in a decentralized form. For the Kingdom of Portugal, the process came to fruition in the final third of the sixteenth century, catalyzed by the colonial wars.

PORTUGUESE FIREARMS AND ARTILLERY

When Afonso V started his North African expedition in 1458, Portuguese firearms – both handguns and cannons – had already developed to a remarkably high standard. The modernization of the artillery primarily showed up in the navy (*artilharia cargada*) and the siege artillery, but hand-held firearms and ship-carried artillery (*artilharia descargada*, consisting of smaller-calibre guns that were also mobile on the ground) also had a role and an importance proven

36 Gonalo Couceiro Feio, *O ensino e a aprendizagem militares em Portugal e no Imp rio, de D. Jo o III a D. Sebast o: a arte portuguesa da guerra*. Lisboa, 2013, 30–31.

37 Nonetheless, Afonso V, with a retinue of aristocrats, campaigned as a kind of belated knight-king in North Africa. Outstanding iconographical sources of this and pre-Manuel Portuguese weaponry are tapestries held in Pastrana, Spain: In s Filipa Meira Ara jo, *As tape arias de Pastrana. Uma iconografia da guerra*. Lisboa, 2002.

38 In 1510, Afonso de Albuquerque (1453–1515), the second Indian viceroy, wrote from Kannur (Cannanore) to Manuel complaining of the lack of “Swiss captains that could teach infantry troops arriving from Portugal not to run away and by their wild flight cause chaos among those who should stand in the appropriate formation” (Esp rito Santo, ‘As resist ncias em Portugal’, 604.)

39 Couceiro Feio, *O ensino e a aprendizagem militares*, 3.

by a series of Portuguese overseas victories. The development of the naval artillery benefited from the personal interest and involvement of the monarchs, particularly John II, who built on the modest beginnings to institutionalize domestic gun casting (*Casa de Ferrarias*) and gunpowder manufacture, before which the Portuguese artillery mostly used guns and gunpowder purchased from other countries.⁴⁰

The sea route to India gave new momentum to the process. The first major naval fleet was assembled in 1505, and it was no longer designed as a mere show of strength. Its function was to protect Portuguese interests in the Indian Ocean, or rather to keep Asian powers with similar interests under military pressure.⁴¹ The fleet was equipped mostly with domestically-made weapons, and to further this strategic aim, Manuel set up state weapons factories (*tercenas*) at two sites in Lisbon in 1513. These proved unable to satisfy the proliferating demand and did not mark the end of privately-owned weapons factories or the import of war material.⁴²

Developments in Portuguese military technology were not confined to the navy and its artillery. One important innovation was a new kind of timber fort, the *bastida*. This was a structure that could be erected in a very short time by ships' carpenters, working at a forced pace, and it was used to consolidate Portuguese conquest and military presence. During the Manuel era, *bastidas* were prefabricated in Portugal and taken wherever they were needed.⁴³

TACTICS AND STRATEGY IN THE NORTH AFRICAN WAR ZONE

We can identify four types of Portuguese colonial military operations during our period. The first consists of field battles and sieges on land alone, examples being the continuous North African border raids after 1415 (under John II, Manuel and John III) and the only open field battle of the period at Boulalouane (Būlāwān) in 1514. The second category is defence of fortified positions with or without breakouts, such as the siege of Arzila by the Moors in 1508, the sieges of the Indian towns Banastarim (1512) and Calicut (Kozhikode, 1525), and the first defence of Diu in 1538 against local forces supported by the Ottomans. The

40 On Afonso's arms purchases from the Netherlands, see Saul António Gomes, *D. Afonso V. O Africano*. Lisboa, 2006, 172–173.

41 Including the Mameluk Empire, which the same year equipped its own first navy against Portuguese forces that were attacking Egyptian trading ships: Frederic Chapin Lane, *Venice, a Maritime Republic*. Baltimore, 1979, 290.

42 Ferraria de Barcarena, Tercenas de Pinhel and Major-general Renato Fernando Marques Pinto, 'As indústrias militares e as armas de fogo portáteis no exército português', *Revista Militar* 2495 (2009) 3–5.

43 There are records of their use as early as the construction of the first *feitória* on the Mauritanian coast, at Arguim (Ārkīn), before 1455: José Custódio Vieira Da Silva, 'Arquitectura em Madeira na Expansão Portuguesa', in *A arquitectura militar na Expansão Portuguesa*. Porto, 1994, 27. At Aguz (Sóiura Qadima), the first rough wooden structure was built in a single night, in preparation for a stone-built fort: António Dias Farinha, *Os portugueses em Marrocos*. Lisboa, 2002, 44–45.

third type is the naval-assisted battle (transport of war material and troops), with or without artillery support (the capture of Azamor in 1513), and the fourth is the purely naval battle, such as the defeat at Chaul on the Indian coast in 1508 and the successful retaliation one year later at Diu (1509).⁴⁴ We will now apply this typology to the military conflicts in North Africa, where, along with the naval warfare which was fundamental for Portugal in every region, we encounter major military efforts on land.

In what is now the north-west zone of Morocco, a complex set of factors caused Portugal to engage in a strategy of territorial conquest and consolidation against a political entity that in several respects was comparable to its own.⁴⁵ Towards the end of the Manuel era, the north-western section of the Maghreb entered a period of political rearrangement. The Berber Wattasid dynasty of the Kingdom of Fez were the central protagonists. They possessed a stretch of coast south of Arzila, and after 1472, they took control of the key areas of the interior. The Kingdom of Fez had a system of vassals, the most important being the Saadi dynasty, who had founded an emirate on the lands south of the Atlas Mountains and, in 1524, captured Marrakesh. Although they and the Wattasids had delineated their spheres of influence in 1527, the Saadis thereafter embarked on campaigns of conquest. The Portuguese attempted to use this power struggle to benefit their own expansion, but found themselves facing both of the warring dynasties, and the Saadi dynasty, who regarded themselves as descendants of the prophet Mohammed, eventually realized their ambitions to unify the region.⁴⁶

Retention of the Portuguese possessions in the Maghreb, organized as a unit called the “Overseas Algarve” (*Algarve D’Além-Mar*), demanded constant demonstrations of military strength and the maintenance of balance among local interest groups. The former involved coastal raids (*almogavarias*) and incursions (*entradas*) into as yet unpacified areas. These were regarded as the “school of war”, which meant they formed part of military training, but were professionally-exercised military actions in which the Portuguese displayed the military heritage of the Reconquista.⁴⁷

A typical raid involved a small mounted or infantry contingent led by an *adail*, which entered an enemy area in secret, often at night, with minimal transport equipment and pack animals and moved quickly to execute a specific task – looting food or war material, acquiring information, taking captives or even liquidating targets. The soldiers, supported by informers who knew the

44 The military conflicts up to 1578 are analyzed by this typology by Couceiro Feio, *O ensino e a aprendizagem militares*, 79–144.

45 For the military side of the Portuguese presence in the Maghreb in the fifteenth century, see Vitor Luís Gaspar Rodrigues, ‘The Portuguese Art of War in Northern Morocco during the 15th Century’, *Athens Journal of History* 3:4 (2017) 321–336; the same up to the Battle of Alcácer Quibir: Farinha, *Os portugueses*, 7–59.

46 On the sixteenth-century Maghreb policy, see Dahiru Yahya, *Morocco in the Sixteenth Century. Problems and Patterns in African Foreign Policy*. London, 1981.

47 For its other names and participants, see Igaz, *Háborúzó államok*, 54–55, 74.

terrain, rode specially-selected fast horses and often wore local (Moorish) attire to avoid identification or any surprises that could endanger their mission. The unit would typically be joined by local allies who profited from the Portuguese presence, the “Moors of peace” (*mouros de pazes*), who also paid tax. These raids kept the enemy under constant pressure and maintained the Portuguese forces themselves in a state of readiness. They were sometimes made in preparation for further military operations, and also had a role in reconnoitring or even disrupting Moorish attacks on Portuguese forts and fortified settlements. In addition, the loot they obtained in these actions gave a substantial boost to the local economy. This recipe was supplemented by the permanent defensive activity of Portuguese-held forts. These had lookout towers that were illuminated at night and surveyed the whole area of the fort or settlement, monitoring and inhibiting any enemy movement.⁴⁸ The *almogavaria* was an effective element of land operations throughout the Portuguese presence in the Maghreb and remained so even after the Portuguese began to lose their grip on power after the high point of 1514. It may be regarded as a kind of permanent guerrilla war, but regardless of the interpretation and despite accounting for the overwhelming majority of purely land-based military conflicts during our period, the *almogavaria* never caused any essential changes in the military status quo.

The Moors naturally took up the struggle, and the Portuguese intruders faced a series of sieges from the very beginning of their presence in the Maghreb. The Wattasid sultan Abū ‘Abd Allah al-Burtuqālī Muḥammad ibn Muḥammad (1504–1526)⁴⁹ attempted to recapture Arzila in 1508. This, and another Moorish siege the following year, are examples of successful Portuguese defence, relying on a combination of Spanish support from the sea, a relief army and a breakout by the besieged forces. According to a later account by Bernardo Rodrigues (ca. 1500–1560), who was born in Arzila and was present during the siege as a child, the defenders had only six (!) otherwise civilian handgunners and some crossbowmen. He also claims that neither side used artillery.

By contrast, the Christian forces who landed on the shore (about 3,500 strong) set up ship’s guns on land (which meant in the fort) and started firing effectively against the Moors, who had taken up positions in the town. After a day of artillery preparation, they planned a breakout during which – according to the chronicle – Swiss-type troops carrying pole weapons and firearms were first deployed in a Portuguese engagement. They were one of three contingents who took part in the breakout, and there is one Portuguese historian who infers from the sources that their handgunners were already effectively employing the

48 Couceiro Feio, *O ensino e a aprendizagem militares*, 81–82.

49 An illustration of how Portuguese–Moroccan relations spanned rulers and dynasties is the origin of the soubriquet al-Burtuqālī (Portuguese) applied to the sultan (who appears in Portuguese sources under the name Mulei Mafamede). He was taken from Arzila to Portugal as a child in 1471, and spent two years there before Afonso V sent him home in exchange for the bones of his uncle, Ferdinand Infante (1402–1442), who had been captured during the first and unsuccessful Portuguese siege of Tangier in 1437 and later died in Fez. David Lopes, *A Expansão em Marrocos*. Lisboa, 1924, 51.

caracol tactic.⁵⁰ This broke the strength of the attackers, who returned in 1509 but were frustrated again by the rapid intervention of the Portuguese navy.

The European conquerors fought only one open field battle against the local forces during our period. This was the Battle of Boulalouane, also known as the “Battle of the Qadis” (*Batalha dos Alcaides*) on 14 April 1514. This, and a clash with an opposite outcome one year later, taught many lessons and had serious consequences. Since 1510, the Portuguese had made treaties with most of the tribes of Duquela,⁵¹ resulting in a substantial growth of Portuguese-controlled territory. This opened the prospect of taking Marrakesh and, in the longer term, overcoming the Kingdom of Fez (and making it a Portuguese protectorate). The Wattasids responded by raising a substantial army to prevent further loss of territory. Their first target was Azamor. Azamor was one of the forts included in the major programme of construction and extension the Portuguese had been pursuing since 1505. The Wattasid attack was a contingency that had been planned for, and the governors of the three most important southern *praças* decided on a preventive war. They massed their forces in Safim, where they were joined by large numbers of *mouros de pazes* led by Yahyā Ou Ta’fouft (Bentafut or Ibn Tafut in Portuguese historiography). Although the sources generally round up the strength of the enemy and round down those of the Portuguese forces, and cast doubt on the usefulness of the mercenaries and the “Moors of peace”, we can accept that there were about 4,300 very inhomogeneous troops on the Portuguese side. Of these, approximately 1,000 were (variously equipped) horsemen and 1,300 foot soldiers (crossbowmen, handgunners and “Swiss” units) and about 2,000 allied Moorish horsemen.

The Portuguese forces marched north from Safim, united with the other two *praça* formations, and then turned south-west. They encountered the Wattasid army at Boulalouane, in the winding valley of the Oum Er-Rbia (Rio Morbeia in Portuguese). Decisive to the outcome of the battle was the absence of ‘Abd Allah al-Burtuqālī. He had marched south from Fez to the town of Salé (Salā) but turned back with part of his army to assist the qadis of Alcácer Quibir and Larache (al-‘Arā’iṣ), who had marched on Tangier and been defeated there by the Portuguese captains of Arzila and Tangier. The Portuguese thus only had to deal with the forces of the former qadi of Azamor, Mulay Zidane, and the leaders of a few smaller districts and settlements, who – together with the advance guard of the Moorish army – were waiting at Boulalouane for their main force to arrive.⁵² When the Portuguese learned of this situation, they acted immediately, leaving their camp and setting out towards the Moorish positions at dawn.

The Portuguese commander, João de Meneses, led an army of five contingents. The first was commanded by the governor of Azamor, Rui Barreto.

50 Bernardo Rodrigues, *Anais de Arzila, crónica inédita do século XVI*. Lisboa, 1915, 22–23.

51 The name of the southern zone of Algarve D’Além-Mar (from the Arabic name Dukkāla).

52 The victory of João Coutinho and Duarte de Meneses in the north meant that the Wattasid forces were divided: José Paulo Oliveira Costa and Vítor Luís Gaspar Rodrigues, *A Batalha dos Alcaides, 1514. No apogeu da presença portuguesa em Marrocos*. Lisboa, 2007, 52.

The second had several leaders, because it comprised nobles seeking their fortune in Africa, and their clients. They could not be put under anyone else's command. In combat, they simply ignored the orders of external officers and did not even respect pre-arranged tactical manoeuvres. Their combat value, in the eyes of African war-zone veterans, trained mercenaries and fort commanders, was understandably low.⁵³ The third unit comprised the commander-in-chief's own best-trained soldiers, and the eight hundred or so men in other two were a combination of *mouros de pazes* troops, horsemen of Safim, the most populous Portuguese possession, and the men of Nuno Fernandes de Ataíde and his son-in-law Afonso de Faro, some of whom capable of fighting in the Swiss mode. The Portuguese rearguard escorted the baggage train and the field artillery, which the Moors lacked.

We do not know the overall strength of the Wattasid army, but it was divided into three main units. Its vanguard consisted of infantry and handgunners, the latter being ordered to cause maximum losses to the Portuguese cavalry. After their first volley, de Meneses sent some of Bentafut's cavalry on a diversionary manoeuvre, and when they engaged with the Wattasid rearguard, he personally launched a frontal attack with six hundred horsemen and the rest of the *mouros de pazes* against the main body of the enemy, quickly disrupting the Moorish ranks, at the same time attempting to open the way for the slow-moving Portuguese infantry. The Moors soon went into flight, heading for the surrounding hills. Small groups of Portuguese cavalry set off in pursuit, but became dispersed in the process, and the commander-in-chief attempted in vain to keep his army together. Then followed the critical phase of the battle. The Moors, seeing the breakdown of unified control in their enemy as the various units ran in chaos, and realizing that Bentafut's cavalry had not stayed to defend the Portuguese forces,⁵⁴ quickly rearranged their ranks and counter-attacked. This took devastating effect: having rashly spread apart, the Portuguese *fidalgos* paid the price: twenty-seven nobles and forty Azamor townsmen lost their lives.⁵⁵ The battle nonetheless ended favourably for the Portuguese, for two reasons: the two infantry contingents led by Nuno Fernandes de Ataíde managed to get into formation just in time, halting the Wattasid attack, and de Meneses' combat-hardened soldiers gave them effective support, by virtue of having stayed together on the battlefield.

The Portuguese lost some fifty horsemen but very few foot soldiers during the three-hour battle, while 2,000 of the Wattasid army (almost certainly an exaggerated number) died and 280 were taken prisoner.⁵⁶ Although Mulay Naṣīr (brother of the sultan) arrived with his army the following day from Sale, where

⁵³ Costa and Rodrigues, *A Batalha dos Alcaides*, 48.

⁵⁴ The *mouros de pazes* found something better to do – they started to loot the Wattasid camp: Rodrigues, *Anais de Arzila*, 113.

⁵⁵ *Ibid.*, 115.

⁵⁶ An account of the battle based on reports by the chroniclers Bernardo Rodrigues, Damião de Góis (1502–1574) and Pedro de Mariz: Couceiro Feio, *O ensino e a aprendizagem militares*, 99–100.

they had been lingering, they were obliged to retreat after a series of attacks by Bentafut's men.⁵⁷ Following soon after this victory was an enterprise that may be regarded as the peak of Portuguese operations in the interior of the Maghreb. On 21 August, a provocative incursion by 3,000 horsemen, mostly Moorish allies, advanced all the way to one of the gates of Marrakesh.⁵⁸

Boulalouane was an important but not, as things turned out, a fateful battle. The deciding event came a year later, when the Portuguese fared rather differently. On 14 June 1515, a fleet of 200 ships carrying 8,000 men, including 2,000 horsemen, sailed from Lisbon, commanded by António de Noronha. Its mission was to set up a new fort and *feitoria*⁵⁹ in a location ideal for the purpose, the estuary of the river Cebu (Sbū), beside the town of Mamora (now Mehdiya). As was their practice, the Portuguese started to build a wooden fort immediately after landing, using structural components they had brought with them, with a view to finishing it in stone.⁶⁰ The new base was named after Saint John (*Fortaleza de São João de Mamora*), and from the beginning was the target of Moorish attacks, which became increasingly intense. This resulted in the suspension of the works, which had been progressing well. The climax came on 19 July, in a concentrated attack by an overwhelming Wattasid force of 3,000 cavalry and 30,000 infantry troops led by Mulay Naşir.

That was when the serious error in the choice of location for the fort became apparent. The fort lay on a stretch of the estuary shore that could be easily defended against a naval attack, but a rise in the ground nearby made it extremely vulnerable on the land side. The Moors placed some of their cannons on the mound and kept the fort under continuous fire. Meanwhile, they set up the other half of their artillery at the mouth of the harbour, cutting off the Portuguese from relief by sea. After three days, the Portuguese attempted a breakout that cost the lives of at least 1,200 soldiers. There was also an unsuccessful attempt to bring a ship into the harbour and open fire on the Moorish gun batteries. Demoralized and blaming each other, the Portuguese held out until 10 August, when they began to evacuate the fort, an operation that ended in unprecedented bloodshed. Their ships, unable to manoeuvre in the river estuary because of the low tide, ran aground or sank. In the total chaos of the retreat, some 4,000 people and 100 ships were lost. In the prevailing anarchy, all attempts to control the troops or arrange the infantry in Swiss formation ended in failure, and the Moors could not be halted.⁶¹

57 Frederico Mendes Paula, 'Batalha de Boulalouane ou dos Alcaides', in *Histórias de Portugal em Marrocos*. Blog, 18.12.2016, <https://historiasdeportugalemarrocos.com/2016/12/18/a-batalha-de-boulalouane-ou-dos-alcaides/> (accessed: 23.05.2019).

58 *Ibid.*

59 As evidenced by the civilians that were travelling on the ships, the future inhabitants of the new *praça*, who included women and children: Diogo Cardoso Gomes, 'Expedição da Mamora', in *E-cyclopaedia of Portuguese Expansion, Temas e factos* (2014), https://www.academia.edu/6313633/Mamora_Expedi%C3%A7%C3%A3o_da (accessed: 23.05.2019).

60 Lopes, *A Expansão*, 39.

61 Rodrigues, *Anais de Arzila*, 135–138.

The Mamora catastrophe was regarded even at the time as the most serious military defeat of the Manuel era, and it had far-reaching consequences. The crown abandoned the construction of forts on the Maghreb coast,⁶² signalling to the people of the area that European military pressure was weakening. The Algarve D'Além-Mar regime also began to unravel politically, as many *mouros de pazes* challenged their treaties with the Portuguese. The weapons looted near Mamora enabled the Moors to develop their artillery,⁶³ effectively depriving the Portuguese of their unchallengeable superiority in this branch of arms in North Africa. The Saadi dynasty also soon showed that it was going to be just as determined an enemy of the Portuguese as the Wattasids: in 1541, their later sultan, Mulay Muḥammad, used artillery firepower to capture the southern end-point of the Portuguese possessions, the fort of Santa Cruz do Cabo Guer (on the site of today's Agadir). This prompted John III to order the evacuation of the other Portuguese-held *praças* in the Duquela area. By the final third of the sixteenth century, retention of the more distant but more remunerative *Estado da Índia* took priority over the Algarve D'Além-Mar.⁶⁴

THE PORTUGUESE NAVY

Despite having an extraordinarily small army, the Kingdom of Portugal achieved territorial expansion that elevated it to world power status in the first decades of the fifteenth century. The key to its success was sea-based warfare and the use of warships to control conquered territory. Its fleet had a major role in facilitating trade between the Mediterranean and the North Sea, resulting in the development of ships that incorporated technical innovations from both of these regions. The Portuguese navy thus became a major military force in the fourteenth century,⁶⁵ engaging mostly in privateering and defensive operations against Muslim raiders from the Maghreb. After 1415, the navy took on new duties, defending the Straits of Gibraltar and the North African bases that were by then in Portuguese possession. The long process of circumnavigating Africa and taking possession of the Atlantic islands (Madeira, the Azores and Cape Verde) had also begun, coming to a peak in the discovery of the sea route to India in 1498 and the discovery of Brazil two years later.⁶⁶

62 The only exception was the extension of Aguz in 1519: Frederico Mendes Paula, 'O Castelo de Aguz em perigo', in *Histórias de Portugal em Marrocos*. Blog, 02.06.2017, <https://historiasdeportugalemarrocos.com/2017/06/02/o-castelo-de-aguz-em-perigo/#more-8203> (accessed: 23.05.2019).

63 On the fifteenth-century Maghreb artillery and points of relevance to Portugal, see Weston F. Cook, 'Warfare and Firearms in Fifteenth Century Morocco, 1400–1492', *War and Society* 11:2 (1993) 2.

64 After 1541, only Ceuta, Tangier, Arzila, Alcácer Ceguer (al-Qaṣr aṣ-Ṣeghir) and Mazagão (the predecessor of al-Jadidah) remained in Portuguese possession: Farinha, *Os portugueses*, 67–68.

65 Francisco Contente Domingues (ed.), *História da marinha portuguesa. Navios, marinheiros e arte de navegar 1500–1668*. Lisboa, 2012, 17.

66 Henry the Navigator (Infante Dom Henrique, o Navegador, 1394–1460) is well known for his efforts in organizing and mentoring, but John II, the "Perfect Prince" (*o Príncipe Perfeito*), was

From 1501 onwards, Manuel sent fleets (*Armadas*) to the Indian Ocean in February and March each year, in convoys ranging in size from three to twenty-two sailing ships and with crews totalling between 150–160 and 1,500 seamen. Some of these returned to Europe laden with commercial goods, and the rest remained in the territory of the *Estado da Índia* as warships to protect the Portuguese maritime monopoly. In the first half of the sixteenth century, the Portuguese had to contend with European (Spanish, French, and later Dutch) navies in the Atlantic Ocean, while on Asian waters, they encountered only the fleets of local Muslim powers, which were no match for their own warships.

The best-known Portuguese warships were caravel variants (*caravela latina* and *caravela redonda*), the *nau*, which means no more than a big ship, and the formidable galleon (*galião*). The size and firepower of the galleon gave the Portuguese the true means of ruling the waves. It could also carry a large number of troops and – during the North African campaigns – horses. The Portuguese also involved local ships, some of them oar-propelled, in their operations. Nearly every type of ship was used for both transport and combat, and even for fishing.

Portuguese naval power reached its zenith in the first half of the sixteenth century. The following example serves to illustrate the quality of its warships: the 1,000-tonne *São João Baptista* (commonly known as the *Botafogo*), a floating fortress with 366 bronze cannons, played the leading part in the capture of La Goletta (Halq el-Wād) and thus of Tunis in 1535. It was the most powerful element of the Portuguese navy, which was then fighting in alliance with Charles V.⁶⁷

SUMMARY

The scope and limitations of the Portugal's military operations were ultimately defined by the country's geography and demography. The Portuguese often found themselves challenged in their Asian and North African operations by larger powers with continental hinterlands.⁶⁸ Modernization was crucial in land warfare during this period, and only for a limited period was Portugal able to keep pace. Eventually, it fell behind in these developments and paid the price in the colonial wars.

In 1578, the infantry, having been reformed at great speed through the regulation enacted by King Sebastian (1557–1578) on 10 December 1570 (*Regimento dos Capitães-Mores*), sought and found an opportunity to prove its

also instrumental in this. His very rejection of Columbus boosted the Portuguese plans to reach India by sailing round Africa: Charles Verlinden and Florentino Pérez-Embid, *Cristóbal Colón y el descubrimiento de América*. Madrid, 1967, 40–41.

67 Saturnio Monteiro, *Batalhas e combates da marinha portuguesa*. Vol. 2. Lisboa, 1991, 243–244.

68 In the Portuguese–Ottoman sea war fought in various parts of the Indian Ocean (Red Sea, Persian Gulf, Indian coast), the Portuguese held their own mainly because the Ottomans were fighting as far from their homeland as they were, and were not necessarily welcomed by local Muslim political formations: István Rákóczi, *Források és tények: Diu első- és második ostroma*. PhD Dissertation. Budapest, 1994, 120–121.

new effectiveness in the Maghreb. The experiment had a grievous outcome, and cost the life of the king. At Alcácer Quibir (al-Qaṣr al-Kabīr) on 4 August, Sebastian deployed thirty-two companies of 250 troops in large square formations on the well-known Spanish pattern (*terço*). These eight thousand troops, the core of the Portuguese army, could not avert the catastrophic outcome.⁶⁹ It was almost as the direct consequence of this defeat that Portugal lost out – and eventually had to surrender its independence – to an empire that was superior in organization, had much greater reserves and population, and was coincidentally its neighbour in Europe: the Spanish monarchy of the Habsburgs (1580).

69 For the historiography of Alcácer Quibir, see Younès Nekrouf, *La Bataille des Trois Rois*. Paris, 1984; Frederico Alcide de Oliveira, *Alcácer-Quibir. A vertente táctica*. Lisboa, 1988.

MILITARY ORGANIZATION AND ARMY IN ENGLAND (1485–1547)

A NEW DYNASTY ON THE ENGLISH THRONE

For a long time, historians thought that the Wars of the Roses (1455–1485) were a series of merciless battles and brutal murders that left England awash with blood. This long-held myth does not stand up to the evidence. The death rate of the aristocracy was not outstandingly high, in fact it was average; there was no annihilating war; the “home of peace” saw undisturbed production and prosperity; the periods of military conflict added up to no more than one year; and there were no encounters between armies tens of thousands strong, most battles being between companies of a few hundred. The parties carried on their struggle in the political arena rather than on the battlefield. There were political assassinations and reprisals, but no real military events. Typifying this was the First Battle of St Albans in 1455 and the Battle of Wakefield in 1460, where some peers, indeed the leading politicians of the two “roses”, were killed, but there were few other casualties. In most cases, military engagements were brief skirmishes that involved the taking of prisoners for ransom. They were not the kind of military enterprises seen in the wars of continental Europe at that time. What concerns us here is the extent to which England retained the military apparatus which, for several decades, had made it almost invincible and enabled it to keep much of another country under military occupation.

In 1485, Henry Tudor, with an army of 5,000 heavy cavalry and mounted archers recruited largely with French support, defeated Richard III and took the throne of England.¹ Tudor reign was not at all stable, and Henry had to deal with many revolts and challenges by claimants to the throne who had armies of their own. At Stoke in 1487, he faced and saw off his first pretender, who had Habsburg support in the form of money and 8,000 mercenaries, including 6,000 German *landsknechts*.²

1 Stanley B. Chrimes, *Henry VII*. London, 1972, 47; John D. Mackie, *The Earlier Tudors*. Oxford, 1952, 52.

2 Mackie, *The Earlier Tudors*, 70, 72.

Henry showed good judgement in reinforcing England's navy and coastal defences, which were already unmatched in Europe. By 1486, a complete naval fleet was ready to sail into the English Channel.³ Although he did not go to war in person after 1485, Henry VII's wise policy kept England safe from external enemies, partly by moving the theatre of war over to Brittany, the other side of the Channel.⁴ By 1492, England was presenting a new face to the world. Over a period of ten months, at great expense, the king armed a 10,000-strong force, fitted out the fleet and purchased artillery.⁵ His declared intention was to capture Boulogne, the French bastion.⁶ He demonstrated his reign to be sufficiently strong and stable to deny any external power the chance of returning the English throne to a pretender from the House of York.⁷

WAR BUDGET

The Tudor regime invested enormous sums of money in preparations for war, the fruits of which were already apparent in the Boulogne campaign. We should first ask how the new king managed to raise the requisite finance. The population of England did not recover from the depredations of the Black Death before the end of the fifteenth century, and early in the next century, it stood at only 1.9–2.3 million (on an area of 150,000 km², including Wales).⁸ The population subsequently grew very fast, by 20% between 1520 and 1540, and to well over three million by 1550.⁹

Treason trials, estate seizures and fines obviously did not generate enough revenue in themselves to purchase guns from Flanders. In 1492, Henry VII levied a poll tax on moveable property at the rate of 15% in villages and 10% in towns. The income tax was already well known in England. Nobody owning the least moveable property was exempt, and foreign merchants paid double.¹⁰ Increasing sums flowed in from customs on the wool trade, tonnage on imported wine and poundage on skins. The country's economy, particularly the sea-based

3 William Campbell (ed.), *Materials Relating to the Reign of Henry VII*, 2 vols. (Rolls Series, 183.) London, 1873 (= *Materials Henry VII*), I. 145–152.

4 John M. Currin, '“The King's Army into the Partes of Bretagne”: Henry VII and the Breton Wars, 1489–1491', *War in History* 7:4 (2000) 383, 390–91; Roger Lockyer and Andrew Thrush, *Henry VII*. Harlow, 1997, 81.

5 Lucy Wooding, *Henry VIII*. London, 2008, 72; John M. Currin, 'To Traffic with War? Henry VII and the French Campaign of 1492', in David Grummitt (ed.), *The English Experience in France, c. 1450–1558: War, Diplomacy and Cultural Exchange*. Aldershot, 2002, 126.

6 John M. Currin, 'English International Relations 1485–1509: Continuities amidst Change', in Susan Doran and Glenn Richardson (eds.), *Tudor England and Its Neighbours*. Basingstoke, 2005, 22; Chrimes, *Henry VII*, 282.

7 Currin, 'To Traffic', 111.

8 Bruce M. S. Campbell, 'The Population of Early Tudor England: A Re-evaluation of the 1522 Muster Returns and 1524 and 1525 Lay Subsidies', *Journal of Historical Geography* 7:2 (1981) 145–154.

9 Robert Allan Houston, *The Population History of Britain and Ireland 1500–1750*. Cambridge, 1995, 16.

10 Charles Cruickshank, *Army Royal: Henry VIII's Invasion of France, 1513*. Oxford, 1969, 10–11.

trade conducted by the towns, developed enormously as world trade routes were put in order. Henry VII maintained a strict fiscal policy and left a substantial treasury surplus to his successor.

Another aspect of the first Tudor's careful financial management was a steady increase in annual revenue to about £100,000 by the end of his reign. His son, Henry VIII, raised rather less – around £80–90,000 a year – from ordinary revenues, but acquired very substantial sums by extending extraordinary revenues. Even before seizing the assets of monasteries in 1536, he increased crown income to previously unseen levels from vacant church estates, taxation of church moveable property and subsequently a further regular state poll and income tax (*First Fruits*). In the 1540s, the treasury income from the church alone was around £200,000, or double the entire state income under Henry VII. In a “great year of war” such as 1544, Henry VIII's military expenditure amounted to several times his father's annual income.¹¹

The Tudor government centralized the system of military finance. The Exchequer was gradually obliged to relinquish control of many revenues to the Chamber, which was controlled directly by the king without interference from Parliament. The Wardrobe, the king's private “money casket”, became the office of military finance, providing the army with food and weapons. Parliament had no say in this budget either. Within the Chancery, there were separate departments dealing with the Royal Army and Navy.¹² To satisfy the king's desire to maximize his own control of these affairs, decisions in matters of war were taken by the Privy Council and with the Privy Seal. He made his own men Keeper of the Privy Seal, and they were responsible for providing the finance for campaigns. The Wardrobe operated as an independent financial body for military finance.¹³ Its officials also went on campaigns as a “mobile treasury”. In addition, the Privy Wardrobe procured and financed war material, gunpowder, weapons, ship's gear, horse gear, etc. Another body was subsequently formed within the Wardrobe, the Great Wardrobe, responsible for other equipment required on campaigns (tents, clothes, saddles, etc.).¹⁴ Soldiers' pay was the responsibility of a special field treasurer.

11 Richard Hoyle, ‘War and Public Finance’, in Diarmaid MacCulloch (ed.), *The Reign of Henry VIII. Politics, Policy and Piety*. Basingstoke, 1995, 77, 83, 85, 89–90. In the late fifteenth century, the gold coin used in England was the “noble”, of which there were 2.4 to the pound. It weighed 7.59 g by the end of the century. The “angel”, a coin minted at the time of Henry VIII, was exchanged at the rate of 2.66 to the pound, and its weight in 1526 was 5.12 g. Thus, one pound was worth 13.64–18.21 g of minted gold. If we convert this into the 3.53-g Florentine florin, and for the sake of simplicity we do not take into account the fineness of the coins, one pound during our period was worth 3.86–5.1 Florentine florins. Thus, Henry VIII's standing ordinary revenue of £90,000 was equivalent to 350–400,000 Florentine florins.

12 Alfred L. Brown, *The Governance of Late Medieval England, 1272–1461*. London, 1984, 56, 83. Chancery: The National Archives, Chancery C 47/2: Army and Navy. Eg. C 47/2/31/2: provisions for the northern and western fleets.

13 Brown, *The Governance*, 46.

14 *Ibid.*, 58, 95, 97.

Overall, there was a revolutionary change in finance for war well before the Tudors seized the assets of monasteries. After the late 1530s, military expenditure increased drastically, and despite an unprecedented increase in customs revenues, the crown could not finance such campaigns out of its ordinary revenues. Income tax became regular. When war escalated, and the troops had to remain in arms for more than eight months, Parliament approved the levying of large taxes three times within one year.¹⁵ The king's subjects were also obliged to give loans to the crown. By 1540, the war budget was twice that of 1513.¹⁶ In addition to its formidable longbow, England now had a fathomless treasury to bolster its military might.

MILITARY ORGANIZATION

For several decades, the Tudor-age English army developed within the system adopted during the Hundred Years' War. At its heart was the array, the levy of freemen based on traditional feudal obligations. This had proved to be inadequate during the intensifying military enterprises, particularly in Wales and Scotland, in the late thirteenth and early fourteenth centuries. Feudal bonds were fading, and the Norman system of personal military service and the raising of soldiers in accordance with landed estates (*knight's fee*) had loosened. In a phenomenon known to historians as "bastard feudalism", retinues of paid retainers were formed under contract for the fixed period of a campaign. This was the *indenture*, military service undertaken through a written contract.¹⁷ For the wars in France, the crown also made contracts with "entrepreneur" landlords through taxes approved by Parliament. The majority of the nobles and yeomen lived from breeding sheep, and the livestock epidemics and plagues of the Little Ice Age caused a decline in wool exports. Consequently, large numbers of men offered their services as retainers. As members of companies, they made a good living from *chevauchée* raids for loot and captives. Many of the nobles who marched to the wars of the sixteenth century were capable of raising paid contingents out of wealth that had been built up over the previous two centuries. In the second phase of the Hundred Years' War, following the Battle of Agincourt in 1415, England was preparing for the occupation of large parts of France, but its relatively small population denied it the capability to maintain territorial control for a period of decades. England's advantage in military technology and the cohesion of its fast-shooting archers and knights who could dismount in combat was to no avail if sufficient garrison troops could not be found. The illusions of territorial control quickly sapped England's economic strength, and even without any catastrophic defeats in battle, the conquered lands were rapidly lost. The military potential

¹⁵ Currin, 'To Traffic', 112.

¹⁶ Glenn Richardson, *Renaissance Monarchy: The Reigns of Henry VIII, Francis I and Charles V.* London, 2002, 71; Richard Hoyle, 'War and Public Finance', 85.

¹⁷ Peter R. Coss, 'Bastard Feudalism Revised', *Past and Present* 125:1 (1989) 27–64.

built up over previous decades sagged, but did not completely give way. The French did not land on the English coast, the Irish did not drive out the English landowners, and the Scots did not triumphantly penetrate to York. Even in 1486, England was not an insignificant power. The strength that had lain behind the victories of Edward III and Henry V did not disappear without trace, and the military organization which had in many respects – such as supply and logistics – been well ahead of its time, did not fade away.

The main cause of England's civil strife was considered, during the Tudor age, to be the *indenture* system. Generations of historians accepted as the cause of the tragedy the replacement of feudal bonds by pecuniary obligations, enabling magnates to build up private armies to pursue their ambitions.¹⁸ As the first act of his rule, Henry VII prohibited lords from engaging retainers on pain of death. The Tudors wanted to revive general military service for owners of any land or buildings, even though the noble levy had last been called in the fourteenth century.¹⁹ The towns were subject to military service in the same way, although in their case, the crown was satisfied by redemption in money. The king must have realized, however, that the county levy, never having seen battle, would have a far lower combat value than the paid, contracted magnate retainers who had developed into professional soldiers during the Hundred Years' War. In the initial period, he could not dispense with the contracted companies. He returned to paid soldiers, and did not abandon contractual system. Magnate retinues made up a dwindling proportion of the military, but there was a need for rapidly-mobilizable, experienced, capable troops, and so one or two faithful lords had royal permission to go to war with their retainers, although they no longer had retinues several hundred strong.²⁰ Since there was a great need for experienced naval seamen, contracts were still made with magnates for this purpose: Sir Edward Howard fitted out eighteen ships in 1511.²¹

The essence of the Tudor reforms was that the king himself made contracts with independent, trusted, faithful captains who recruited companies with the king's money instead of great landholders raising their own paid contingents. The outlines of the new Royal Army began to emerge.

The Tudor military machinery directly organized contingents from the centre, but it would have been folly to overturn their traditional structure. Units were assembled for short fixed periods, and the royal treasury paid nothing in advance. Mobile treasuries travelled with the army, and military treasurers disbursed soldiers' pay punctually, within six days, usually to the soldiers themselves. The captain was only the commanding officer, and did not pay the soldiers himself, except possibly as an intermediary. Even later, however, the military system was unable to dispense with the high combat value of magnate

18 Christopher Plummer, 'Introduction', in Sir John Fortescue, *The Governance of England*. Oxford, 1885, 15–16.

19 John Jeremy Goring, *The Military Obligations of the English People, 1511–1558*. London, 1955, 3–4.

20 Mackie, *The Earlier Tudors*, 209.

21 *Ibid.*, 274.

retinues. At some strategic points, such as the key bridgehead of Berwick at the Scottish border, the risk of employing anything but a professional company could not be taken.²² In 1513, the king could not do without the 4,500 strong army of the loyal earl of Shrewsbury.²³ Much more common, however, was for the crown to make contracts with experienced captains of much lower birth – from the gentry – who had skills that went beyond the traditional cavalry tactics: their companies included infantry who could lay siege to castles, and also included artillerymen.²⁴

Nonetheless, the Tudor government continued to value the county militia. Although these troops were not suited for service in the great campaigns or the navy, they could be useful for suppressing local revolts or taking reprisals for minor Scottish incursions. Command of a militia was assigned to captains loyal to the government instead of members of the local nobility, the traditional sheriffs. To break the retainers' previous bonds of loyalty, militia troops were arranged into units of a hundred, under *centeniers*. The Tudors were cautious, and made sure militias were trained and properly armed. Members of the militia were not paid. At most, they could hope for a share of the plunder, but their provisions were met by the treasury. A register was made of the men available for service: in 1544, 90,000 troops could – in principle – be mustered from the counties of Southern England and Wales.²⁵ The militias proved their usefulness at Flodden, won by forces of the northern counties.²⁶ Sometimes the crown was obliged to use the county troops in large numbers: in 1544 it was tied down on several fronts, and militia troops made up two thirds even of the army sent to France.²⁷

Central control of the army is increasingly perceptible towards the end of Henry VIII's reign. By then, the king was not simply making contracts with captains who organized their own companies. The crown, as client, specified how many soldiers a captain was to raise, the equipment they should bear, their composition, the proportions of pikemen, and whether foreign mercenaries should be included. The word *indenture* was still used, but its meaning had changed. The king gave instructions according to his own ideas, and the battalion commanders had to follow them. The military organization became capable of planning the branches of arms that would go on a campaign, the types of guns to be employed, and how many ships were to be used.

In 1518, the king moved in the direction of a modern standing army by making contracts with "substanciall and compent" captains to cover peacetime rather than just a specific campaign, so that "to bee in arredines to s(er)ue us at oure pleas(ure) when the case shal require". These "select" retinues raised "with

22 Cruickshank, *Army Royal*, 197.

23 David Grummitt, 'The Court, War and Noble Power in England, c. 1475–1558', in Steven Gunn and Antheun Janse (eds.), *The Court as a Stage*. Woodbridge, 2006, 148.

24 Cruickshank, *Army Royal*, 31, 100.

25 Paul Cornish, *Henry VIII's Army*. Oxford, 1987, 17.

26 Richardson, *Renaissance*, 65.

27 Wooding, *Henry VIII*, 262.

a royal licence” formed the core of a central standing army. They did not yet spend their service living in barracks, but they were inspected twice a year. They served in military uniform, with appropriate arms, and had more than just ceremonial or bodyguard duties.²⁸ A plan of 1537 – to be financed from the wealth of the dissolved monasteries – envisaged a standing army stationed in the middle of the country, organized into cavalry and infantry in companies and regiments, that could be deployed whenever needed.²⁹

Another progressive move towards a standing army was the institutionalization of the sovereign’s bodyguard. Henry VII set up the Yeomen of the Guard, whose scarlet uniforms are preserved today by the Beefeaters of the Tower of London. They were originally heavy cavalry troops established in units of lances consisting of a man-at-arms, a squire and a longbowman. They numbered 150–200 on average, but sometimes up to 600.³⁰ In addition to their duties in ceremony and royal display, they were ready at any time to join the king on the battlefield as a select, well-trained, professional force. In 1544, 185 yeomen served at the siege of Boulogne.³¹ After a while, they were considered an infantry force, armed with halberds, but they still included units of cavalry and mounted archers. A similar function was served after 1509 by the King’s Spears, later the Gentlemen Pensioners. At the start of the period, they fought as heavy cavalry. They numbered between 50 and 70, but each man-at-arms was usually accompanied by a squire and three or four longbowmen.³² The treasury paid for their horses and weapons. In most wars, they were considered an elite formation, eventually consisting of heavy footmen with polearms. Longbowmen remained an elite unit within the guards for a long time, and even on ships, they made up the king’s closest retinue. Longbows were found in large numbers when the king’s flagship, the *Mary Rose*, was retrieved from under the sea.³³

MILITARY DISCIPLINE

The armed forces of England increasingly became “the King’s Army” after the 1510s, formed in the king’s own image. The great landowners had a place in the king’s retinue, but only one or two were chosen for strategic, decision-making positions. Battalions to be raised by different captains were standardized. Contingents of 100 were raised for the 1522 campaign. Later, division into 100-strong units was extended to magnates’ contingents. The king was

28 James Raymond, *Henry VIII’s Military Revolution: The Armies of Sixteenth-Century Britain and Europe*. London, 2007, 113.

29 Geoffrey R. Elton, ‘Parliamentary Drafts, 1529–1540’, *Bulletin of the Institute of Historical Research* 25 (1952) 130.

30 Mackie, *The Earlier Tudors*, 58.

31 Cornish, *Henry VIII’s Army*, 16.

32 *Ibid.*

33 This information was provided by János B. Szabó. See Alexzandra Hildred (ed.), *Weapons of Warre: the Armaments of the Mary Rose*. (Archaeology of the Mary Rose, 3.) Portsmouth, 2011, 586–593.

endeavouring to rationalize the mustering of troops. There was no longer a place for magnate retinues marching as separate formations in strengths of anything from 30 to 2,000. The primary consideration was to stop the army breaking up, as it did when it was composed of medieval knights, a forest of armorial colours spaced widely apart. Marching and formation into columns and flanks had to take place under central control. There was a need for a uniform command, operating according to a precise hierarchy. In the King's Army, everyone was a soldier of the sovereign. Troops stopped wearing the colours of their lords, and instead all wore the green-and-white Tudor uniform, which also made the army more "royal". Commanders often did not even have knightly rank. What was more important was to be an experienced master gunner or to have a background in commanding continental-type infantry.

The regulations promulgated by the 1512 military statute strengthened cohesion and discipline. All troops were to assemble at once, upon command, and retain the formation in all circumstances. All were forbidden to leave the unit, and had to march wherever ordered by the battalion commanders. The quartermaster ordered where camp was to be pitched for the night, and soldiers were prohibited from visiting others in the same retinue even at night, on pain of strict punishment – denial of pay, exclusion, or for more serious offences, forfeiture of estates or execution. Everybody had to march with the proper, regularly-inspected weaponry and had to account for his qualifications. Military procedures became increasingly strict, and the regulations were constantly extended.³⁴ The king even made separate contracts with artillerymen, keeping control of the troops of his most valuable branch of arms almost by individual assessment.

The central command planned itineraries in advance and mapped out routes and camp sites. Scouts were sent out to reconnoitre terrain conditions, crossing and watering points, and pastures. Great emphasis was placed on river crossings, and the ferrying of valuable guns was planned almost as a separate operation, special units being assigned for the task. Keeping in formation on the march was not just a general requirement: the rules specified the number of ranks and files and the distances to be kept while marching.³⁵

BRANCHES OF ARMS, WEAPONS, COMPOSITION

There is a widespread view among historians that civil strife-torn England was overtaken by continental Europe. The heavy cavalry tactic still dominated in England, perhaps with the special feature that the English were able to fight upon dismounting, although this was not common in practice. In the Hundred Years' War, a company of a few dozen knights supported by mounted archers could easily make devastating raids (*chevauchée*) on light, undefended targets,

34 Paul L. Hughes and James F. Larkin (eds.), *Tudor Royal Proclamations*, 3 vols. New Haven, London, 1964–1969, I. 109, 110–113.

35 Cruickshank, *Army Royal*, 33.

but even in the 1420s, they could not stand up to assembled French armies with artillery. The second phase of the war was dominated by sieges, where artillery was of increasing importance, and dismounted knights and archers could not contend with the Valois armies organized in the *compagnie d'ordonnance* system. The longbow gradually lost the power to decide a battle, its effectiveness decreasing as armour improved and the replacement of cavalry with infantry meant there were fewer horses to shoot at.

Historians have in the past broadly agreed that the inward-looking English mindset during the Wars of the Roses caused the country to become increasingly isolated. English armies did not face enemies with artillery or *lands-knechts*.³⁶ There were few continental-type heavy footmen, and hardly any troops armed with firearms. The latter made up only seven per cent of the army even in the 1544 Boulogne campaign.³⁷ The victorious Tudor army of 1485 seemed old-fashioned, and would have melted under Burgundian, Venetian or Ottoman cannon fire.

Today, this “isolation” view is being reviewed and found to be somewhat distorted. Historians are finding that the English military organization during the sixteenth century did not seriously lose pace with the military revolution that was going on elsewhere.³⁸ Neither should the continental armies of the sixteenth century be mystified, or the military system of the fifteenth be underestimated or presented as obsolete.³⁹ It is not true that in contrast with the Swiss pike squares or the Spanish *tercios*, “archaic” England lived in the “past glory” of “amateur” archers with outdated longbows. Neither is there any basis for the view that the English armed forces owed their past successes merely to plundering campaigns and were unable to do any better in the sixteenth century.⁴⁰ Historians of the second half of the twentieth century always complained that England did not keep up with Europe in developing a standing army.⁴¹ They forget that many elements of England's excellent logistical system lived on, and a central system of military institutions emerged that were independent of Parliament and financed from a separate budget.⁴²

Research has found that by the 1540s, the military organization suffered no technological lag, and in tactical skill and weaponry it was competitive with the

36 Charles G. Cruickshank, *Elizabeth's Army*. Oxford, 1966, 1, 7.

37 David Eltis, *The Military Revolution in Sixteenth Century Europe*. London, 1998, 99, 103.

38 Gervase Phillips, ‘The Army of Henry VIII: A Reassessment’, *The Journal of the Society for Army Historical Research* 75 (1997) 9–23; Gilbert John Millar, *Tudor Mercenaries and Auxiliaries*. Charlottesville, 1980, 16–17.

39 Cliff S. L. Davies, ‘Henry VIII and Henry V: The Wars in France’, in John L. Watts (ed.), *The End of the Middle Ages? England in the Fifteenth and Sixteenth Centuries*. Stroud, 1998, 244; Anthony Goodman, *The Wars of the Roses: Military Activity and English Society, 1452–97*. London, 1981, 194.

40 Sir Charles Oman, *A History of the Art of War in the Sixteenth Century*. London, 1937, 285.

41 Raymond, *Henry VIII's Military Revolution*, 2.

42 Cliff S. L. Davies, ‘Provisions for Armies, 1509–50. A Study in the Effectiveness of Early Tudor Government’, *Economic History Review* 17 (1964–65) 234–248.

major powers of the time.⁴³ In castle architecture, the new Italian bastion system was put to use in Calais, Tournai and Boulogne, on the south coast (Deal), and at the Scottish borders (Haddington).⁴⁴

The new dynasty did all it could to catch up with Europe. It had enormous reserves of infantry. The county levies were composed mainly of billmen, light footmen armed with cutting or striking weapons and polearms ranging from simple skewers to long-shafted halberds with piercing points or hooks. They had previously been used mostly to defend the Scottish border. The bowmen were mostly “left behind” in the counties, serving in local defence or on the borders, and only the finest were recruited into the Royal Army or the magnate retinues.

The county levy revived by the Tudor government was a new force. Many of the troops mustered in this way were of low combat value and most were untrained, but they formed a massive element in the ranks, and in the course of subsequent decades, with training and appropriate equipment, many became highly effective foot soldiers. The sixteenth-century magnate retinues still included armoured knights, but only as small elite formations. Nonetheless, the strength and momentum of a heavy cavalry charge remained something to be reckoned with. Some of the heavy cavalry troops were Burgundian mercenaries acquired through the Habsburgs (*Almayn Ruter*).⁴⁵ A typical magnate retinue in the Tudor age had only a dozen or fewer knights and three times as many light horsemen. The majority, numbering 150–200, were bowmen and footmen armed with polearms.⁴⁶ Following the traditions of the Hundred Years’ War, men-at-arms also fought dismounted, as a tactical unit combined with the similarly-dismounted archers. The English military apparatus did not abandon the easily mobilized tactical strength of the archers. Even in the second half of the sixteenth century, when the longbow of yew or ash was being displaced by the arquebus, English soldiers with longbows, with some adaptation to the challenges of the age, could still decide the outcome of a battle.⁴⁷ In his book on warfare, the famous military theoretician of the Tudor age, Sir Thomas Audley, recommended a battle order of both archers and arquebusiers in precisely-defined, proportionately-assembled mixed formations.⁴⁸

Thomas Wolsey, later cardinal and chancellor, put forward a financial and military scheme for a great continental campaign as early as 1512: it envisaged a

43 David J. B. Trim, ‘The Context of War and Violence in Sixteenth-Century English Society’, *Journal of Early Modern History* 3:3 (1999) 23–55; Luke MacMahon, ‘Chivalry, Military Professionalism and the Early Tudor Army in Renaissance Europe: A Reassessment’, in David J. B. Trim (ed.), *The Chivalric Ethos and the Development of Military Professionalism*. Leiden, 2003, 183–212.

44 Raymond, *Henry VIII’s Military Revolution*, 3.

45 Cornish, *Henry VIII’s Army*, 24; Ann Hyland, *The Warhorse 1250–1600*. Stroud, 2002, 100.

46 Mackie, *The Earlier Tudors*, 209.

47 Steven Gunn, ‘Archery Practice in Early Tudor England’, *Past and Present* 209 (2010) 53–81.

48 *Booke of Orders for the Warre both by Sea and Land*; Raymond, *Henry VIII’s Military Revolution*, 43. I am grateful for János B. Szabó’s reference here.

mainly infantry army of 4–5,000 English billmen, 10,000 dismounted archers, 6,000 Swiss mercenaries and 2–5,000 *lands knechts*.⁴⁹ Heavy cavalry hardly featured, and would have numbered no more than 2,000.⁵⁰ More prominent, with a specified strength of 3,000, were demi-lancers, the successors to the *hobelars*, light cavalry troops riding smaller horses who had already appeared in the vanguard.⁵¹ In 1523, the 377 mounted archers formed an almost negligible proportion of the 10,000-strong army, and there were only 595 demi-lancers. The heavy cavalrymen were nearly all magnates. The rest were foot soldiers.⁵²

English demi-lancers are difficult to compare with contemporary Central European hussars or Italian *stradiotas*. They originated in North England and Ireland, and were highly mobile even in hilly country. They carried javelins and round shields, and wore open helmet, mail shirt and chest and thigh armour. They later also appeared on the continent (*lancier*, *Lanzierer*).⁵³ The “borderers” or “border reivers” were light horsemen of another kind that made up permanent, rapidly mobilizable units stationed in border castles on both sides of the border. They provided rapid response to incursions, suppressed revolts and maintained order, but they were also deliberately used for cross-border plundering, and appeared in both the Scottish and English armies.⁵⁴

The diverse array of traditional thrusting and cutting polearms disappeared from the county infantry, to be replaced by pikes and halberds on the continental pattern. The new pikemen also received training in infantry tactics from Swiss, Spanish and Dutch mercenaries. The foot soldiers did not immediately become Swiss phalanxes, but they successfully integrated continental methods and weapons into the existing tactical system.⁵⁵ In the middle of the century, there is an example of an army where footmen armed with polearms made up four fifths of the total; longbowmen were in a minority or also carried polearms, fighting on foot.⁵⁶ Flodden, in 1513, was effectively a battle of foot soldiers fighting hand-to-hand. On Henry VIII’s campaign of 1544, the cavalry had almost disappeared: there were only 4,000 of them, as against 28,000 infantry.⁵⁷

The infantrymen of the English levy for a long time did little more than make up a large mass of troops. Their weaponry was far inferior to that of the Spanish or the Flemish. The billman went into battle with helmet, leather armour or quilted broadcloth lined with metal plates, a polearm and – particularly after the mid-sixteenth century – a single-bladed sword. The

49 J. S. Brewer, James Gairdner and R. H. Brodie (eds.), *Letters and Papers Foreign and Domestic of the Reign of Henry VIII*, 21 vols. London, 1867–1910; 1920–1932 [= LP], I/1. No. 1412; Raymond, *Henry VIII’s Military Revolution*, 82.

50 LP I/1. No. 1412; Raymond, *Henry VIII’s Military Revolution*, 91.

51 Hyland, *The Warhorse*, 32–33.

52 Raymond, *Henry VIII’s Military Revolution*, 243; note 122.

53 John Tincey and Graham Turner, *Ironsides: English Cavalry, 1588–1688*. Oxford, 2002, 7–10.

54 Keith Durham and Angus McBride, *The Border Reivers*. London, 1995.

55 Raymond, *Henry VIII’s Military Revolution*, 81; Mark C. Fissel, *English Warfare, 1511–1642*. London, 2001, 18.

56 Raymond, *Henry VIII’s Military Revolution*, 84.

57 Cornish, *Henry VIII’s Army*, 24.

infantry of the Royal Army gradually closed the gap with its continental peers. The records of the Tower show that by 1513, the king had accumulated 13,179 *Almain rivets*, German and Dutch infantry armour and polearms (*langue-de-boeuf* and halberds).⁵⁸ There were separate regiments of halberdiers and pikemen. Even a magnate retinue could be composed exclusively of pikemen.⁵⁹ Continental *landsknechts* were also hired, and English units were equipped and trained on this model. In the 1540s, there were Spanish mercenaries fighting the Scots, and crossbowmen continued to come in from Europe.⁶⁰ By the middle of the century, the arquebusier was a familiar foot soldier in the army.⁶¹ They were initially Spanish and Italian mercenaries, but home-raised units became increasingly numerous.⁶²

The army also recruited Irish *kerns*, irregular soldiers who served for the prospect of the loot they could take. They were armed only with a sword or a lance, and wore no armour. Irregular marauders were also recruited in England, mainly from the urban poor (*krekers*).

ARTILLERY AND THE MANUFACTURE OF WEAPONS

The Tudors invested heavily in the development of the artillery. Henry VII specifically sought guns from Flanders, while Henry VIII brought in Dutch foundry masters to make the most advanced heavy cannons of the time: the “twelve apostles”, monsters weighing two or three tonnes and firing 17–18-kilogram balls. The “John the Evangelist” demonstrated its destructive power at the siege of Boulogne.⁶³ The king took more than 160 other cannons on his 1544 campaign. In addition to purchasing artillery pieces from abroad, domestic foundries worked at a furious pace, located mainly on the coast, near ports, such as Houndsditch beside the City of London and in Kent, so that the guns could easily be loaded on to ships.⁶⁴ A royal gun foundry and weapon-making workshop was set up in the Tower of London, the forerunner of the Arsenal.⁶⁵ Many German and Flemish gun founders and Milanese and South German weaponsmiths were induced to settle in England. Royal weapons factories were established and central arsenals built one after another.⁶⁶ Tin and lead from Cornwall, known since ancient times, were rediscovered and put to use in bronze casting.⁶⁷ The 1544 campaign set off

58 Cornish, *Henry VIII's Army*, 34.

59 Raymond, *Henry VIII's Military Revolution*, 83, 84.

60 Currin, ‘To Traffic’, 116.

61 Gervase Phillips, *The Anglo-Scots War 1513–1550*. Woodbridge, 1999, 7.

62 Gilbert J. Millar, ‘Mercenaries under Henry VIII, 1544–46’, *History Today* 27:3 (1977) 173–182; Thomas Esper, ‘The Replacement of the Longbow by Firearms in the English Army’, *Technology and Culture* 6 (1965) 382–393.

63 Wooding, *Henry VIII*, 70.

64 Edmund B. Teesdale, *Gunfounding in the Weald in the Sixteenth Century*. Leeds, 1991.

65 Raymond, *Henry VIII's Military Revolution*, 4–5.

66 Karen Watts, ‘Henry VIII and the Founding of the Greenwich Armouries’, in David Starkey (ed.), *Henry VIII: A European Court in England*. London, 1991, 42–46.

67 Cf. Adrian B. Caruana, *Tudor Artillery, 1485–1603*. Bloomfield, 1992.

mainly with domestically-manufactured guns – ninety-five cannons and fifty mortars.⁶⁸ By the end of Henry VIII's reign, the Arsenal held 400 heavy cannons and 6,500 hand-held firearms.⁶⁹

The Tudors put great emphasis on supplying their troops with weapons of good quality, and were not satisfied with whatever the county contingents happened to bring with them. Even traditional weapons were made centrally, in the royal workshops. In Greenwich, on the Thames estuary, close to where ships were loaded, bows, arrows and polearms were made in large quantities.⁷⁰ Stores of war material and weapons were the responsibility of the Master General of Ordnance. There were also efforts to manufacture gunpowder instead of importing it. The system of royal purveyance for the procurement of raw materials – sulphur, saltpetre, charcoal and even carts and horses – was overhauled. Armour, however, was still mostly purchased from the continent,⁷¹ and ship's guns were imported from the Low Countries.⁷²

The Flemish gunners who settled in England were highly experienced and well advanced in the use of field artillery. Henry VIII was also keen to use field artillery in open battle, and boldly moved them about the battlefield as required. Even at Flodden in 1513, the English army had light guns with them. Field guns were smaller and easier to move. The Tudor armies had a general preference for small guns known as “organs”. The wagon fort that was a feature of German armies was also adapted, under the name “privy wagon”. At Boulogne in 1544 there were fifty privy wagons fitted with small guns called “pencelle”.⁷³

THE MAIN THEATRE OF WAR: FRANCE

The young Henry VIII could hardly wait to pit his strength against France. His country was capable of deploying expeditionary forces on several fronts, and had no trouble transporting troops by sea. In 1512, he demonstrated his strength by landing 11–15,000 mercenary pikemen on the shore of Spain, headed for Aquitaine to support King Ferdinand of Aragon.⁷⁴ To transport and supply such an army over a distance of 1200 km was no mean enterprise.⁷⁵

68 Cornish, *Henry VIII's Army*, 35.

69 Richardson, *Renaissance*, 67; LP I/1. Nos. 324–325.

70 Mackie, *The Earlier Tudors*, 211.

71 Richardson, *Renaissance*, 64; LP I/2. No. 3608; Steven J. Gunn, ‘The French Wars of Henry VIII’, in Jeremy Black (ed.), *The Origins of War in Early Modern Europe*. Edinburgh, 1987, 28–47; David Grummitt, ‘A Military Revolution in the North? The Impact of Gunpowder Weaponry on the Anglo-Scottish Marches in the Fifteenth Century’, in Andy King and David Simpkin (eds.), *England and Scotland at War, c. 1296–c. 1513*. Leiden, 2012, 284.

72 Currin, ‘To Traffic’, 116.

73 Cornish, *Henry VIII's Army*, 40.

74 Raymond, *Henry VIII's Military Revolution*, 82; Rawdon Brown (ed.), *Calendar to the English Affairs, Existing in the Archives and Collections of Venice and in Other Libraries of Northern Italy*, 3 vols. 1202–1526. London, 1864–1869 (= *Calendar Venice*), II. Nos. 154–155; LP I/1. No. 1093, 1128. Mackie, *The Earlier Tudors*, 275; Cornish, *Henry VIII's Army*, 4.

75 Wooding, *Henry VIII*, 69.

Young Henry had been steadily buying weapons for several years – armour, polearms, war material, gunpowder, cannons and hand-held firearms – from Flanders and German lands, and armour from towns in Italy, South Germany and Spain. The ideas in Wolsey's scheme of 1512, involving 30,000 troops,⁷⁶ were taken up again in 1513, but the king wanted to raise an even greater force, of 40,000.⁷⁷ In the meantime, the navy operated in coordination with the army, primarily to clear out the English Channel, for which two fleets ravaged the coasts of Brittany and Normandy, concentrating on ports at strategic points.⁷⁸ For Henry's first campaign, several hundred ships sailed into the Channel.⁷⁹

The crossing

Crossing the Channel was always a central element of a campaign, and was prepared for with great care and in minute detail. The plan was passed to the Privy Council for debate and approval.⁸⁰ The army could not operate independently of the navy, and sea transport was an increasingly integral part of army organization. By the 1540s, the development of shipping enabled land forces to be mobilized even to Scotland more easily and cheaply by sea than by land, relieving the troops of a gruelling march of several hundred kilometres, and relieving the treasury of the need to provide for a several-week operation.

After a while, troops marching to Scotland were, as a matter of course, provisioned not from wagons but from ships following them along the coast. In the 1540s, a well-organized system brought supplies to the border bulwark of Berwick, and an expeditionary war on the pattern developed for French campaigns was also fought in Scotland. In the second half of that decade, Edward Seymour, later earl of Somerset, took the port of Leith near Edinburgh for the specific purpose of establishing further maritime bases for launching campaigns from the north.⁸¹

England already had a centuries-old tradition of moving great armies by sea, and the military organization had specialized, qualified logistics officials who worked in accordance with highly detailed operational instructions. Army units set out from several different points and crossed at different times in a tried and tested system. As early as 1492, Henry VII set up four embarkation centres for troops sailing to the French war in Brittany, thus ensuring that their transport – on large and vulnerable commercial vessels rather than warships – would not all be exposed to any single enemy naval attack.

The troops were usually assembled for the crossing into several effectively autonomous armies, "wards". After landing, they marched separately, several

⁷⁶ *LP I/1*. No. 1412.

⁷⁷ *Calendar Venice*, II. No. 225; *LP I/1*. Nos. 1568, 1629, 1726; John J. Scarisbrick, *Henry VIII*. London, 1971, 54.

⁷⁸ Scarisbrick, *Henry VIII*, 56.

⁷⁹ *LP I/2*. Nos. 1939, 1950, 2065, 2053; *Calendar Venice*, II. Nos. 250, 252.

⁸⁰ For instance, in 1544: *LP XIX/1*. No. 271.

⁸¹ Marcus Merriman, *The Rough Wooings: Mary Queen of Scots, 1542–1551*. East Linton, 2000, 249.

miles apart. Each ward had its own vanguard and rearguard, autonomous flank formations, baggage train and reconnaissance units. Crossing at different times was also important to relieve Calais from the burden of receiving large numbers of troops at the same time.

Planning covered the precise schedule and details of the campaign, and stations along the way were assigned for stocks of food and – most importantly – water. The Ordnance Office, with responsibilities for war material, weapons and gunpowder, surveyed and drew military maps (the Ordnance Survey). Castles on the Scottish border, particularly Berwick, played a similar role as Calais. Dover became a key point of embarkation, because there was a need to secure the return of large armies, which were vulnerable from the sea as they landed.

Calais, the bridgehead

At the end of the Hundred Years War, Calais remained in English hands and provided a base for further campaigns. The “key to the heart of France” was not just a bridgehead where a landing army could set up a base. It was a miniature state, with a regularly-paid, select, professional garrison and highly organized supplies, presaging systems of modern warfare. The artillery and fortifications were constantly improved. In addition to the garrison troops, Calais had a field army capable of carrying out campaigns on land, and its own fleet. In the Tudor Age, the town grew to a metropolis of 12,000 inhabitants.⁸²

The English military planners were always aiming to establish another base. Henry VIII demanded that Tournai, and later Boulogne, must be taken at all costs to relieve the burden on Calais. Since it was cut off from the mainland, Calais required a constant military operation to bring in supplies of food, war material and weapons. The town became an impregnable colossus under the Tudors, defended by several separate castles (Ardres, Hames and Guînes) and coastal forts around the harbour. One of the most advanced fort systems of the known world, it held out until 1558.⁸³ In addition to the permanent garrison (of 800–1000 troops in the 1510s),⁸⁴ there were always cavalry and several field armies stationed outside the castles.

The captain of Calais acquired considerable authority in the English military organization. Because of the Great Retinue he commanded, he had to be absolutely dependable. The Calais garrison was a well-organized army by comparison with anything else in Europe. It had a high level of discipline, a hierarchical structure and strict order of command. Soldiers were paid according to strictly defined categories, every six months, calculated at daily rates. Their

82 David Grummitt, “One of the mooste pryncipall treasours belongyng to his Realme of England”: Calais and the Crown, c. 1450–1558, in Grummitt (ed.), *The English Experience*, 46–62.

83 David Grummitt, *The Calais Garrison: War and Military Service in England, 1436–1558*. Woodbridge, 2008.

84 Cruickshank, *Army Royal*, 17.

weapons and equipment were of the highest standard, the artillery was first-class and operated by well-trained gunners, and there were units of handgunners, military engineers, sappers and miners. Select units of the kingdom's finest longbowmen also served there. The garrison had a special status in the military organization. Calais had its own military regulations, and there were military procedures that applied only to the town. These were set out in more detail and more comprehensively than for any castle in England or Scotland, specifying the order of guarding, reconnaissance and intelligence, defence of each wall section, gate and tower, and the roster of defenders. Henry VIII took a personal interest in the supplies and equipment for Calais.⁸⁵

The defence of Calais posed a great logistical challenge to the English war machine. Since it had only a narrow strip of land and its gates were always closely watched by the enemy, it was like a port under permanent blockade. All of its supplies came from England via a "sea bridge" of the kind that became common in modern wars. The narrow strip of land could hardly provide even drinking water for the ten thousand strong armies there. The coastal landings, billeting and provisioning of Tudor-age armies required something like a small autonomous state. The town was a "little England", with leaders having special powers and a separate treasurer. It had mills to grind flour, but all other material and equipment, ranging from tar and saltpetre to flints and timbers, had to be brought from the other side of the Channel. Maintaining Calais was like keeping an English expeditionary force permanently in arms.

The siege of Thérrouanne and the "Battle of the Spurs"
(Guinegate, 16 August 1513)

In 1513, Henry VIII set off with an army of unprecedented size. Some estimate its strength at 30,000; others, who include non-combatant units (sappers, miners, cooks, millers, wagoners, grooms, quartermasters), put it at 33–39,000.⁸⁶ The various sections of the army crossed in stages: the vanguard (8,000), the rearguard (6,000) and king's main battle, numbering between 11,000 and 25,000, although most likely 15,000.⁸⁷ There are also diverging estimates of the overall number of combat troops – between 24,000 and 35,000.⁸⁸ Neither is there a consensus regarding the extent to which the 6–7,000 strong German infantry of Emperor Maximilian, who later joined Henry in the war against the French, actually took part in the fighting.⁸⁹ Henry himself paid for a formation of at least 4,000, and according to some estimates, 6,000 or even 8,000, German *landsknecht* pikemen.⁹⁰

85 Grummitt, 'One of the mooste pryncipall', 54.

86 Wooding, *Henry VIII*, 72.

87 Mackie, *The Earlier Tudors*, 279.

88 Cornish, *Henry VIII's Army*, 5.

89 Cruickshank, *Army Royal*, 31.

90 Denis Hay (ed.), *The Anglica historia of Polydore Vergil, AD 1485–1537*. London, 1950, 211; *LP* I/2. No. 2391; Raymond, *Henry VIII's Military Revolution*, 83.

Certainly, the assembled force was of substantial size even by European comparison and the “new era” of Italian wars. Although the lords’ retinues no longer formed the basis of the army, noblemen close to the House of Tudor still raised considerable numbers of troops. The general, George Talbot, stood at the head of a 4,500-strong retinue,⁹¹ but there were few magnate retinues that numbered more than a hundred. These comprised a few heavy cavalry, rather more mounted archers, and increasing proportions of heavy or light footmen carrying polearms.⁹² Overall, cavalry made up a small proportion of the army. Henry VIII went prepared for sieges, and many of his 3,000 horsemen were demi-lancers rather than fully armoured knights.⁹³ Almost the only representatives of traditional armoured troops were the Burgundian knights hired through the Habsburgs.⁹⁴

The objective was to capture Théroutanne, a castle thought to be weak. To the surprise of the English, it was well supplied with artillery, and the defenders held out for two months, rebuilding the walls by night. Despite the enormous sums they had invested in artillery, the English had not yet properly learned the art of siege warfare or how to handle the powerful Flemish cannons. The English army was not yet accustomed to the modern tactics of the Italian wars. They did not place their guns at the best points, so that their great firepower was relatively ineffective, and they could do no more than starve the garrison out. The final assault was celebrated as a great victory, but in fact met with almost no resistance.

The English got word of a French detachment carrying relief supplies to the castle and set out to ambush it. On the heights surrounding the route of approach to the castle, the English set up light guns and several thousand longbowmen to take the French in the flanks.⁹⁵ These set up a hail of arrows and cannon fire to cover an attack by several thousand cavalry and 10–12,000 foot soldiers led by Henry himself.⁹⁶ The French, having orders only to deliver provisions, did not want to give battle. They had no artillery, were not equipped for a field battle, and the French cavalry escorting the wagons did not want to clash in open combat with an enemy supported by artillery and archers.

In the chaotic scene, the French cavalry fell into confusion, immediately went into flight, and in desperate, “unchivalrous” fashion, abandoned the struggle without a clash of swords. The encounter was thus dubbed the “Battle of the Spurs”, where “the French made more use of their spurs in retreat than their swords”. It is true that the French commanders did not even attempt an ordered retreat, and nobody turned back to form up into a defensive formation.⁹⁷ In reality, there was no battle, only a disorderly flight and fervent pursuit, in

91 Grummitt, ‘The Court’, 148.

92 Wooding, *Henry VIII*, 72.

93 Tincey and Turner, *Ironsides*, 9–10.

94 Hyland, *The Warhorse*, 100.

95 *LP I/2*. No. 2173.

96 Cornish, *Henry VIII’s Army*, 4.

97 Charles G. Cruickshank, *Henry VIII and the Invasion of France*. Stroud, 1991, 100–107.

which a few dozen French soldiers fell.⁹⁸ The “victory” was mainly manufactured by Tudor propaganda.⁹⁹ The salient point for military history is that the French cavalry were routed by the English light cavalry.¹⁰⁰

Capture of Tournai

Subsequently, a fort of major strategic significance fell to the English. At Tournai, the English artillery made a better account of themselves against much stronger fortifications. They almost completely destroyed the town, deliberately targeting houses and churches. The king sought to sap the morale of the defenders, a tactic better known in modern warfare. For this purpose, he specifically ordered his cannons to take precise aim at the cathedral. Henry VIII hoped to establish a new Calais at Tournai, and had the town and the garrison rebuilt almost immediately, with no expense spared, like a modern colonial operation. At first, the “new bridgehead” had a 5,000-strong garrison, and although it was later reduced, the permanent paid professional garrison of 7–800 troops was still a remarkable force. Holding the city was the largest-scale military enterprise of Tudor rule. Tournai lay deep inland, however, 130 km from the coast, and was much more difficult to supply by ship than was Calais. Pay often came late, more and more soldiers were discharged, and Tournai was eventually returned to France in the peace of 1518.

England had made a powerful entrance to the stage of European wars. The capture of a major French city and a zone of occupation extended beyond Calais were reminiscent of the Hundred Years’ War. And as a bonus, despite the intrigues of French diplomacy to employ the well-tried recipe of getting the Scots to take on England from behind, the “stay-at-home” army was sufficient to destroy a considerable Scottish army on Flodden Field.

Boulogne in English possession (1544)

Henry VIII continued to develop his army, navy and artillery. He made unique progress in the mobilization of the artillery. The combat skills of the English infantry might have paled by comparison with those of Spanish arquebusiers, Swiss pikemen and German *landsknechts*, but England could move its armies by sea at dazzling speed, was far ahead in naval warfare, and had an organized supply system that the swelling continental armies of the time could only dream of. Additionally, the dissolution of the monasteries delivered to Henry an income that permitted campaigns involving thousands of Spanish, Wallonian or German mercenaries.

⁹⁸ Wooding, *Henry VIII*, 73.

⁹⁹ *LP* I/2. No. 2170.

¹⁰⁰ Cornish, *Henry VIII’s Army*, 5.

In 1522, the king of England had high hopes as he took his 15,000-strong army to wage a new war with France.¹⁰¹ After landing, the army ventured inwards, but did not take advantage of its true potential, carrying out no more than a few minor attacks. This was because proportions of the army were not matched to feasible war aims. Its large siege guns would unduly have weighed down a long campaign to lay waste great expanses of territory. If, instead, the objective was to take forts, there was no need to march with a large number of cavalry and archers. Moving an army prepared for a siege was a major enterprise. A basic tenet was that nothing could be left behind, and so the largest and slowest-moving siege gun defined the distance that the whole army could march.

Almost the same mistakes were repeated the next year, in another very large expedition.¹⁰² The 9–15,000-strong English army captured several castles in key positions, but proceeded on a forced march almost all the way to Paris. They were only two or three days' march from the capital, and the army command, recalling the days of the Plantagenets, started preparations for a siege. An enterprise of this scale in the heart of France, however, was beyond the capability of the English army on its own.

The venture eventually failed because the English leadership placed too much trust in its "allies": neither Emperor Charles V nor the duke of Bourbon, who had changed sides, came to their aid. The campaign demonstrated the dangers lying in wait for an army that penetrates deep into enemy territory. In the 1410s, Henry V could retreat easily, and part of the area remained in his possession. The great Tudor army, with its expensive artillery, had to advance with care, keeping open the possibility – and the exact route – of retreat. This time, intent on taking Paris, they did not leave a sufficient rearguard, and the French cut off their supply line at the Somme. When they reached stalemate outside Paris, the English forces could not even pay their troops. In the meantime, summer turned to autumn, with heavy and unusually cold rain and hard frost. The English were forced to retreat.

England certainly had considerable military potential. It showed itself capable of raising even more troops than its enemies and, just as importantly, of being able to pay them. None of this was enough, however, to achieve absolute superiority. Henry VIII kept up his dream – the "Enterprise of Paris" – in subsequent years. As the dress rehearsal for such a campaign, a 5,000-strong expeditionary force was sent to the Low Countries in 1543, this time with a different composition. It consisted of paid infantry troops armed with pikes or other polearms and wearing armour, many of them *landsknechts*. On this occasion, a Flemish-Spanish army was going to join with the English, an arrangement the French had not previously reckoned with.

¹⁰¹ Mackie, *The Earlier Tudors*, 312.

¹⁰² Scarisbrick, *Henry VIII*, 175; Raymond, *Henry VIII's Military Revolution*, 84; Mackie, *The Earlier Tudors*, 313; Cornish, *Henry VIII's Army*, 10.

The king finally embarked on his great enterprise in 1544, marching with a 42,000-strong army with the aim of taking Paris.¹⁰³ They successfully took their first target, a new bridgehead at the large and well-fortified city of Boulogne. During the two months in which English attention was completely absorbed in the siege, a 50,000-strong French army assembled and advanced unchallenged towards the English positions. There was good reason for the Valois to be active, for this time Charles V indeed entered the war and marched on Paris with his army. It was thus crucial for the French to prevent the Habsburgs uniting with the Tudors. An indication of the potential of the English army is that regardless of the threat from Charles V, the French command did not want a clash with them in open battle, despite their numerical superiority, but only wanted to secure the defence of Paris. The French cavalry were not anxious to face the English artillery or the polearms and arquebusiers of its heavy infantry.¹⁰⁴

The capture of Boulogne was a great step towards England's aim of re-establishing itself in France. Boulogne became a formidable fortress in English hands, defended by a garrison of 4,000 in the early period. The French made an immediate attempt to recapture the city, and in a night operation where they put on white shirts over their armour (the "white shirt siege" or "camisade de Boulogne"), they penetrated the lower town. At that point, however, they started looting and the defenders were able to drive them off. Nonetheless, Boulogne showed up some weaknesses of the English military organization. The defence troops were numerous, but not highly enough trained to stand up to "expert" enemies. In 1546, a 2,600-strong force of foot soldiers from the garrison broke out to attack a 4,500-strong French army composed mainly of mercenary *landsknechts*. There was no doubt about the outcome. The professional *landsknechts* won, showing the English infantry to be incapable of taking on continental infantry on its own, without archers and artillery, even though they were well supplied, and their weaponry was not inferior to that of their opponents. Mounted longbowmen still had an important role in such an encounter, because even in the middle of the century, the longbow could still shoot at a much higher rate than the arquebus.

THE NAVY

Henry VII never marched to war in person after 1485, but pursued effective policies to protect his crown against external enemies. As a claimant to the throne, he himself had started from France to seize the crown, and well knew the sources of danger in the port towns. It was on the sea that primary defence had to be organized. Henry set about reinforcing the navy with a sure hand, and neither France nor the Habsburg Low Countries could match it. His efforts to

103 Cornish, *Henry VIII's Army*, 20; Glenn Richardson, 'Eternal Peace, Occasional War: Anglo-French Relations under Henry VIII', in Doran and Richardson (eds.), *Tudor England and Its Neighbours*, 44–73; Richardson, *Renaissance*, 77.

104 Scarisbrick, *Henry VIII*, 580.

build up the fleet and the coastal defences started immediately. A full-size fleet sailed out into the English Channel in 1486.¹⁰⁵ Henry VII's fleet supported the siege of the valuable French port of Sluys, blockaded the mouth of the Seine, and patrolled the ports of Honfleur and Barfleur to stop any French ships from leaving. This demonstrated England's naval capabilities and brought the French to the negotiating table without a shot being fired.¹⁰⁶

During the Hundred Years' War, the kingdom had relatively few ships of its own. Land forces took priority, and armies were transported to France mainly on merchant vessels commandeered by royal prerogative in the impressment system. The country had enormous resources in the form of well-built, high-capacity seagoing ships. There were very few naval battles, and it was only in the first half of the fifteenth century that Henry V started to form his own fleet, consisting of only a few dozen ships. The navy contracted again during the Wars of the Roses, and the Tudors had to reorganize it almost from scratch. At the end of the fifteenth century, they had only a few modest-sized ships – three- or four-masted carracks. The largest was the 600-tonne *Regent*. Henry primarily developed naval artillery, and equipped even his smaller ships with smaller guns bought in Flanders. The *Regent* had 225 light serpentes, but the *Sovereign* had 141 larger guns.¹⁰⁷ There was still a need to rent ships, because even the English ships acquired by impressment were insufficient to carry the army of 1492. Several hundred Dutch ships of thousands of tonnes carried its 12–14,000 troops.¹⁰⁸ Most of the rented Flemish ships were slow-moving trading *kogges* and *hulks*.¹⁰⁹ A substantial number of warships with crossbowmen on their decks were also rented from the Low Countries.¹¹⁰ A significant innovation was the use of English ships, built specifically for naval purposes, to patrol the whole of the English Channel during the crossing.

The navy was a matter close to Henry VIII's heart, and he set out to make the country into a great sea power. He regarded the fleet as his main defensive force. Construction of the new royal fleet started on an enormous scale, mainly under Flemish and German shipwrights. The number of foreign carpenters and gun founders who settled in England could have filled a whole town. He also personally checked the impressment of trading ships¹¹¹ and oversaw the construction of the thousand-tonne *Great Harry* and what was considered a marvel of naval warfare, the *Mary Rose*, capable of firing broadsides from gun ports arranged on several decks. His father had already set up the Navy Board, an independent body in charge of the navy and sea defences, and would not

¹⁰⁵ *Materials Henry VII*, I, 145–152.

¹⁰⁶ Currin, 'To Traffic', 111.

¹⁰⁷ Mackie, *The Earlier Tudors*, 211.

¹⁰⁸ Wooding, *Henry VIII*, 72; Currin, 'To Traffic', 126.

¹⁰⁹ Mackie, *The Earlier Tudors*, 275.

¹¹⁰ Currin, 'To Traffic', 116.

¹¹¹ *Calendar Venice*, II. No. 225; *LP I/2*. Nos. 1568, 1629, 1726; Scarisbrick, *Henry VIII*, 54.

allow any interference in its budget.¹¹² Cannons were installed on ships at a furious pace. In 1512, the twenty-five ships of the Royal Navy defeated the French fleet through the superiority of its guns.¹¹³

Overseas campaigns were thoroughly prepared, and the army sailed in coordination with the navy. Starting in the 1510s, in addition to stationing itself in the English Channel to clear the area of enemy shipping, the navy, up to several weeks before the land forces sailed, systematically destroyed strategic points on the French coast to secure the landing.¹¹⁴ In 1513, the entire French coast was blockaded and naval forces landed as “marines” to carry out raids on dry land. Ship’s crews did not only fight at sea. At Flodden, the English army included a unit of a thousand seamen from ships stationed nearby.¹¹⁵ During the campaigns of the 1540s, naval raids and land incursions to cause confusion and alarm were a matter of course.

In 1545, the king led a fleet of ninety ships as they lined up in the Solent at the Isle of Wight.¹¹⁶ A great victory was achieved over a Valois fleet¹¹⁷ that allegedly consisted of 400 ships carrying 30,000 seamen and soldiers.¹¹⁸ There were several other victories at sea, and a system of forts along the coast from Essex, through Kent and all the way to Devon, to which a large number of troops were assigned, frustrated several attempted landings by the French.¹¹⁹ In 1547, in addition to the large warships, the navy had fifty-three small but fast-moving Low Countries pattern pinnaces that could effectively challenge the heavy Spanish galleons.¹²⁰

Sea and land forces were often capable of fighting effectively in close coordination. In the warships anchored at the ports of Calais, Berwick and Dover, regular marines were maintained permanently in arms to be on hand when required to assist army formations. Ships sailing close to the shore assisted land forces with their guns, and small, fast-moving ships proceeding along the coast could quickly land troops to join a battle where required. The Battle of Pinkie Cleugh in Scotland in 1547 was fought between armies on land, but an eighty-ship English fleet at the mouth of the Esk, near Musselburgh, was able to sail close enough for its guns to intervene decisively in the battle, destroying the Scots’ left flank from the sea. The English thus had the capability of deploying the two services together, so that they complemented each other.¹²¹ The Royal

112 Cliff S. L. Davies, ‘The Administration of the Tudor Navy under Henry VIII: The Origins of the Navy Board’, *English Historical Review* 80 (1965) 268–288.

113 Mackie, *The Earlier Tudors*, 275.

114 Scarisbrick, *Henry VIII*, 56.

115 Cornish, *Henry VIII’s Army*, 6.

116 Richardson, *Renaissance*, 69.

117 Richardson, ‘Eternal Peace’, 67.

118 *Ibid.*, 77.

119 Alexander McKee, ‘Henry VIII as a Military Commander’, *History Today* 41:6 (1991) 22–29.

120 David Loades, ‘Henry VIII and the Navy – Henry VIII: the Real Founder of the Navy?’, in Starkey (ed.), *Henry VIII*, 172–181.

121 David H. Caldwell, ‘The Battle of Pinkie’, in Norman MacDougall (ed.), *Scotland and War AD 79–1918*. Edinburgh, 1991, 61.

Navy's practice of supporting land forces in battle rather than simply providing transport and supplies was unique at the time. This greatly depended on English sailors' centuries-old skills in manoeuvring at sea.

By the end of Henry VIII's reign, the navy patrolled the sea as the country's first line of defence almost all year round, keeping away foreign armies and providing the capability to mount an attack on the continent at any time. By the middle of the century, even before Queen Elizabeth I came to the throne, the navy had made England a major European power. The Tudor monarchy could proudly assert that no external power could attack England.

SUMMARY

England's military forces and organization embarked on major developments after the Wars of the Roses. In reaching two or three days' march from Paris in the 1520s and defeating much larger French forces on French territory its operations evoked the times of the great Plantagenets. An army numbering more than 10,000 troops had not approached the French capital since 1359–1360, and this time, they brought with them artillery of fearsome strength.

Henry VIII thus made his mark in the modern wars of the opening decades of the sixteenth century, even though when the century opened, none of the powers of Europe anticipated that England would be as influential as the French, Swiss-German or Spanish military forces. The English military organization already relied on paid troops early in the Tudor age, well before the dissolution of the monasteries, with finance coming mainly from war taxes and increased income from the reorganization of trade routes (such as monopolies). The superbly-functioning supply system inherited from the armies of the fourteenth and fifteenth century was further improved. Troops, war material and artillery could be transported by sea with dazzling speed and efficiency. Army and navy cooperated effectively, and the Tudors overtook their peers in naval warfare before they had even recognized the importance of warships and naval artillery.

The English military organization thus adapted to the military changes going on in Europe: an army based on heavy cavalry and longbowmen increasingly changed over to light and heavy infantry, while in border areas, the long-existing light cavalry elements were preserved. The outcome was a system that combined mobile units with field artillery and could adapt to any terrain.

MILITARY ORGANIZATION AND ARMY IN SCOTLAND (1488–1547)

THE SCOTTISH MILITARY ORGANIZATION

In the early sixteenth century, Scotland had substantial military strength relative to its population,¹ which stood at only 500–600,000 at that time, but thereafter grew rapidly, to 700–800,000 by the second half of the century.² This military capacity derived from the high proportion, relative to European kingdoms, of men of military age who were actually in arms. Military service was seen as an ancient right of freemen rather than an obligation, because fighting ability was a condition of the archaic status of freedom and possession of land. Even the poorest Highland clan members joined up to fight the English intruders, although there has been a tendency to exaggerate the romantic image of almost unarmed free warriors charging down the English cannons.

The reasons for such a large section of society being “born for war” lie in vicissitudes of the kingdom’s history. Medieval Scotland was like a never-ending *Macbeth*, a succession of conspiracies and assassinations. Hardly a year passed without some kind of civil war. The bloody internal battles went on even when Tudor interference was demanding a united response (Linlithgow and Melrose, 1526). Kings died young, typically leaving young orphans, and regents came and went. War was a daily occurrence, and nobody could get by without experiencing combat. Everyone was required to defend his own land and estate, and had to be skilled in arms.

People were also quite accustomed to intrusions by foreign enemies. The Anglo-Norman influx started in the eleventh century, but the country had already lived for a long time under the Viking threat. Viking traditions of warfare were subsequently preserved in a northern kingdom in the Hebrides, under the Lord of The Isles (*Rìgh Innse Gall, dominus insularum*), which did not become part of the Kingdom of Scotland until the fifteenth century. Even in the sixteenth century, the *galloglasses*, soldiers highly skilled in the use of the battle

1 Ian D. Whyte, *Scotland before the Industrial Revolution: An Economic and Social History c. 1050–c. 1750*. London, 1995, 113.

2 Robert Allen Houston and Ian D. Whyte (eds.), *Scottish Society, 1500–1800*. Cambridge, 1989, 3.

axe, sword and lance, formed a large section of the Scottish army. They traditionally marched at a run, and could cover long distances in a day. In the fifteenth century, they could be assembled into an army up to 10,000 strong.³

The Scottish fleet was another Viking legacy. In the fifteenth century, more than a hundred *birlinns*, more rounded versions of the Viking longship, were available for military commission, providing mobility by sea. In a country of 80,000 square kilometres with a heavily indented coastline, ships were essential to supply armies on land.

The Scottish army drew its strength from a mass of free soldiers of the Highland Gaelic clans, who were somewhat poorly armed – with wooden shield and axe. Even the better-off among them did not have swords until the sixteenth century. All clansmen, from teenagers to old men, marched to battle. In the fifteenth century, a large clan could muster several thousand soldiers.⁴

The Lowland military organization closely resembled the English. The magnates, under contract, mustered paid contingents, but in rather smaller numbers and with inferior weaponry. The Lowland lords mustered their troops much more often than their English counterparts, and the general levy was much stronger than in England. The monarchs held strict musters, and the towns paid war subsidies. The freemen of the shires were organized into units of a hundred, and troops of the counties were assigned to four groups with separate commanders. The division followed clan bonds. The armies of the shires thus took strength from the fact that their soldiers were fighting for one clan, for each other, for their own and each other's land.⁵

Some of the nobility were unable to ride to war in full armour, and fought on foot or rode smaller horses with light armour. The longbow was not adopted as it was in England, but English bowmen were recruited for the army.

James IV Stewart/Stuart (1488–1513), his treasury boosted by income from the burgeoning sea trade, bought cannons and firearms and hired master gunners. He also embarked on major naval development, and his ship the *Great Michael* was the largest of its time. The Valois regime renewed the *Auld Alliance*, under which the Scots had so often taken England “from behind”, and sent war funds, cannons and master gunners. Also under this alliance, the round phalanx-like schiltrons were “modernized” by Swiss officers, who taught the Scots how to fight with pikes rather than home-made polearms, keeping in formation in closed ranks, in the “Almayns [German] manner”.⁶

3 Neil Oliver, *A History of Scotland*. London, 2000, 144, 155, 156.

4 *Ibid.*, 148.

5 Gervase Phillips, ‘Scotland in the Age of Military Revolution, 1488–1560’, in Edward M. Spiers, Jeremy A. Crang and Matthew J. Strickland (eds.), *A Military History of Scotland*. Edinburgh, 2012, 184.

6 James Raymond, *Henry VIII's Military Revolution: The Armies of Sixteenth-Century Britain and Europe*. London, 2007, 86–87; David Grummitt, ‘Flodden 1513: Re-examining British Warfare at the End of the Middle Ages’, *Journal of Military History* 82:1 (2018) 18.

FLODDEN – THE SCOTTISH “MOHÁCS” (9 SEPTEMBER 1513)

Before the continental war of the 1510s, Scots incursions and English reprisal raids had become everyday events, with border lands being constantly looted.⁷ Several months in advance of the war, Henry VIII, realizing that the Scots would immediately attack after his forces were engaged on the continent, made the requisite preparations. In 1512, he mustered the county levy,⁸ assigned substantial forces to the north, and sent large consignments of provisions.⁹

The Northern Marches, the defensive zone along the Scottish border, had been established in previous centuries, and there were permanent garrisons at Bamburgh, Alnwick and Roxburgh. Several supply bases of victuals and war material, and gunpowder stores, were established and fortified along the marching routes. The English fortress of Berwick on the river Tweed played a similar role on the Scottish borders as Calais did in France.¹⁰ With a 1,000-strong garrison, it was an impregnable stronghold, rebuilt by continental architects, and the Scots could not even conceive of taking it.¹¹ Great stores of victuals, wine, beer, animal feed, weapons and war material enabled it to host an army for a period of weeks.

In 1513, the Scots did indeed march in full strength, led by their king, James IV. Estimates of the size of the Scottish army by both contemporary reports and modern historians vary widely, from about 10–12,000 to 42,000,¹² but the standard modern view puts the number at 29–30,000. Against them stood an English army with only about half a dozen barons, and even the commander had no more than 500 horse and 200 bowmen. The county contingents of all estates and ranks numbered no more than 12,000, joined by the royal army and parts of castle garrisons, but the total English strength was less than 20,000.¹³

Their combat value fell far short of the troops of the royal army fighting in France. The militias mostly comprised light footmen with polearms, although bowmen from the countryside maintained their traditional role, and even in the sixteenth century, the bowmen outnumbered billmen by two to one in the North English militias.¹⁴ Nonetheless, it was hand-to-hand infantry fighting that decided the battle.¹⁵

7 Gervase Phillips, *The Anglo-Scots War 1513–1550*. Woodbridge, 1999, 104–137.

8 John J. Scarisbrick, *Henry VIII*. London, 1971, 60.

9 John D. Mackie, *The Earlier Tudors*. Oxford, 1952, 276.

10 John M. Currin, ‘English International Relations 1485–1509: Continuities amidst Change’, in Susan Doran and Glenn Richardson (eds.), *Tudor England and Its Neighbours*. Basingstoke, 2005, 35.

11 Charles Cruickshank, *Army Royal: Henry VIII’s Invasion of France, 1513*. Oxford, 1969, 19.

12 Jonathan Cooper, *Scottish Renaissance Armies 1513–1550*. Oxford, 2008, 4; John Sadler, *Flodden 1513: Scotland’s Greatest Defeat*. Oxford, 2006, 28.

13 Paul Cornish, *Henry VIII’s Army*. Oxford, 1987, 6; Grummit, ‘Flodden’, 16; Niall Barr, *Flodden 1513*. Stroud, 2001, 149.

14 Raymond, *Henry VIII’s Military Revolution*, 85.

15 Phillips, *The Anglo-Scots War*, 130–133.

The Scots took up a very good position on a hill and put the road below under fire, to prevent the English, who were approaching from the south, from bringing relief and supplies to Berwick. The king was confident that the English would be obliged to attack uphill towards the steep Flodden Edge. Instead, the English divided their army in two, one force distracting the attention of the Scots, who put too much reliance on the position of their army and artillery, while the rest proceeded along one side to take position on the northern, gentler slope of the hill to the north of the Scots. When they caught sight of the English approaching them from behind, the Scots were seized with anxiety and attempted desperately to set their guns in the new direction. In the meantime, the rest of the English joined the formations who were approaching Flodden from the north. One Scots flank, in alarm, attacked on their own initiative. The numerically strong Scots, the Lowland nobility, were able to repulse the English flank but failed to disrupt them, because another part of the main English army, the border light cavalry, came up in support.¹⁶

In the meantime, the main English army resolved to attack, at which the Scots, taking strength from having beaten off the English flank, attacked in disorder, recalling the manner of the Middle Ages and throwing aside what they had learned from the Swiss. The Scottish cannons, primarily intended for sieges, were difficult to move or to point in a different direction, and neither were the gunners properly able to bring them to bear on the targets. In the event, they could not even fire them, because the king's attack had started. Rushing in front of their own guns, the Scots made a wild assault on the English lines.

James himself dismounted from his horse and threw himself into the hand-to-hand fighting. He was followed by the Scottish heavy cavalymen, who could otherwise, following the artillery fire, have easily run down the English light infantry at the bottom of the hill. By contrast, the English managed to take with them some light cannons as they were manoeuvring, and with these and some firearms, they fired on the frantically charging Scots. The Scots did not keep in formation as the fighting closed in. In a moment, they forgot everything the Swiss had taught them. There was no trace of the principle of holding the pikes in strict order and going into attack slowly, keeping in step. Hearing the call of tradition, they took out their old two-handed claymores and trusted in close combat, one-on-one struggle. Their longswords availed them little against the disciplined English footmen with halberds and other polearms, supported by artillery. In addition, the Scots careered down the rain-soaked slope, the lords in heavy armour being literally unable to stop, and the English took off their boots to get more grip in the mud.

On the other Scots flank, the more weakly-armed footmen of the Highland clans, who in traditional manner marched behind James with the cavalry and

¹⁶ Raymond, *Henry VIII's Military Revolution*, 86.

dismounted to take a good position on the hilltop, fell to the arrows of the English longbowmen.¹⁷

The Scots had no experience of coordinating artillery with infantry in open battle. They simply gave up on the artillery, and the troops gave no thought to the guns as the “ancient” ardour swept them along. Their wild rush to battle recalled the medieval spirit and nullified all of the Stuart crown’s expenditure and efforts to modernize the artillery, with cannons acquired from France and Flanders or cast in local workshops.

The Scots losses were enormous, estimated at up to 10,000, inflicted by a “provincial” English army of border defence troops and militias.¹⁸ The English losses were tiny by comparison – between 500 and 1,000.¹⁹ An even deeper tragedy was the near-decapitation of the Scottish nobility: the king, nine earls, fourteen lords, five prelates and several hundred noblemen fell on the battlefield.²⁰

FROM SOLWAY MOSS TO PINKIE: SCOTLAND’S MILITARY COLLAPSE (1542–1547)

The Scots learned nothing from Flodden. The Stuarts maintained their conviction that the defeat was just a mishap and that, in time, they would take their revenge on the Tudors. The French Valois exploited this magnificently, and the Scots continued their incursions in the 1520s and 1530s, never put off by frequent failures. At the same time, the Tudors became more cautious, maintaining greater forces to defend the Marches, especially when they were tied down on the continent.

In the 1540s, Henry VIII decided he had had enough of these constant hostilities. After a small Scottish force won the Battle of Haddon Rig in 1542, the English government responded with “greater than usual” destruction, laying waste wide areas of Scotland.²¹ In turn, the Stuarts summoned the levy, and the army that mustered has been estimated at 10–18,000 strong.²² This force clashed with a 4–5,000 strong English army of border light cavalry at Solway Moss. There, too, the Scots made a wild charge at the English and did not take account of the terrain. Sinking into the marsh, they were rendered almost immobile, and the English had little to do but take them prisoner, including 1,200 proud Scottish lords and noblemen. Tudor propaganda proclaimed an enormous

17 Gervase Phillips, ‘In the Shadow of Flodden: Tactics, Technology and Scottish Military Effectiveness, 1514–1550’, *Scottish Historical Review* 77 (1998) 162–182.

18 Both contemporary reports and modern estimate vary over a wide spectrum – from 5,000 to 12,000.

19 Cornish, *Henry VIII’s Army*, 9; Mackie, *The Earlier Tudors*, 282; Raymond, *Henry VIII’s Military Revolution*, 87.

20 J. S. Brewer, James Gairdner and R. H. Brodie (eds.), *Letters and Papers Foreign and Domestic of the Reign of Henry VIII*, 21 vols. London, 1867–1910; 1920–1932 [= LP], I/2. No. 2286; Cooper, *Scottish Renaissance Armies*, 6.

21 LP XVII. No. 987.

22 Scarisbrick, *Henry VIII*, 562–563; LP XVII. Nos. 994, 996, 998; Cornish, *Henry VIII’s Army*, 11.

triumph, and it was true that the defeated Scottish army was several times stronger than the English.

In 1544, Henry VIII resolved to strike the final blow. By that time, there was a well-oiled system for bringing troops and supplies to the border castles. The English effectively waged an expeditionary war on the pattern of their French campaigns. Edward Seymour, later duke of Somerset, went to war with infantry transported by ship and supplied by the navy, controlling the whole operation being from the sea. Only a very small cavalry force proceeded by land. They used the unprecedented tactic of attacking from the north, and set themselves up in Leith, the port of the capital city of Edinburgh. By invading the heart of Scotland, they aimed to acquire new bases from which they could strike ever further into the country. Since the Tudors had recently dissolved the monasteries in England and retained no respect for church property, the English army burned down the churches.²³ An open attack on Edinburgh itself devastated the royal palace and struck a demoralizing blow that presaged modern warfare.²⁴ In retreat, Seymour aimed to leave behind a *tabula rasa*, systematically laying waste the country all the way to the border. Modern warfare had come to Scotland.

The Scots regenerated their forces with astonishing speed. At Ancrum Moor in 1545, an army of only 2,000 scored an unexpected victory over a greatly superior army of 2–3,000 English soldiers and 3,000 German and Spanish mercenaries. The Tudors learned that they could never relax when it came to Scotland. The English cavalry, with the *lands-knechts* following close behind, set off in pursuit of the retreating Scottish cavalry. But they had fallen for a simple feint, and unlike at Flodden, found themselves facing a wall of pikes in ordered schiltrons. Because of inadequate reconnaissance, they also failed to notice the Scottish artillery coming up on the two flanks and the Scottish cavalry returning from the feigned retreat. Although only 800 of the English troops fell and 1,200 were taken prisoner, the army's shameful flight was a blow to the prestige of the ageing king.²⁵

News of the battle roused the duke of Somerset to take revenge with greater destruction than ever before. At Pinkie Cleugh in 1547, the Scots once again attempted an ambush, but this time without success. The English vanguard of 700 men-at-arms and 1,000 light horse quickly ran down the Scots, who were fighting on smaller, weaker horses. The schiltrons on this occasion were joined by well-ordered Scottish artillery, but could not stand up to the constant onslaught of the more than 3,000 English demi-lancers and several thousand footmen and Spanish arquebusiers, backed up by substantial field artillery.²⁶ The Scots infantry were surrounded, and suffered heavy losses.²⁷ Thereafter, the

23 LP XIX. Nos. 342, 386, 389, 405.

24 David Grummitt, 'The Court, War and Noble Power in England, c. 1475–1558', in Steven Gunn and Antheun Janse (eds.), *The Court as a Stage*. Woodbridge, 2006, 151; LP XIX. No. 314.

25 Cooper, *Scottish Renaissance Armies*, 14.

26 *Ibid.*, 14–15.

27 *Ibid.*, 17.

English armies systematically set up operations in the Scottish Lowlands, taking and fortifying castles and defending them with artillery and permanent garrisons, and setting up new bases and supply dumps.

SUMMARY

Following a period of growth and modernization, medieval Scotland appeared to go into final decline. Flodden had a symbolic significance: when the cream of the English army were absent in France with their king, the forces left behind – a few county militias – nearly destroyed a Scottish army of unprecedented size, with the Scottish king among the dead. This opened a new chapter in the chequered history of relations between the two countries: a month after England's ancient enemies had renewed their alliance, the Tudor monarch had defeated both of them in battle. The old recipe no longer worked.

On the Scottish borders, England withstood the almost constant French-financed incursions and its forces dealt devastating defeats to its northern enemy. The medieval-minded Stuarts finally learned that the Tudor armies were fighting wars of a new – Renaissance – age, and their demoralizing campaigns, laying waste to the countryside, paralyzed the military potential of their old enemies for a long time.

By the end of the period, English domination was complete, and there could be no doubt that the strength of the Kingdom of Scotland was no longer commensurate with England's enormous military potential. By adept tactics, they could win the occasional minor battle, but they had no answer to the destructive force of the Tudor war machine.

MILITARY ORGANIZATION AND ARMIES IN SCANDINAVIA (1495–1524)

SCANDINAVIA IN THE KALMAR UNION

At the dawn of the modern age, Norway, Sweden and Denmark probably had a higher degree of similarity in terms of language, institutions, etc. than any other three countries in Europe. Nonetheless, they were equally remarkable for their heterogeneity, even within each country, and the shared history of “these three kingdoms” (*dessa tre riken*)¹ cannot be summed up in simple terms. Various dates have been offered for the break-up of their union,² but there were an almost unceasing series of wars in Scandinavia in the period 1501–1543. There had been a dozen or so years between 1389 and 1501 in which one of the three kingdoms, or a part of one, was at war with another. By contrast, there were only one or two years of peace between 1501 and 1524, and the “times of disturbance” (*tempora disturbiorum*) continued thereafter – until 1536 in Denmark and Norway, and 1543 in Sweden.

In 1319, Magnus Eriksson, son of a Swedish duke and a Norwegian princess, inherited the Norwegian throne and was also elected king of Sweden. His son Håkon Magnusson also became king of Norway and Sweden and, in 1363, married Margaret, daughter of Valdemar IV, who had restored the Kingdom of Denmark. This laid the dynastic foundation for the triple union. After Valdemar’s death in 1375, the Danish council of the realm elected Margaret’s five-year-old son Olof as king. Håkon died in 1380, and Olof also became king of Norway

1 On the term they used themselves at the time: Harald Gustafsson, *Gamla riken, nya stater. Statsbildning, politisk kultur och identiteter under Kalmarunionens upplösningskede 1512–1541*. Stockholm, 2000, 52 ff. A sample of the vast literature on the period: Esben Albrechtsen, *Danmark–Norge 1380–1814. Fællesskabet bliver til. Bind 1, 1380–1536*. København, Oslo 1997; Lars-Olof Larsson, *Kalmarunionens tid. Från drottning Margareta till Kristian II*. Stockholm, 2006²; Knut Helle (ed.), *The Cambridge History of Scandinavia. Volume I: Prehistory to 1520*. Cambridge, 2008; Bo Eriksson and Dick Harrison, *Sveriges historia 1350–1600*. Stockholm, 2010.

2 For example, 1448, 1471, 1501, 1523 and the 1530s: Jan Glete, *Swedish Naval Administration 1521–1721. Resource Flows and Organisational Capabilities*. Leiden, Boston, 2010, 53. The Scandinavian monarchs (Frederick II and John III) renounced their mutual territorial claims at the Peace of Stettin (1570).

(with Margaret retaining real power), marking the official start of a union of Denmark and Norway that lasted nearly 450 years. Olof died in 1387, by which time Margaret had gained control of both kingdoms; in 1388, she was also invited by some of the Swedish aristocracy to rule there, in opposition to their king, Albert. Margaret had her closest eligible male relative Bogislav, duke of Pomerania, crowned as King Erik of Norway in 1392, and as king of Denmark and Sweden in 1397. Thus was born the Kalmar Union, named after the place of the latter coronations. During the period when Erik was being dethroned,³ the Union faltered following a coup d'état by Karl Knutsson (Bonde),⁴ but supporters of the Union remained in the majority in all three councils of the realm and it subsequently continued under Christopher.

Christopher, however, died unexpectedly in early 1448. In the ensuing war for control of Sweden, Karl Knutsson had himself crowned king of Sweden, while the crowns of Denmark and Norway went to Christian of the Oldenburg dynasty. Although no agreement could be reached on a single king, the Union was upheld in the treaties of Halmstad in May 1450 and Bergen in August.⁵ Christian, as king of Denmark, entered another union in 1460 when he became duke of Schleswig-Holstein.⁶ The raising of the money he needed to attain this title was a contributory factor to his reign in Sweden (1457–1464) being cut short. In spring 1464, an army composed of troops from various sections of society, raised by an alliance under the control of the Oxenstierna and Vasa families and led by Bishop Kettil Karlsson (Vasa) of Linköping, defeated Christian's army of Danes, Swedes and Holsteiners at Hällaskogen.⁷ This act of the Swedes was not aimed against the Union: nearly every medieval Swedish king was deposed,⁸ and the Oxenstierna and Vasa families had already deposed

3 Between 1438 and 1442, the three councils of the realm individually, at different times, withdrew their support from Erik and reached an accord with Christopher.

4 While Erik's rule was becoming irretrievably unstable, he had himself made regent (*riksförståndare*) in 1438 during the struggle for control of Sweden, and the civil war re-erupted; see Gábor Nagy, *A középkori Svéd Királyság története*. Miskolc, 2012, 203 ff.

5 In the Treaty of Halmstad, the Danish and Swedish councils of the realm set the conditions for a common king at the latest upon the death of the two current kings, and in the Treaty of Bergen, the Danish and Norwegian councils agreed that their two kingdoms would remain under a common monarch.

6 Schleswig is the southern area of Jutland. After becoming a duchy in 1232, Schleswig gradually asserted its autonomy and finally detached from the kingdom in the fourteenth century. After wars and treaties, the king of Denmark was elected duke of Schleswig and count of Holstein in 1460, whereupon the two entities were joined in irrevocable union. (Frederick III, upon his meeting with Christian in 1474, attached Ditmarschen to Holstein and elevated it to a duchy.)

7 The location of the battle fought in the forest of Haraker (Västmanland), the strength of the armies and the course of the battle are all subjects of dispute: Martin Skoog, 'Det andra slaget vid Hällaskogen 1464. Om krigföring och taktik i det senmedeltida Sverige', *Collegium Medievale* 28 (2015) 105–144 (summary of sources on the battle: 122).

8 Between 1250 and 1523, only Magnus Birgersson (1275–1290), the uncrowned Margaret, and Christopher were not deposed. In the modern age, the history of the kingdom was the opposite: only three kings were deposed.

Christian's opponent Karl Knutsson (d. 1470) in 1457 (and again at the turn of 1464–1465). The council of the realm was always determined to maintain its predominance over any monarch. In 1471, Christian allied with the Oxenstiernas and Vasas in an attempt to recover the throne, but they were defeated at Brunkeberg⁹ by forces supporting the *riksföreståndare* (regent), Sten Sture (d. 1503), including the Danish-Swedish Axelssons,¹⁰ opponents of both kings and related to Sture by marriage.

Christian did not attack again, and he died in 1481. The three kingdoms and two duchies all accepted succession by his son Hans (in Sweden: Johan), but the councils of the realm had to agree on the terms. A month and a half after his coronation in Denmark and Norway (1483), on 7 September, delegates from the Danish and Swedish councils of the realm (including Sten Sture) meeting in Kalmar again confirmed that the three kingdoms would remain in eternal peace, love and connection under one lord and king.¹¹ As the Axelssons gradually lost their power, the king also gained sovereignty over Gotland in 1487, although Sten Sture managed to delay implementation of the Kalmar settlement until 1497.

TERRITORY AND POPULATION

The Kalmar Union extended over an enormous area. This may be appreciated from the time it took to sail to various points in the kingdoms from Copenhagen in fair conditions: nearly a week to Oslo or Kalmar, at least two weeks to Bergen, Stockholm or Åbo, and three weeks to Nidaros. The equivalent journeys by land, during the summer, took several months.¹²

The territory of the Kingdom of Norway was at its largest when Håkon IV died in 1263. Håkon put an end to the civil wars and set into law the heritability of royal power. On the peninsula the *Norgesveldet* then (unlike modern Norway) extended to Bohuslän, Jämtland,¹³ Härjedalen and part of Nordkalotten.¹⁴ Norway's possessions in the west, known as *skattlanda* ("tax-payers", an allusion to their previous relationship), were Greenland, Iceland, Orkney, Shetland, the Faeroes, the Hebrides and the Isle of Man. The

9 The place lay outside Stockholm, and is now in the city centre. It was the most memorable battle of medieval Sweden. The main written source (*Sturekrönikan*) is utterly biased, the oldest surviving version dating from decades later. On the battle: Erik Lönnroth, 'Slaget på Brunkeberg och dess förhistoria', *Scandia* 11:2 (1938) 159–213; more recently: Larsson, *Kalmarunionens tid*, 318–325.

10 On what was perhaps the most famous Scandinavian family of the time, see Nagy, *A középkori*, 214–215, 228–236.

11 ...them [the three kingdoms] at blifua tilsamen i en ewigh fridh, kerlegh och bebyndilsse wnder en herra och konungh til ewigh tiidh... The charter issued by the Swedish councillors: *Sverges traktater med främmande magter*... utgifne af O. S. Rydberg. Tredje delen 1409–1520. Stockholm, 1895, 372.

12 Larsson, *Kalmarunionens tid*, 52.

13 The archbishop of Uppsala, however, held ecclesiastical jurisdiction over this area.

14 The collective name for the areas inside the Arctic Circle.

peninsular part of the country was politically divided into *sunnanfjällska* [Østlandet] and *nordanfjällska Norge* [Vestlandet and Trøndelag]).¹⁵ Upon his election in 1483, King Hans promised¹⁶ that local state councillors in both parts would have a say in the grant of fiefs and that the council of the realm would hold its annual meetings alternately in Oslo and Bergen, the most important town in the kingdom (and a Hansa town).¹⁷ Relations with the islands gradually weakened: Magnus VI, who consolidated royal power, ceded the Hebrides and the Isle of Man to the king of Scotland in 1266, and Christian pawned Orkney and Shetland to his prospective son-in-law James III of Scotland in 1468–1469. The population of the kingdom at the dawn of the modern age, mostly by consequence of a series of epidemics that started in 1349, must have been very small.¹⁸ Most estimates put it at 120–200,000¹⁹ around 1520,²⁰ but according to Ole Jørgen Benedictow, there may have been 330,000 people living within the borders at that time.²¹ (The population returned to its pre-epidemic level only in the middle of the sixteenth century.)²²

Denmark reached its greatest extent during the era of the Valdemars,²³ who conquered much of the south Baltic coast. At the dawn of the modern age, Denmark had the most abundant resources of any North European kingdom, including the largest area for arable farming (e.g. Scania).²⁴ The sea routes between the Baltic and the North Sea all led past Denmark, and the country's proximity to the continental markets also caused it to become centre of the Union. The main component lands of the kingdom were Jutland, Funen, Zealand and Scania,²⁵ and in the Middle Ages it was divided into three jurisdictions. In contrast with Norway and Sweden, there was no

15 Østlandet and Vestlandet were, respectively, the eastern and western regions of South Norway, and above them was the central region of Trøndelag (now the north end of South Norway), containing the archiepiscopal seat of Nidaros (Trondheim).

16 Gustafsson, *Gamla riken*, 51.

17 The – mainly Wendish – merchants there principally brought in grain and took out dried cod.

18 The main basis for the very approximate estimates is data on the numbers of estates, households and the numbers living in them: Jouko Vahtola, 'Population and Settlement', in Helle (ed.), *The Cambridge History of Scandinavia*, I. 561–562.

19 For example, Erling Sandmo, professor at the University of Oslo, has proposed 170,000. The figures: <https://www.norgeshistorie.no/kirkestat/mennesker/1112-livet-og-pesten.html>; 120–150,000: Sverre Bagge and Knut Mykland, *Norge i dansketiden*. Oversat fra norsk af Ole Schierbeck. København, 1987, 119.

20 This is based on a detailed register prepared for the extraordinary tax imposed by Christian II (*tiendepengeskatten*, a single payment of one tenth of the value of movable and immovable property).

21 On the estimates of 200,000, and his own: Ole Jørgen Benedictow, 'Svartedauen i Norge. Ankomst, spredning, dødelighet', *Collegium Mediaevale* 19 (2006) 146, 157, etc.

22 Vahtola, 'Population and Settlement', 563.

23 Collective term for the rule of Valdemar (the Great, 1157–1182) and his two sons Knut VI (1182–1202) and Valdemar II (the Victorious, 1202–1241).

24 Possessed between 1332 and 1360 by Magnus Eriksson, without becoming part of any kingdom.

25 Or, with the inclusion of the neighbouring Halland to the north and Blekinge to the east: Skånelandskapen. This was among the lands that Denmark was forced to cede to Sweden in the Peace of Roskilde (1658).

national unification of laws,²⁶ and the nobility outside the council of the realm met according to the same division.²⁷

The water routes between these areas (Lille Bælt, Store Bælt, Øresund) were also the gateways to the Baltic, and maintaining control of them was a decisive element of Denmark's defence, demanding a strong fleet; latterly, control of the sea routes also provided much of the monarch's enormous wealth. The population of the Kingdom of Denmark is unknown, but modern estimates for the first third of the sixteenth century put the number of people living within the contemporary borders (not including Schleswig) at about 600,000.²⁸

The Kingdom of Sweden was arranged along a west-east axis from the Göta estuary, Stockholm, Åland and Åbo. This was the land best suited to farming, and the line gradually extended to the east as new land was populated. The name of the eastern part of the country eventually changed from Österland to Finland.²⁹ A significant difference from the modern borders is that until the middle of the seventeenth century, Bohus, Jämtland and Härjedalen belonged to the Kingdom of Norway, and Halland, Scania, Blekinge and Gotland³⁰ to the Kingdom of Denmark. In the early 1520s, Sweden was sparsely and unevenly populated,³¹ with an estimated 500,000 inhabitants.³² About 6,000 lived in Stockholm, the largest town.

CROWN REVENUES

The main administrative unit of the three kingdoms was the *län*.³³ Substantial *län* were associated with a castle³⁴ (*slottslän*), whose tax-collecting area did not necessarily coincide with the land that served it. The proportion of taxes that

26 Although the laws passed at the end of the rule of Christian II were of national scope, they did not come into effect following his dethronement.

27 Gustafsson, *Gamla riken*, 51.

28 Around 1500, according to Alex Wittendorff (Olaf Olsen [ed.], *Befolkningsforhold i Gyldendals og Politikens Danmarkshistorie*, 2002–2005, <http://denstoredanske.dk/index.php?sideId=307436>). A researcher at the University of Aarhus proposes a similar figure for 1536: <http://danmarkshistorien.dk/perioder/adelsvaelden-1536-1660/kongens-riger-og-lande/>.

29 Finland originally meant only the surroundings of Åbo, the area that first became part of the kingdom.

30 The island's links with the Kingdom of Sweden tightened in the middle of the thirteenth century (although it kept its own currency and legal system) and was taken by Valdemar IV in 1361. Under canon law, it belonged to the diocese of Linköping until 1570.

31 In the west of the country, population was relatively dense on the plains (Västergötland and Östergötland), on the south coast and the Mälaren area; and in the east, on the coast and beside the major lakes: Lars-Olof Larsson and Eva Österberg, 'Vasatiden och stormaktstiden', in Göran Behre, Lars-Olof Larsson and Eva Österberg, *Sveriges historia 1521–1809. Stormaktsdröm och småstatsrealitet*. Stockholm, 2003³, 15–16.

32 Larsson and Österberg, 'Vasatiden', 17.

33 It literally means 'fief', but has the sense of an administrative unit.

34 For example, in Norway: Akershus, Tönsberg, Bergen and Bohus; in Denmark: Koldingshus, Nyborg, Korsör, Vordingborg, Helsingborg, Varberg, Falkenberg, Laholm, Lindholm and

remained under royal control (*fataburslän*)³⁵ varied widely, as did the grant of a *län* (*förläning*; generally with assignment of all royal privileges) in terms of its size and recipient and the conditions it was granted under.³⁶ Control of the *slottslän* was a constant issue of contention between the council of the realm and the king (or, in the Kingdom of Sweden after 1470, the *riksföreståndare*), whose income was decisively influenced by these variables.

In the Kingdom of Denmark, extraordinary tax became permanent in the second half of the fifteenth century, justified by the war against the Swedish *riksföreståndare*. Tax was frequently levied on groups of peasants, who contributed in proportion to their holdings. In 1473, for example, every four peasants had to pay two marks.

An estimate of the previous ordinary crown revenues was produced around 1524.³⁷ (No separate state treasury yet existed in Norway.)³⁸ The total amount was 70,500–80,500 Danish marks,³⁹ and the Sound Dues,⁴⁰ for example, were estimated at 10–15,000 marks (2–3,000 *rose noble*). The largest item was income from royal domains. Historians consider the figures in this document to be exaggerated. The *län* provided 37%, followed by the town revenues (tax, *accisa*, fines), at 28%. The income from the Sound Dues and the royal court (*det kongelige retterting*)⁴¹ each accounted for 14%, and the Scanian (herring) market,⁴² 7%.⁴³ Rural income was thus surpassed by income from the towns and

Sölvesborg; in Sweden: Kalmar, Borgholm, Stockholm, Västerås, Örebro, Åbo, Tavastehus, Raseborg and Viborg.

35 Meaning rendering provisions (*fatabur*: larder).

36 Partial surveys: Albrechtsen, *Danmark-Norge*, 114 ff (Denmark-Norway); Nagy, *A középkori*, 97–98 (Sweden). The most frequent versions were: 1. the feoffee (*läntagare*) was obliged to render accounts of the *län* revenues (*räkenskapslän*); 2. he paid a fixed amount in advance (e.g. the annual tax of the *län*), after which he collected it for himself (*avgiftslän*); 3. in return for his services, the peasants on a specified area paid tax to him (or his agent) (*tjänstelän*); 4. he was granted it as security on his loan to the crown (*pantlän*).

37 The table: Nils Hybel and Bjørn Poulsen, *The Danish Resources c. 1000–1500: Growth and Recession*. Leiden, Boston, 2007, 316.

38 Albrechtsen, *Danmark-Norge*, 254–255, 260.

39 There were generally two Danish marks to one Lübeck mark: http://denstoredanske.dk/Geografi_og_historie/Diverse_historie/M%C3%B8nter/mark.

40 The ship dues levied continuously since 1429 originally amounted to one *rose noble* per *mærsskib* (ship with crow's nest) regardless of the size of the cargo. The passing ships had to pay the dues at the narrowest point of the Sound, opposite the castle of Helsingborg, at Helsingør, where the fortress of Krogen (Ørekrogen) was built.

41 A commission that traversed the realm and judged in the king's name (or authenticated an agreement between the parties who came before it). It was also a means for recovering property alienated from the crown.

42 Merchants, mostly from the Hanseatic League, bought the herring in Skanör and Falsterbo at places assigned to them by the king, and it was cleaned and conserved by local labour, salted with Lüneburg salt they brought with them, put into barrels and sold in the West – 200–300,000 barrels a year in the late fourteenth century: Albrechtsen, *Danmark-Norge*, 37.

43 The percentage breakdown: Albrechtsen, *Danmark-Norge*, 255.

from trade, even though the estimate did not include the duties on the cattle trade, which is estimated to have been as remunerative as the Sound Dues.⁴⁴

There are also records of crown income from the reign of Christian II (1513–1523).⁴⁵ The extraordinary taxes and other revenues for all of the full years of his reign were (in Danish marks):

	Extraordinary taxes	Other revenues
1514	2,190	17,330
1515	16,108	20,555
1516	6,108	9,669
1517	58,466	19,846
1518	63,632	20,328
1519	2,893	11,241
1520	69,517	16,365
1521	18,960	5,765
1522	38,382	1,849

The figures correspond to certain events in Christian's reign. In 1514, he was crowned in Copenhagen and Oslo, in 1515, he married Isabella (Elizabeth) Habsburg – sister of the later Charles V and of Mary and Ferdinand – and had her crowned queen, and in 1517, 1518 and 1520, he went to war to recover the Swedish throne.⁴⁶ (The largest annual sum – in 1520 – was due to the raising of the Sound Dues and the tax on the trade in Scanian herring salted in Falsterbo.)⁴⁷

A law passed in the Kingdom of Sweden in the middle of the fourteenth century specified the revenue due to the monarch, and prohibited any diminution.⁴⁸ The reality in the early sixteenth century was different. One group of aristocrats – among whom infighting was continuous – managed to obstruct the king of the Union from exercising his rights in Sweden for several decades. Their leader exercised power under the title *riksföreståndare* (regent). Consequently, there is no equivalent of the two Danish sources we have discussed. One or two *län* lists of dubious value and the correspondence of the Stures⁴⁹ are the customary sources for assessing which *län* in Sweden belonged

⁴⁴ Albrechtsen, *Danmark–Norge*, 256.

⁴⁵ The table: Hybel and Poulsen, *The Danish Resources*, 315.

⁴⁶ He had never sat on it, but the Swedish council of the realm had recognized him as king during his father's reign.

⁴⁷ Albrechtsen, *Danmark–Norge*, 296.

⁴⁸ MEL Konungsbalken II–III, see Gábor Nagy, '„Ett konungarrike, som heter Sverige..." Magnus Eriksson első törvénykönyvének *Királyfejezete* (Konungsbalken)', *Gesta* 16 (2017) 40.

⁴⁹ The Sture era was 1470–1520. After the death of King Karl Knutsson, a knight, Sten Sture (Sten Gustavsson [Sture], d. 1503) seized power as *riksföreståndare*. His opponent-turned-ally Svante Nilsson (d. 1511–12) was elected *riksföreståndare* in 1504. He belonged to a different family (Natt och Dag), and his son Sten Svantesson (d. 1520) was made *riksföreståndare* in

to the ruling authority (in the absence of a king: *rikets fatabur* rather than *konungens*).⁵⁰ The taxes levied in each *fataburslän* differed in amount, composition and form of payment (produce, money or service).⁵¹ Sweden had a higher proportion of peasant holdings than any other country in Europe. The majority of peasants owned the land they farmed, in which case they paid tax to the treasury. If they were not the owners, they paid rent to the landowner – either the crown or a *frälse* – instead of ordinary tax. The *frälse* were landowners exempt from payment of tax (and other duties). They were either clergy (*andligt frälse*) or laymen (*världsligt frälse*) who in return for exemption provided minutely-specified service as armoured cavalymen. This started in the thirteenth century. Land was divided into four categories by character (*jordnatur*): taxable, royal, church and (secular) *frälse*.

The crown was able to make effective use of its economic resources only during the reign of Gustav (1523–1560). A large part of the country had become under the direct – and increasingly effective – control of bailiffs (*fogdar*).⁵² Newly-established farms were constantly brought under taxation. Extraordinary taxes were effectively made permanent and had to be paid even on land granted in fief, often even by *frälse* tenants. Most of the church estates and other revenues (such as the tithe,⁵³ and fines) passed to the crown after 1527,⁵⁴ and there was greater income from mining⁵⁵ and customs duties.⁵⁶

Most crown expenditure went on administration and defence, but the former was tiny in comparison with the latter, which included the sum of 120,000 Lübeck marks set by the Lübeck authorities as the price for the assistance they had given to the rebels, and initially accepted by Gustav after his election. Much was also spent on mercenaries, who effectively kept Gustav in power until 1543, and there were also great expenses involved in the initial building of the navy.

1512. To consolidate his power, Svantesson started to use the name Sture and is thus known as the “Sten Sture the Younger”.

50 Still authoritative: Ingrid Hammarström, *Statsförvaltning och varuhandel 1504–1540*. Uppsala, 1956, 12–16.

51 For example, Värend in Småland paid in cash, Finland mostly in produce, other areas only in butter, the mining region (Bergslagen) and Gästrikland only in iron, etc.: Hammarström, *Statsförvaltning*, 26.

52 From the word *advocatus*; first appeared in the thirteenth century.

53 The tithe was not due to the bishop in Sweden. In the Middle Ages, it was usually divided three ways, and the priest still retained the part due to him.

54 On this, see Gábor Nagy, ‘Tanulni a vesztesektől. Katolikusok a 16. századi Svéd Királyságban’, *Egyháztörténeti Szemle* 13:4 (2012) 12–15.

55 The Sala silver mine was reopened in the 1520s.

56 Larsson and Österberg, ‘Vasatiden’, 41.

ASPECTS OF MILITARY ORGANIZATION

The first military organization of the three northern kingdoms was naval in character, the *leding*.⁵⁷ This inherited system was altered several times (made redeemable, changed to tax, etc.) and eventually vanished. The new system was based on stone castles and was inseparable from the military service by secular landowners (*frälse*), who served as armoured cavalry in exchange for certain privileges, above all tax exemption. The privilege was thus tied to service and could be renounced or withdrawn. In Denmark, the *frälse* held 40% of the land⁵⁸ and provided the main cavalry forces of the country around 1500. During the civil war of 1534–1536, they probably numbered between 1,600 and 1,700. In Sweden, the first regulations applying to the *frälse* date from around 1280, and they were the subject of Articles XI–XXI of Magnus Eriksson's code of laws of ca. 1350.⁵⁹ The degree of service was properly brought into line with wealth only after our period, however, in the reign of King Gustav. The upper section of the secular *frälse* were the knights (*riddare*), but in our period, the adult secular *frälse* could have numbered no more than a few hundred.

Defence of the land – rather than the kingdom – (*landvärn*) was compulsory in all three kingdoms, and in time of need, every man over the age of fifteen was required to muster for duty (*man ur huse*). The first standing land infantry in the Kingdom of Sweden was established only after our period, in 1543, when Gustav, after suppressing the Dacke uprising, sought a way of immediately stifling any future uprising. (The force was mainly recruited from the rebels' own area.)⁶⁰ The equivalent in the Kingdom of Denmark was established even later, in 1614, after the Kalmar War (1611–1613). (Norway had been part of the Kingdom of Denmark since 1536.)

There is only some scattered information about the castle garrisons. In Visborg in 1485, for example, 193 troops received pay in the summer season, and 78 during the winter. They included craftsmen, boatmen, kitchen staff and workers.⁶¹ There were more than 150 troops in Borgholm in 1487, 140 in Älvsborg, 200 in Öresten in 1502, and 130 in Uppsala Castle in 1521.⁶² From autumn 1501 to May 1502, Queen Christine defended Stockholm – the town, and later the castle – with a garrison that initially numbered less than 1,000. Of these, seventy (or by some accounts ten)⁶³ remained fit for service after the capitulation. In 1505–1506, when the castle was held by the *riksföreståndare*, Svante Nilsson, 127 troops

57 In general: the equipping, provisioning and raising of naval crews for the government.

58 http://denstoredanske.dk/Danmarkshistorien/De_fire_st%C3%A6nder/De_fire_st%C3%A6nder/Adelen/Standbevidstheden.

59 Nagy, 'Ett konungarike', 44–47.

60 On this, see Lars-Olof Larsson, 'Gustav Vasa och „den nationella hären”', *Scandia* 33:2 (1967) 250–269.

61 Eriksson and Harrison, *Sveriges historia*, 101.

62 The figures: Christian Lovén, *Borgar och befästningar i det medeltida Sverige*. Stockholm, 1996, 37 (except for Öresten; on this: Larsson, *Kalmarunionens tid*, 396).

63 Lovén, *Borgar*, 87.

served there, including the cooks, the shoemaker, the courier, etc.⁶⁴ When the king's forces surrendered Borgholm in 1510, 133 foot soldiers were taken captive.⁶⁵ According to a sixteenth-century source, when Gustav Eriksson's forces took the fortified archiepiscopal estate of Uppsala in 1521, the archbishop's *fogde* had 100 cavalry and 3 units (*rote*) of infantry, perhaps 30 troops.⁶⁶

FIREARMS

Gunpowder is first mentioned in Denmark in 1372.⁶⁷ Several fifteenth-century gunpowder mills are known of, but the first owned by the king dates from the first half of the sixteenth century.⁶⁸ For a long time, saltpetre was brought in from abroad, and the manufacture of saltpetre in Denmark is known only from the 1560s. Cannons, saltpetre, gunpowder and balls came to Denmark in the 1510s by purchase (from Nuremberg, for example) or loan.⁶⁹ The first records of gunners date from the 1430s.

We first hear about the casting of bronze guns in Denmark in 1507,⁷⁰ but the first definite record of such a weapon existing in the country is the annual inventory of Visborg for 1509 (4 *kopperslanger*). Two years later, two bronze half-culverins (*halve kartover*) are mentioned as being carried on the deck of a warship. (The use of the catapult seems to have ceased with the adoption of cannons.)⁷¹ We have information on the Swedish fleet and Swedish artillery only from the reign of Gustav, although certain individuals, such as Sten Sture, the regent of the realm, already possessed cannons. The Swedish artillery mainly consisted of the Danish-made guns seized from castles that fell to the rebels as they came to power after 1521 (such as the capitulation of Stockholm in summer 1523),⁷² to which were added the guns taken from bishops' arsenals after 1527. Specialists from Germany were soon replaced by Swedish. An abundance of copper and water energy and a high degree of centralization favoured development of the weapons industry, and the country's international isolation also encouraged self-sufficiency. After 1540, a separate official (*Överste Tygmästare* or *Arklmästare*) was designated to oversee the artillery, the casting of guns and the manufacture of gunpowder, saltpetre, etc.

64 Dag Retsö, 'Livsmedelsförsörjning och näringsstandard på Västerås slott 1517–1520. Ett nyupptäckt dokument i danska Rigsarkivet', *Scandia* 84:2 (2018) 43.

65 Lovén, *Borgar*, 77.

66 Mentioned in Lovén, *Borgar*, 259.

67 Michael H. Mortensen, *Dansk artilleri indtil 1600*. København, 1990, 64.

68 Gunner Lind, 'Early Military Industry in Denmark-Norway, 1500–1814', *Scandinavian Journal of History* 38:4 (2013) 406.

69 For example, a heavy mortar from Lüneburg in 1471, which was lost at Brunkeberg: Mortensen, *Dansk artilleri*, 69.

70 *Ibid.*, 77.

71 Their last known mention in Scandinavia dates from 1514: Jonas Hedberg, *Kungl.[iga] Artilleriet. Medeltid och äldre vasatid*. Stockholm, 1975, 23.

72 Mortensen, *Dansk artilleri*, 60.

The use of field artillery in Sweden was first mentioned in the 1430s, but the first recorded action involving siege artillery was the demolition of a tower in Viborg in 1495. A less technically sophisticated means of defeating fortress garrisons than the use of cannons and catapults was to set fire to the fortress using ballistas, fire arrows or, for wooden forts, torches, and bundles of branches, which were also used to fill up ditches. Battering rams are first mentioned only in the early sixteenth century, during one of the sieges of Kalmar, and the only definite use of a siege tower was at an event of 1434.⁷³

ASPECTS OF WEAPONRY

In Denmark in the early 1500s, about 75% of the *frälse* cavalry fought with lance and full armour, 25% with bow and arrow (later cavalry pistol) and cuirass. This proportion turned round by 1558, to 34–66%.⁷⁴ In Sweden the equipment of the *frälse* was specified in detail by Article XI of the MEL: “shall have a horse worth at least forty *mark penningar*,⁷⁵ better and not worse, with a saddle fit for a warhorse, together with helmet and full armour on the body and legs, leaving nothing out...”⁷⁶ Equipment and readiness were inspected annually, on the eighth of St Peter (6 July).

The sailors of the royal fleet had to present in lighter armour with cuirass (*harnesk*) and straight sword (*värja*).

Peasant foot soldiers were usually equipped with helmet, cuirass or mail shirt, shield, crossbow, some kind of sword and sometimes a (long) polearm ([*stöt*]*spjut*) or battle-axe. (Of course a stake or a scythe was also an effective weapon in their hands).⁷⁷

Paul Dolnstein, a bridge-builder who made drawings with text, was a mercenary of the royal army in the 1502 campaign.⁷⁸ One of his drawings shows peasant soldiers armed – in the front rank – with crossbows facing *landsknechts* with pikes and halberds. The crossbows are aimed at the enemies’ legs, and the pikes and halberds are being thrust between the helmet and the cuirass. The peasants in the second rank wield long polearms, one of them a halberd. On another drawing, a peasant soldier with a long sword at his side holds his long polearm towards a *landsknecht* fighting with a halberd, a short sword hanging at his side.

⁷³ Lovén, *Borgar*, 34 ff.

⁷⁴ Knud J. V. Jespersen, ‘Det 16. århundredes „militære revolution” og det danske adelsrytteri. En sammenlignende analyse’, *Militärhistorisk Tidsskrift* 1981, 8.

⁷⁵ The soldier’s life could depend on the quality of his horse. Horses bred specifically for war could fetch three times this sum. A source of 1390, for example, mentions a horse worth 140 marks, which at the time corresponded to the price of 98 cows.

⁷⁶ Cf. note 60.

⁷⁷ Janken Myrdal, *Jordbruken under feodalismen 1000–1700*. (Det svenska jordbrukets historia, 2.) Stockholm, 2000, 190.

⁷⁸ Recently: Danielle Mead Skjelver, ‘there I, Paul Dolnstein, Saw Action.’ *The Sketchbook of a Warrior Artisan in the German Renaissance* (2012). Theses and Dissertations, 1271, <https://commons.und.edu/theses/1271>.

ESTIMATED MILITARY POTENTIAL AND THE STRENGTH
OF ARMIES IN THE FIELD

Medieval sources are unreliable in the matter of troop numbers. A point of particular dispute concerns the number of men corresponding to a given number of armoured cavalymen.⁷⁹ The size of Danish armies under kings of the Oldenburg line, who were also dukes of Schleswig-Holstein, was constrained by how many (chiefly German) mercenaries they could afford to hire. In 1471, for the campaign to recover the throne (which ended at Brunkeberg), Christian is said to have taken 5,000 troops to the islands of Stockholm in 70 ships.⁸⁰ Some historians doubt the possibility of assessing troop strengths except to say that the king's was probably about half the size of his opponent's.⁸¹ According to the muster list of Hans' Swedish campaign of 1497 (see below), involving about 60 ships,⁸² the Danish nobility, bishops and towns raised 3,600 troops,⁸³ and Hans hired Thomas Slentz' famous *landsknechts* for 8 marks per head.⁸⁴ For the Swedish campaign of 1502, 21 ships were ordered from Jutland, 7 from Funen, 21 from Zealand, and 10 from Lolland, Falsterbo and Mön. These had to be provided by the trading towns. In the event, a fleet of thirty ships sailed for Stockholm in April.⁸⁵ To put down the uprising by Knut Alvsson, James IV of Scotland sent two ships equipped for war and a few dozen infantry.⁸⁶ Hans arrived for the Kalmar Union meeting of 1505 with 60 ships. The troops mustered in the town numbered 3,200 in total, the church and the nobility having raised 600 each, the towns 1,000,⁸⁷ and the elector of Brandenburg⁸⁸ 700.⁸⁹ In 1517, more than 3,000 troops were sent from Copenhagen to aid the archbishop of Uppsala. According to Laurentius Wermann,⁹⁰ a soldier on Christian II's 1518 campaign, the king had 5,000 Germans on about 80 ships, an additional 1,000 lightly-armed soldiers, mostly Danish, 100 noble cavalry and a

79 Lovén, *Borgar*, 37 ff.

80 Jørgen H. Barfod, *Flådens fødsel*. København, 1990, 45–46.

81 Lönnroth, 'Slaget', 209: "Härarnas storlek är omöjligt att bedöma, det enda säkra torde vara, att Sturarnas var Christierns ungefär dubbelt överlägsen i numerär."

82 Barfod, *Flådens fødsel*, 83.

83 For the first time in Denmark's history, every tenth peasant was ordered to muster: Kurt Villades Jensen, Knud J. V. Jespersen and Gunner Lind, *Danmarks krigshistorie 1. 700–1814*. København, 2008, 132.

84 Larsson, *Kalmarunionens tid*, 380.

85 Barfod, *Flådens fødsel*, 86–87.

86 *Ibid.*, 87.

87 Larsson, *Kalmarunionens tid*, 400.

88 Joachim, husband of Hans and Christine's daughter Elizabeth.

89 Other accounts state that the king ordered 31 ships from the Danish towns with the requisite men, totalling 1,000. The *frälse* provided 13 ships with 500 men, the bishops 6 ships with 758 men, the king had 5 ships of his own, known by name, with 256 men, Joachim of Brandenburg sent 2 German ships with 140 men, a total of 57 ships: Barfod, *Flådens fødsel*, 91.

90 Laurentii Wermanni *de obsidione Holmiensi anno 1518 epistola*, in *Scriptores rerum Svecicarum medii aevi. Tomus III*. Edidit et illustravit Claudius Annerstedt. Uppsalae, 1871–1876, 151–153.

multitude of unarmed workers, while the army of the enemy, Sten Sture the Younger, consisted of the cavalry and 10–12,000 peasants.

The regents relied on mercenaries – paid for out of an income incomparably smaller than the king's – and a limited number of peasant troops. The latter were recruited with promises (such as tax reduction) or fear (if the enemy wins, he will raise taxes). In exceptional cases, simple force was applied. In 1452, before Christian's attack, Karl Knutsson ordered every seven tax-payers or tenants in a district to equip an eighth as a soldier,⁹¹ and in 1495, as we will see, some of the peasants from the east of the country were conscripted before a Russian attack.

The peasants could only be called away from their fields at certain times of year. In addition, especially in areas close to the border, they increasingly formulated political aims independently of the national leadership, seeking and making peace.⁹² In 1505, after the collapse of a truce between the king and the *riksföreståndare*, an assembly of peasants of the Möre, Varend and Finnveden regions of Blekinge and Småland – areas along the Swedish–Danish border for almost the entire length on Swedish side, and along a substantial section on the Danish side – agreed to live in peace, maintain trade, warn the other side if the army approached, and collaborate in combating the forest bandits.⁹³ In autumn 1507, when the royal troop-carrying fleet appeared near Kalmar, the *riksföreståndare* called up the peasants of Varend, who replied that they would all muster (*man ur huse*) when the enemy approached by land. Defence of “their own land” (*sitt eget land*) meant Varend rather than Sweden. In 1510, when another major military operation threatened, the peasants of Blekinge, Möre and Varend again held an assembly and – according to a letter from one *fogde* to the king – declared that they would not pay tax until there was peace. Another *gränsfred* was established in autumn, this time between Varend and the whole of Scania. At an assembly in summer 1511, after the king's campaign, the peasants of the whole of Tiohäräd wrote to the king and the regent that neither of them would get their tax until peace was made because of their fear of retaliation from the other side.⁹⁴ In 1523, the *gränsfred* covered the entire area of what we now conceive of as the Swedish–Danish–Norwegian border. This was possible, as Larsson points out, because at that time, the inhabitants did not see the others as Danish or Swedish, but as people of Blekinge, Varend, etc.

91 Eriksson and Harrison, *Sveriges historia*, 250.

92 This was the tradition of *gränsfred* (*gräns* “border”, *fred* “peace”), agreement between communities on both sides of the border, mostly peasants with each other and sometimes in defiance of the centre, to moderate wartime losses and destruction.

93 Larsson, *Kalmarunionens tid*, 402–409.

94 Their letter is quoted in Larsson, *Kalmarunionens tid*, 406, and in Eriksson and Harrison, *Sveriges historia*, 255.



THE NAVY

As in England, the navy was a combination of the king's own ships,⁹⁵ those provided under naval obligation and, if necessary, requisitioned merchant ships that happened to be passing. The creation of the royal fleets is traditionally dated to the reigns of Hans (1481–1513) and Gustav (1523–1560). An important factor, according to Barfod, was the development of artillery during the reign of Hans, requiring guns to be fixed on ships rather than being taken from a fort when needed. Ships were thus built with structural alterations to accommodate cannons.⁹⁶ The first royal docks were established around 1500 in Nakskov, Kalundborg and Copenhagen, and the latter soon became the naval centre.⁹⁷ The first known list of ships⁹⁸ also dates from the reign of Hans. (Previous monarchs had of course also been involved in maritime activities for defence and trade. For example, Christian had contacts with Henry the Navigator and Afonso V of Portugal and sent ships on voyages of discovery in the North Sea.)⁹⁹ The trading towns were usually obliged to recruit the crews for the ships. Until the reign of Frederick III, ships were effectively the property of the king.

Sweden had few large merchant ships capable of conversion for military purposes and little opportunity to seize foreign merchant ships.¹⁰⁰ The regents of the realm had one or two ships, but they were no competition for the royal fleet. This maritime inequality changed suddenly in spring 1522. Lübeck merchants, wealthy shipowners with the ability to raise money to equip and supply large ships and to find men with the requisite skills, were worried about Christian II's plans for transforming maritime trade. They assembled a fully-equipped fleet of eight ships and sent it – with crews, weapons, supplies and 700 mercenaries for land combat¹⁰¹ – to Gustav Eriksson together with the two ships left by the late Sture.¹⁰² By October, the “Swedish navy” consisted of thirteen large ships, two having been purchased from Stralsund and one, the *Lybska Svan*, from Lübeck. The exact size of the allied fleet¹⁰³ that operated outside Stockholm in autumn

95 There are records of such fleets from the eras of Margaret and Erik (1384, 1398, 1414). The fleet was considered royal movable property, and Erik took it with him when he failed.

96 Barfod, *Flådens fødsel*, 70.

97 Lind, ‘Early Military Industry’, 407.

98 Assembled for the 1487 venture to take Gotland: Barfod, *Flådens fødsel*, 72–74.

99 ...at de to skibsherrer Pinning og Pothorst, som blev sendt ud med nogle skibe efter Deres kongelige bedstefars befaling og på foranledning af kongen af Portugal med det formål at opdage nye øer og fastlande i de nordlige have... This letter from the mayor of Kiel to Christian of 3 March 1551 is quoted in Barfod, *Flådens fødsel*, 48. Didrik Pinning became governor of Iceland in the 1480s, and a picture of Hans Pothorst has survived in St Mary's Church in Helsingør. The expedition probably took place in the second half of 1473.

100 Glete, *Swedish Naval Administration*, 59.

101 Hedberg, *Kungl.[iga] Artilleriet*, 365.

102 Glete, *Swedish Naval Administration*, 140. This fleet anchored at Söderköping on 8 June: Barfod, *Flådens fødsel*, 157.

103 Lübeck equipped a fleet in its own name, and other Hansa towns also sent ships.

1522 is not known, but Glete estimates the total displacement of the Swedish section at 3–4,000 tonnes.

BATTLEFIELD TACTICS

The land combat of the time, apart from some cross-border pillaging, mostly took place in Sweden and to a lesser extent in Norway. Combat involving the *frälse* armoured cavalry was predominantly one-on-one, and so these troops were not divided into tactical units.¹⁰⁴ Peasant soldiers, even when led by experienced *frälse* officers, were no match for this cavalry. During the half a century of the *tempora disturbiorum*, however, the peasants had gained considerable experience in warfare and the use of weapons. If the enemy could be lured into the forest, the heavy cavalry became ineffective, and a crossbow bolt could penetrate their armour. These limitations showed up in the Battle of Hållaskogen in 1467, for example: the royal forces were surprised from behind wooden barricades (*bråtar*) and trees were cut half way through so that they could be felled after the enemy passed.¹⁰⁵ Since the combatants were peasants, and frozen waterways permitted rapid travel, winter was the customary season for war in Sweden.

The enormous distances and the divided terrain lent particular significance to water routes in warfare: in his 1497 campaign, Hans sent part of his army by ship to the centre of the Kingdom of Sweden, while on the other coast, he simultaneously attacked and took the only western gateway to the country, Älvsborg Castle.¹⁰⁶ It was difficult, however, to attack the national centres. Copenhagen was defended by the fleet and Stockholm by nature: it was far away; it extended over two separate pieces of land, each surrounded by waterways; and approach from the sea was hampered by an enormous archipelago (*skärgård*). A simultaneous land and sea blockade was therefore a major undertaking, and – as demonstrated by the events of autumn 1522 – defence of the archipelago could be improved further by setting up batteries on the islands overlooking the shipping routes.

Since the king's land forces chiefly consisted of foreign mercenaries, he had to win quickly or make a truce. He therefore attacked major forts to which he could bring his army rapidly by sea, or alternatively, invaded border areas. Until 1522, the royal fleet was usually able to seize ships at will during the Swedish wars, thereby obstructing trade, and it also pillaged and extracted taxes from coastal areas. The

104 This changed in the second half of the sixteenth century, and at the national muster in 1609, Christian IV established seven permanent tactical units. These were companies of 150–200, increasing in number to 12, each of 100 troops, in 1624: Jespersen, 'Det 16. århundredes „militære revolution“, 8.

105 There is a depiction of this in Olaus Magnus' monumental opus *Historiarum de gentibus Septentrionalis libri XXII*, published in Rome in 1555: Lib. VII, cap. XII, De bellis sylvestribus.

106 The Danish king again successfully mounted simultaneous attacks on several fronts during the Kalmar War (1611–1613), and the fleet was able to sail to Stockholm (Vaxholm), partly because of Swedish disorganization, although without an expeditionary force.

defending *riksföreståndare*, whose army was much smaller than that of the king, avoided major open encounters and played for time: the royal army's advance over forest-covered, sparsely-populated country was impossibly slow (and thus costly). In contrast with the king's foreign mercenaries, the peasant troops were untrained, but they were cheap, had good local knowledge and could arrange their own provisions. Peasant soldiers with crossbows – their favoured weapon since the middle of the fifteenth century, every small town having a crossbow-maker¹⁰⁷ – could be very effective against royal troops, as in the Battle of Hällaskogen, when they trapped the enemy between the barricades (*bråtar*) and the prepared trees that were cut down after them. Nonetheless, winter – the usual season of land operations – favoured the attackers, speeding their advance and hindering the defenders from hiding in the forest.

To hold power in Scandinavia, a ruler required above all – in addition to the support of the council of the realm and the *allmoge* (“all the common people”) – to have possession of castles. In Sweden, there were few castles that could resist the royal army and its artillery. Most of the coastal castles of importance for communication and control, were held by the crown, and could seldom be taken if they were prepared to put up a determined defence and their supplies were guaranteed by royal superiority on the sea. The western part of the country was particularly exposed to attack by well-equipped forces, but the only western gateway was Älvsborg on the Göta estuary. Until Olofsborg was built, Kalmar, near Stockholm, about 40 kilometres from the Danish border, was the strongest fortress on the east coast, with full protection on each side. Öland, on the other side of the sea route in front of it, Kalmarsund, was protected by Borgholm. The castles along the coast beyond Kalmar were Stäkeholm, Stegeborg, Nyköping and – on the Mälaren estuary – Stockholm (whose natural defence we have discussed). Inward from there, on the north bank of the lake, was Västerås,¹⁰⁸ and on the bank of the Hjälmarén, Örebro. After leaving the western part of the country, the only fortress in Åland was at Kastelholm, and in the east was Åbo, Tavastehus on the bank of the Vänå, Raseborg in the Gulf of Finland, and finally Viborg and Olofsborg on the border.¹⁰⁹

THE RUSSO-SWEDISH WAR (1495–1497)

The only eastern war of our period was one of a series of conflicts between the Swedes and Russians that went on for more than five hundred years.¹¹⁰ Like the Kingdom of Hungary and Croatia, the Kingdom of Sweden lay “on the border of the lands of the Christians” (*in fine terrarum Christianorum*) and the Russians were “enemies of Christ's name” (*Christi nominis inimici*). The events may be

¹⁰⁷ Myrdal, *Jordbruket*, 191.

¹⁰⁸ On its significance: Retsö, ‘Livsmedelsförsörjning’, 40.

¹⁰⁹ On this see, inter alia, Lovén's summary table: Lovén, *Borgar*, 198–199.

¹¹⁰ From the time of a battle won by Alexander Nevsky (not known from Swedish sources) until the last Russo-Swedish war ended with the Peace of Fredrikshamn on 17 September 1809.

reconstructed from archive sources on the history of the kingdom,¹¹¹ and Swedish and Russian narrative sources.

The first Swedish–Russian peace treaty (and the last, until our period) was concluded in Nöteborg in 1323. The kingdom at that time did not have definite borders, especially in the east;¹¹² geographical knowledge of the region was incomplete; and the Karelian and Tavastian tribes were not even consulted. Where the border ran was, for much of its length, unknown in the Middle Ages, and still is.

There were two castles on the eastern border of the kingdom in the late fifteenth century – Viborg in Karelia, in the Gulf of Finland¹¹³ and Olofsborg, which defended Savolax.¹¹⁴ Viborg, standing on an island in the Gulf of Viborg, was built at the beginning of the Novgorod Wars in 1293 by Torgils Knutsson¹¹⁵ – in the words of his king two years later – “in reverence of God and the glorious Virgin, the defence of our country and no less the safety and peace of those traversing the sea”¹¹⁶ against the pagan Karelians supported by the perfidious *Ruteni* (Russians). Traditionally, the commander of Viborg was responsible for defending the border, relying on local resources. The monarch over the sea only became involved in case of serious conflict.¹¹⁷ The Swedish copy of the Peace of Nöteborg, now lost, was held there.¹¹⁸ Erik Axelsson held the Viborg *slottslän* as *tjänstelän*¹¹⁹ between 1457 and 1481, during which time a stone wall with at least seven towers was built around the town.¹²⁰ As the Russian threat mounted, Erik (who was *riksföreståndare* in 1466–1467) built a new castle on an island of Saimen on the Russian border “to the glory of God, Christ and to strengthen the sacred Christian faith”,¹²¹ and named it after the pagan warrior who had converted to Christianity, later king of Norway and venerated as a saint in many places,

111 The *Diplomatarium Fennicum* on the internet: <http://df.narc.fi/>, the relevant part: FMU (Finlands medeltida urkunder).

112 The first agreement on the Swedish–Russian border was made in the Treaty of Teusina (on the right bank of the Narva) at the end of the Twenty-Five Years’ War (1570–1595).

113 Now in Russia.

114 Now Olavinlinna in Finland.

115 He held the title of *marsk* and headed the regency when King Birger Magnusson was in his minority.

116 *ad honorem Dei virginisque gloriose, ad regni nostri tuicionem necnon ad securitatem mare transeuncium et pacem*. Letter from Birger Magnusson, written in Örebro on 4 March 1295, to Lübeck and the Baltic trading towns: FMU 217.

117 Kari Tarkiainen, “Vår Gamble Arffiende Ryssen”. *Synen på Ryssland i Sverige 1595–1621 och andra studier kring den svenska Rysslandsbildens från tidigare stromaktstid*. Uppsala, 1974, 19.

118 ...*epter konung Magnus och konung Øriens breffs innehöldilse, aff hulke breff wii sendom ider verdughet en wtscript pa latin, lydandis ordh fra ordh som huffuudbreffuet inneholder*. Letter from Bishop Magnus of Åbo and Nils Eriksson (Gyllenstierna) to Sten Sture, *riksföreståndare*, from Viborg on 23 February 1493: FMU 4475 (“konung Ørien” Jurij Danilovitch).

119 See note 36.

120 Larsson, *Kalmarunionens tid*, 356.

121 *Gudh till loff, Christum, helga christna tro till styrkielse*; according to a carving recorded in the seventeenth century: FMU 3628; also quoted in Lovén, *Borgar*, 189.

including Sweden, Olof (d. 1030).¹²² It was originally built of wood, but in 1477, according to the regest of Rasmus Ludvigsson¹²³ for that year, Erik added towers, an outer wall and other buildings, for which he hired sixteen foreign stonemasons.¹²⁴ The regest also records that every boat (*pråm*) carrying workers going for material was escorted by twelve or fifteen of Erik's soldiers with armour and sword (*medh theris harnesk och wärier*), to guard against the Russians. Olofsborg became one of the strongest castles in the country, built to ensure that the whole castle district could be enfiladed (*flankering*) by firearms.¹²⁵

The Grand Prince of Muscovy, Ivan III, extended his hegemony to Novgorod in 1478, after which he attacked Olofsborg, which the Russians considered to have been built on the wrong side of the border. The fighting ended with a truce in 1482. Russian expansion in to the area of the Gulf of Finland led to the foundation of Ivangorod on the right bank of the Narva in 1492. In 1493, Ivan III made a treaty with King Hans, who promised to adjust the Nöteborg borders¹²⁶ (the agreement was not made known in Sweden at the time), and on 6 November 1494, Hansa trading in Novgorod ended. In Sweden, the council of the realm, led by Archbishop Jakob Ulfsson, turned against the *riksföreståndare* in 1494.¹²⁷ The quarrel subsided at the beginning of the Russian threat, but erupted again later and became the catalyst for the restoration of the Union.

When the last truce expired, Russian (Muscovy, Novgorod, Pskov) attacks started with cross-border pillaging raids, and the main force was directed against Viborg (attempts at Olofsborg being quickly fended off). The *riksföreståndare*, who had held the Viborg *slottslän* since 1483, took five hundred German mercenaries¹²⁸ to Viborg in advance and in the east of the country, as initial assistance, one peasant soldier was called up for each five tax units, and the few *frälse* of Finland were also sent to Viborg.¹²⁹ It is certain that Nyland sent 800 peasants to the castle (the bishop 40 soldiers),¹³⁰ bringing the number of defenders to about 1,800, led by the *riksföreståndare*'s brother-in-law Knut Posse, who had earned his reputation in the defence of Stockholm Castle and the Battle of Brunkeberg in 1471. The defenders several times broke through the blockade, such as towards Vatikivi on 12 October. This amphibious manoeuvre, in which half the defenders are said to have taken part, resulted in several hundred peasants and nearly a hundred armoured soldiers being killed or taken captive: the Russians surprised them as they landed. The commanders were at

122 Sometimes also called Nyslott.

123 Royal secretary who wrote historical and genealogical notes, died in 1594.

124 FMU 3733.

125 Lovén, *Borgar*, 190; the castles of Stegeborg (Östergötland) and Raseborg (Nyland) also had one tower built for this purpose (*ibid.*), and they belonged, respectively, to Erik's brothers Ivar and Laurens.

126 Larsson, *Kalmarunionens tid*, 358.

127 The main reason was the oppressiveness of the *riksföreståndare*, but the council of the realm also knew that Hans and Ivan III were engaged in negotiations.

128 This figure: Ulf Sundell, *Medeltidens svenska krig*. Stockholm, 1999, 361.

129 Larsson, *Kalmarunionens tid*, 358.

130 The figures: Sundell, *Medeltidens svenska*, 361.

first able to restrain the panic, but Russian reinforcements cause more panic, the attack collapsed, and few managed to get back to the boats.

In the meantime, the council of the realm was assembling an army in Stockholm. The *riksföreståndare* and two other councillors wrote to the archbishop on 5 November that it would be useful and necessary to take St Eric's¹³¹ banner¹³² with them to Finland to encourage their friends and demoralize their enemies, the enemies of Christianity.¹³³ In an event that strengthened Sture's grip on power in several respects, the banner (according to the *Sturekrönikan*)¹³⁴ was ceremoniously brought from Uppsala to Stockholm, and from there to Finland. Plague, stormy weather and the onset of the ice meant that it was only around Christmas that Sture made his landing – at Åbo, at least 400 km by land from Viborg.

By that time, the siege of Viborg had ended.¹³⁵ The Russians broke down the wall with powerful artillery and war machines, some at least seven metres long,¹³⁶ and on 30 November,¹³⁷ presumably in spite of severe weather and supply difficulties, launched an assault “with an enormous multitude of horsemen and foot soldiers”. According to the chronicle, the defenders attempted to keep them at bay, or fight them off, with burning tar and pitch. The attackers seem to have prevailed, and they took one of the strongest towers. They were, however, eventually forced to retreat, a development variously attributed by contemporaries – according to their faith and point of view – to divine or satanic intervention, and no other reason is known. According to Bishop Magnus of Åbo, for example, citing information from Knut Posse, the Russians attacked heroically and reduced three strong towers,¹³⁸ but then the supplication and honour of St Andrew brought assistance of the miraculous grace of God: it seemed to the almost-triumphant Russians that the town was full of soldiers, “although there were very few of ours compared with such a multitude” – but that day, as every returnee from Viborg unanimously said, there appeared in the sky the cross of

131 Not known from contemporary historical sources, the figure later known as King Erik must have ruled in the second half of the 1150s on some part of the emergent kingdom and died a violent death (like his predecessor and successor). He was latterly associated with an eastern crusade, and in the fifteenth century became the patron saint of Sweden.

132 I do not know of an earlier mention, and it was subsequently lost.

133 ...i blandh annet taall war her rörrh oss i mellan om nytto ware ok behoffh giordis at sancte Erics baner skulle haffuas medh til Finlandh, om huilkitt oss tykte at thet skulle mykith nyttigh wara bade för ty at thet schulle wara waara wener til en ganske stoor trösth oc warum ok cristendomens fyndom til en stoor wantrösth... FMU 4631.

134 This rhyming chronicle is probably an amalgamation of two separate documents, one – covering the period up to 1487 – commissioned by the *riksföreståndare* and another for 1488–1496, commissioned by his enemy, the archbishop.

135 ...obsidio circa ffestum beate Anne, quod apud nos xviiij kal. januarij celebratur, dissoluta extitit. Bishop Magnus of Åbo to the archbishop from Korois on 6 January 1496: FMU 4648.

136 ...bombardas et machinas habebant magnas et mirabiles, aliquas in longitudine xxiiij pedum, prout nobis scripsit et mensuram misit Kanutus Pose. *Ibid.*

137 ipso namque die beati Andree apostoli. *Ibid.*

138 iamque tres turres pociores solotenus subuerterunt. *Ibid.*

St Andrew in shining glory,¹³⁹ at the sight of which the enemy took fright and were obliged to retreat. Another story that emerged soon after and has been repeated ever since is that the attack ended with an explosion. One of the interpretations of the “Viborg boom” (*viborgska smällen*) is that Knut Posse ordered the destruction of a tower that had fallen to the enemy.¹⁴⁰ Whatever actually happened, the council of the realm awarded Posse the whole of Ångermanland and a district (*härad*) of Västergötland for life¹⁴¹ for his services, particularly those he had given that winter in Viborg against the “cruel Russians”.¹⁴²

Viborg had escaped for the moment, but the war went on. As the bishop wrote, there were reports that the grand prince of Moscow was not content “merely to ravage this country, and is attempting to attack the borders of Sweden”, and had assembled more than 2,000 ships “known commonly as *lodja*”¹⁴³ that would sail after the ice melted. “If almighty God does not look down on us, we cannot withstand this prince’s wrath.”

The few, inexperienced foot soldiers in the east of the country could not hold off the pillaging raids by greatly superior Russian forces. Several of these took place in January and summer 1496. The cavalry pillaged right up to the Gulf of Bothnia, taking away an enormous quantity of booty.

When the sea became navigable, the *riksföreståndare* himself returned to Stockholm, leaving Svante Nilsson in charge of Finland. The leaders of the kingdom became increasingly distrustful. The *riksföreståndare* tried to persuade the archbishop and others, mainly church leaders, to send an army against the Russians, but since he was unwilling to raise many men himself, the clergy showed little inclination to do so. He attained no more than an agreement to send supplies to Viborg.¹⁴⁴ The council of the realm also asked the Wendish towns for assistance,¹⁴⁵ and Pope Alexander VI, at the request of the country’s leaders,¹⁴⁶ and noting that the Russians “by the slaughter and eternal enslavement of several thousand Christians,” had destroyed the greater part of the diocese of

139 *apparuit sub celo non sine ingenti splendore crux beati Andree. Ibid.*

140 For example, Eriksson and Harrison, *Sveriges historia*, 196.

141 The document, written in Stockholm on 15 May 1496: FMU 4672.

142 *mote the omilde Rytzser* – this was one of the expressions regularly applied to the Russians. On the Swedish view of the Russians: Gábor Nagy, ‘„Regni Hungariae historicorum facile princeps” (Isthvánffi-képek)’, in Gergely Tóth (ed.), *Clio inter arma. Tanulmányok a 16–18. századi magyarországi történetírásról*. (Monumenta Hungariae Historica, Dissertationes) Budapest, 2014, 80–82.

143 *dicta wlgariter lödhier (ibid.)*: a ship with both sails and oars.

144 Letter from Archbishop Jakob Ulfsson to the bishop of Linköping in early summer 1496: FMU 4676. The bishop of Åbo wrote similarly and added that the *riksföreståndare* was constantly protesting his poverty, even though there had been nobody wealthier for a long time: FMU 4677 (...*allegat continuo paupertatem. Re tamen constat nullum fuisse in longis retroactis temporibus ipso opulentiorem...*).

145 As we know from, for example, a letter from Lübeck to Rostock dated 17 June 1496: FMU 4681.

146 Hemming Gadh, one of the dominant figures of Swedish history in the following quarter of a century, a figure comparable even with Cesare Borgia, was present in Rome as the *riksföreståndare*’s envoy.

Åbo¹⁴⁷ and committed acts of great cruelty, issued a bull in Rome on 22 June promising pardon of all sins to those who fell in battle or went to war to subdue and defeat the “schismatics”.¹⁴⁸

Recognizing the impossibility of defending territory, Svante Nilsson went on to the attack. With Posse and selected troops, he crossed the sea and attacked Ivangorod. His force took and pillaged the town on 27 August. Since they could not have held on to it, they caused as much destruction as they could. No further major clashes are known of. The *riksföreståndare* went to Finland in September, but soon quarrelled with Svante Nilsson, who responded by returning to Stockholm. As the forces transported to Finland started to break up, Swedish–Russian talks began, and the *riksföreståndare*, worried about losing control, returned to Stockholm. A six-year truce was signed on 3 March 1497,¹⁴⁹ and on the seventh of that month, the council of the realm, led by the archbishop and Svante Nilsson, renounced their loyalty to the *riksföreståndare*.

WARS OF THE UNION 1497–1524

In these wars, the attacker was characteristically the Union monarch, who was attempting to assert his rights, and so the fighting mostly took place in Sweden. There are few written sources on the medieval history of the kingdom.¹⁵⁰ All we know about some battles is that they took place; the strength of the armies, the course of the fighting and in some cases even the location have been forgotten.

In June 1497, with German mercenaries freed from the Russian front, Sten Sture descended on the estates of Archbishop Jakob Ulfsson. They laid siege to Almarastäket, the archbishop's major castle, the symbol of contest between ecclesiastical and secular power in Sweden, controlling the water route from Mälaren to Sigtuna and Uppsala and the land route between Stockholm and Bergslagen, both loyal to the *riksföreståndare*. After a month, the castle still held. The king intervened on the side of the archbishop, and his army, arriving by sea, completely routed Sture's predominantly peasant army at the Battle of Rotebro on 28 September. The opposing sides settled, the Union was restored, and in 1499, the Swedish council of the realm followed those of Denmark and Norway in recognizing Prince Christian as heir to the throne.

Having consolidating his rule, Hans turned his attention to Ditmarschen, which was reluctant to recognize annexation to Holstein. In 1500, he and his younger brother Frederick, who was also duke of Holstein, and again with the *landsknechts* of Thomas Slentz, marched into the region. The land of Ditmarschen was defended by the sea and the rivers Eider and Elba,¹⁵¹ and the army of local

¹⁴⁷ At that time, this meant the entire eastern region of the country.

¹⁴⁸ FMU 4682.

¹⁴⁹ FMU 4734.

¹⁵⁰ See Nagy, *A középkori*, 23–33. In other words, “the medieval history of Sweden does not generally abound with snapshots” (Erik Lönnroth).

¹⁵¹ Reimer Witt, ‘Die Schlacht bei Hemmingstedt: Wahrheit und Legende’, *Demokratische Geschichte* 12 (1999) 33–48.

peasants blocked the only route through the waterlogged fields around Hemmingstedt. On 17 February, they dealt a devastating defeat against Hans and Frederick's army, which was unable to deploy properly, many of its heavily armoured cavalry simply drowning in the water.¹⁵² Slentz himself also fell. Despite the Scandinavian involvement, the battle was an event in the history of Holstein.¹⁵³ Hans' defeat may have made up the minds of Sture and his supporters: in 1501, the disgruntled Swedish magnates "knocked down the pieces and started a new game".¹⁵⁴ The leaders who renounced their loyalty (Sten Sture, soon re-elected as *riksföreståndare*, Svante Nilsson and Hemming Gadh) were put into an easier position when the news spread in Stockholm that their king had made an alliance with Ivan III in 1493.

The king travelled to Denmark to gather an army, again leaving a queen in charge of the defence of Stockholm¹⁵⁵ with about 1,000 men.¹⁵⁶ After a fire in the town, Christina withdrew to the castle on 10 October, but without sufficient artillery, the attackers could only try to starve them out. At news of losses among the defenders and the approach of the royal fleet, however, they decided to launch an assault on 29 April. Although they did not take the castle, negotiations resulted in an agreement allowing the defenders to leave peacefully on 9 May. Christina and her soldiers, however, were treacherously taken into captivity. The fleet carrying the relief army anchored in Stockholm three days later, but had no choice but to turn back. The insurgents took control of several castles across the country, some by agreement (such as Viborg and Olofsborg), and some by force (such as Bergkvara, a centre of the royalist Trolles). The queen was released through Hansa mediation¹⁵⁷ only in autumn 1503, and in January 1504, only Kalmar Castle and Borgholm remained loyal to the king. On 18 May, Danish and Swedish councillors agreed to hold a Union council meeting in Kalmar in June 1505,¹⁵⁸ until which time a truce would be in effect.

This phase of the war also affected Norway. As in Sweden, the object of hostilities there was to take castles. A Scandinavian aristocrat, Knut Alvsson,

152 Later, in 1559, the dukes of Holstein (Frederick's sons Adolf and Hans the Elder, and their nephew Frederick II, king of Denmark) with the assistance of the famous commander Hans Rantzau, defeated the peasants of Ditmarschen.

153 Albrectsen, *Danmark-Norge*, 263 mentions German mercenaries and Holstein nobles, while Larsson claims that there were royal troops (i.e. Danes) in the cavalry alongside those from the duchy, and even tells of fallen Swedish aristocrats. Both mention the peasants' seizure of the mystical Danish banner (*Dannebrogen*) that Hans had taken with him.

154 Larsson, *Kalmarunionens tid*, 381–386.

155 In April 1428, Copenhagen repulsed an attack by the Wendish Hansa under the leadership of Queen Philippa.

156 Larsson, *Kalmarunionens tid*, 389.

157 Hans banned trade with Sweden, but Lübeck did not obey, after which Lübeck ships sailing towards Sweden were seized and Lübeck citizens were taken captive. Scotland also hunted down Lübeck ships. Eventually, through the intervention of the pope, an agreement was made on 24 April 1503 under which Lübeck promised to refrain from supplying Sweden and to make representations for Christine's release.

158 This allowed for the two parties under the same agreement to put the castle in the charge of a servant of the king who was related to allies of the *riksföreståndare*.

attacked with a Swedish force in autumn 1501 and took the strongest fort, Akershus, in early 1502. He then took Tönsberg and laid siege to Bohus. Viken¹⁵⁹ was attacked by Nils Ragvaldsson, who also had Swedish connections. In the meantime, Prince Christian, with an army of German and Scottish mercenaries, launched a campaign in Sweden. In July, he captured the castle of Älvsborg (drawn by Dolnstein) within four days, and most of the defenders changed over to his side. He then took Öresten (the other castle drawn by Dolnstein), and after allowing the defenders to depart, burned it down. The war of the castles continued in Norway. The king's confidant, Henrik Krummedige defended Bohus, retook Tönsberg, and then sailed to take back Akershus. Knut Alvsson, who had been called to negotiate with a letter of immunity, was killed on his ship. In 1503, Svante Nilsson made an incursion into Norway, burned down Tönsberg, but at the end of 1504, Nils Ragvaldsson lost the Norwegian castle of Olofsborg, bringing hostilities in Norway to an end.

The meeting planned for Kalmar in summer 1505 was frustrated by the absence of the Swedish councillors. Fighting resumed, although most of the time passed in negotiation. Gadh again occupied the town of Kalmar, but supply problems prevented him from taking the castle. The insurgents sometimes pillaged Danish areas on the border. In 1507 and 1508, Swedish foreign trade came under severe pressure from the royal fleet, which also wreaked destruction in Åland, Åbo and elsewhere. A truce was signed in Varberg on 30 June 1508, offering Sweden three options: to accept the king or his son, or pay an annual tax.¹⁶⁰ In the agreement reached in accordance with this in Copenhagen on 17 August 1509, the Swedish council of the realm undertook to pay 13,000 Stockholm marks annually from the income of the Swedish crown until they accepted the king or his son as their lord.¹⁶¹

In the event, the *riksföreståndare* and his supporters did not accept the agreement. In 1509–1510, they made treaties with Lübeck, which was at war with Denmark, and a long-term peace treaty with Ivan. The war resumed in summer 1510. Lübeck prevented the king from taking aid by sea to Kalmar, which thereby fell, as did Borgholm, which had been under almost continuous siege since 1503. In January 1511, Christian led a counter-attack from Denmark, laying waste all the way to Jönköping, and returned by a different route. (The peasants' collective refusal to pay tax, mentioned above, took place after this.) The devastation deepened the divisions within the Swedish council of the realm. Lübeck made a truce with Denmark in November,¹⁶² and Svante Nilsson, *riksföreståndare* since 1504, died on 2 January 1512. His successor, Erik Trolle, was inclined to accept the king, and one of the Malmö agreements made on 23 April provided for a

159 Part of modern Bohuslän.

160 Rydberg, *Sveriges traktater*, III. 538–541 (the introduction uses the expression “these three kingdoms” [*thesse III riige*, 539], which is also found in all of the treaties mentioned below).

161 12,000 to the king (in copper, iron, sulphur and money) and 1,000 to Christine: Rydberg, *Sveriges traktater*, III. 548–551.

162 A survey of the naval operations of the Wendish towns led by Denmark and Lübeck: Barfod, *Flådens fødsel*, 105–117.

meeting in Copenhagen between twelve Danish-Norwegian and twelve Swedish councillors, starting on St Ivan's Day 1513, to choose one of the three options accepted in 1509 (not stating the amount of money).¹⁶³

Once again, the settlement was not implemented. In summer 1512, Svante Nilsson's nineteen-year-old son Sten, who was by that time already calling himself Sten Sture, deposed the *riksföreståndare* and took his place. Hans died in early 1513 and the planned Copenhagen meeting was postponed, first to 1515 and then to 2 February 1517, when it would be held in Halmstad. A truce was ordered until Easter 1517.

In the meantime, a civil war broke out in Sweden. The key background factor was that Archbishop Jakob did not simply withdraw; he arranged for Gustav Trolle, the son of the *riksföreståndare* overthrown in 1512, to take his place. Immediately upon receiving Trolle's letter about papal confirmation on 22 July 1515, the *riksföreståndare* took back the *län* that served Almarestäket, and in the second half of 1516, he mounted attacks that reopened the conflict. In May 1517, after the expiry of the truce with Christian II, a squadron of ships set out from Copenhagen to relieve the archbishop. Some of the army, led by Knut Alvsson's son Karl, besieged and burned down Stäkeholm together with the town of Västervik. The remainder landed beyond Stockholm and were defeated in battle (near what is now Djurgårdsbron, according to a later source), after which the squadron turned back. The archbishop soon surrendered and was taken into captivity, and the castle of Almarestäket was demolished.

In spring 1518, another royal force landed at Södermalm. There are two contemporary written sources on what ensued. One is a letter written in Latin by the otherwise unknown Laurentius Wermann, mentioned above; the other, surviving in a corrupt (perhaps seventeenth-century) copy,¹⁶⁴ is a report by a soldier of the *riksföreståndare* written in Lower German. Wermann claims that the *riksföreståndare* avoided battle. The royal army bombarded the walls of Stockholm vehemently at first and then with reduced force, but their assault on the breaches was repulsed. The king learned that the *riksföreståndare* was approaching "with a large force of citizens and peasants"; the two sides clashed and the enemy army fled. As the royal army rushed into the forest in disordered pursuit of the fugitives, the Swedish cavalry and 12,000-strong peasant force returned to the fray and caused some losses among the pursuers. The king, daunted for some reason, returned to camp with few losses. The Swedish peasants were said to have lost 1,600 of their men. Shortage of provisions (they were already eating horse meat) and of gunpowder for the cannons forced the king to re-embark, but the ships anchored again at Stockholm. His forces looted and drove off the enemy, and looted again. Wermann repeats that the king could have won if he had advanced. After dissension arose because of the pay, some

163 Rydberg, *Sveriges traktater*, III. 570–573. Failing an agreement, the Wendish towns acted as intermediaries and would have the right to fully support the side adhering to the agreement.

164 *Expeditio Danica adversus Holmiam anno 1518*, in *Scriptores rerum Svecicarum medii aevi*, III. 29–32.

soldiers were dismissed, forcing them to change sides, and so the king took fright and feigned truce with the enemy. The fleet then returned home. The text ends with the words, “very great famine”. The most substantial encounter, probably on 27 July, is usually located to the vicinity of Brännkyrka and Årsta (but is not given in the sources). Negotiations led to the signing on 12 September, of the truce aimed at “the good of these three kingdoms”, but the king unexpectedly sailed for home, taking with him the hostages whom the *riksföreståndare* had provided for the talks. Half of them, including Gadh, joined the royal side, but the others, including the later king of Sweden, Gustav Eriksson, did not. Christian II then officially renounced the truce.

Pope Leo X excommunicated the *riksföreståndare* and his associates for their acts against the archbishop, and placed the Kingdom of Sweden under an interdict. This allowed Christian II to act as the secular arm of the church, defending against the usurper of power. In 1519, Karl Knutsson led a campaign that took the western entrance to Sweden, and then joined Sören Norby to take Öland and Borgholm. Lübeck was again forced to suspend trade with Sweden. The royal forces that mustered in early 1520 included, alongside the Danish noble cavalry, mercenaries from France (some of whom had fought at Marignano),¹⁶⁵ Brandenburg, Pomerania, Saxony and Scotland. They advanced relatively easily over the frozen waterways. Waiting to confront them on the ice of the Åsunden was the *riksföreståndare* and the army he had raised. The encounter took place near Bogesund (now Ulricehamn) on 19 January 1520. All that is known of the battle is that the *riksföreståndare* was hit by a cannonball from a light gun of the royal artillery at the beginning,¹⁶⁶ and his army dispersed. In February, the council of the realm signed a truce, and in March, an agreement on the king’s rule of Sweden was made in Uppsala. The royal fleet arrived in Stockholm on 15 May,¹⁶⁷ thus completing the blockade, but the leader of the defence, the *riksföreståndare*’s widow Kristina Nilsdotter (Gyllenstierna), resisted. The king was pressed by costs, and the widow had limited options. On 5 September, Kristina signed the capitulation of the town and the castle, and the king signed a full amnesty going back to the time of his grandfather. On 31 October, the council of the realm recognized that the kingdom belonged to Christian by inheritance and not by election,¹⁶⁸ and he received the tributes at Brunkeberg. On Sunday 4 November, Gustav Trolle, once again archbishop, officiated at his coronation, and a three-day celebration ensued. The king, the council of the realm and many invited persons met on Wednesday, executions were held on Thursday and Friday, and the bodies were burned outside the town on Saturday.¹⁶⁹

165 Larsson, *Kalmarunionens tid*, 434.

166 Sten Sture the Younger died two weeks later on the frozen Mälaren, on the way to Stockholm.

167 Barfod, *Flådens födsel*, 153.

168 ...wt reeth arff och lagelig efterfölgiandhe, oc eckie epter naaghen withwælielse...: Rydberg, *Sveriges traktater*, III. 624.

169 The “Stockholm bloodbath” is still a disputed event. One interpretation is that the amnesty did not apply to heretics, and the acts of the former *riksföreståndare* and his supporters

The country was soon once again in ferment, a reaction to Christian II's decrees rather than the events in Stockholm. Christian had subordinated the ironworks of Bergslagen to a northern trading company that was being set up to thwart Lübeck, thus cutting off the Swedish miners (who had supported the *riksföreståndare*) from their traditional market. To meet his expenditure on the war, he levied an extraordinary tax on the country, which had long been suffering from the royal blockade, and he ordered the immediate disarming of the peasants. It must be borne in mind that the *allmoge* ("all the common people") constituted the third pillar of power, together with – or indeed frequently in opposition to – the castles and the council of the realm. This section of society was becoming increasingly assertive and lived under the constant threat of armies marching through. Many of the peasants refused to be disarmed.

After the king departed in January 1521, uprisings broke out in several places, notably in Småland. The rebels were joined by several of the divided remnants of the council of the realm, including Bishop Hans Brask of Linköping. Others departed for Denmark, and Gustav Eriksson, who had escaped from Denmark via Lübeck, proclaimed himself *riksföreståndare* at the end of August. Without supplies, the castles capitulated one after the other, some of their defenders joining the insurgents, such as the Saxon nobleman Berend von Melen at Stegeborg, who had come into the country with the royal army. By early 1522, the only castles held by the king outside Finland were Kastelholm, Stockholm, Kalmar and Älvsborg.¹⁷⁰ One group within the *allmoge*¹⁷¹ sent a letter from Tuna on 14 April renouncing their loyalty to Christian II. The royal fleet maintained the blockade of the country, and the rebels had only small ships. The two ships of the former *riksföreståndare* lay in Lübeck and Danzig.¹⁷² Without money, mercenaries, war material or a fleet, the insurgents could not have got far. In 1522, however, through the good offices of von Melen and at the repeated request of the *riksföreståndare*, Lübeck provided all of these. The allied fleet went into operation at Stockholm in autumn and partially held up a royal convoy led by Sören Norby consisting of nine warships, four or five supply ships and many transport ships. Norby broke through with his warships, but the opposing fleet captured thirty-one of the merchant ships, and the men, women and children on board (according to Norby, who lost his sister and one of her children, 600 people) were tied up and drowned in the water while the sailors made a great

fulfilled the criteria of *notorietas facti* and *notorietas iuris*. A still-authoritative analysis of the events is Lauritz Weibull, 'Stockholms blodbad', *Scandia* 1:1 (1928) 3–82. Cf. Gábor Nagy, 'Vikingek, Weibullok, Werbóczyk. A stockholmi vérfürdő emlékeztető', *Publicationes Universitatis Miskolcensis. Sectio Philosophica* 16:2 (2011) 179–209.

170 Larsson, *Kalmarunionens tid*, 453.

171 ...wii koperbergxmän, sölfbergxmän, järnbergxmän, staalbergxmän, köpstadzmän, crononis skatskyllige bönder, landbor och menige almoge, som bygge och bo i Dala och wtöffuär alt menige Sueriges riche... The full text: *Sverges traktater med främmande magter jemte andra dit hörande handlingar*, utgifne af O. S. Rydberg. Fjerde delen 1521–1571. Stockholm, 1888, 27–31.

172 Glete, *Swedish Naval Administration*, 139

noise to prevent the shouts of the victims from being heard.¹⁷³ Norby was obliged to leave the archipelago on 10 December. Despite being left without supplies, the Stockholm garrison held on for another six months.

As the Swedish uprising was under way, open war broke out between Christian II and Lübeck in August 1522. As the burdens of war grew, some Jutland councillors, claiming that the king had violated the conditions of his election,¹⁷⁴ conspired to depose him in favour of his uncle, Prince Frederick. In Viborg, the traditional location of the Jutland diet, the conspirators renounced their loyalty to the king on 20 January 1534. Frederick accepted the invitation to the throne and forged an alliance first with Lübeck and then with Ditmarschen (thereby blocking the route of mercenaries that might have come to the aid of Christian II). Schleswig and Holstein also renounced their obedience to Christian II, and the insurgents crossed to the island of Fyn. On 13 April, the king and his family departed Copenhagen for the Netherlands, presumably because he was no longer able to pay the mercenaries.¹⁷⁵ In May, Lübeck ships transported insurgent troops led by Hans Rantzau of Holstein to Zealand, and on 6 June, a small band of Gustav Eriksson's supporters, in the presence of Lübeck envoys, elected him king of Sweden. Gustav recognized a debt to Lübeck of 120,000 Lübeck marks.

The Scanian provinces and Norway gradually distanced themselves from Christian II, and his thrones were divided between Frederick and Gustav. On 1 September 1524, they reached a temporary agreement in Malmö. Gustav had to give up all the parts of Denmark and Norway he was occupying, except Viken, and Frederick recognized him as king of Sweden.

SUMMARY

Extending over an enormous area from Greenland (or at least from Iceland) to Russia and from the North Pole to the Eider, but sparsely and unevenly populated, the Kalmar Union comprised three internally divided and weakly centralized kingdoms. The king's efforts to hold the Union together were hampered by the fact that he was simultaneously duke of another union – Schleswig and Holstein. Tensions also arose from the relative indifference of the Danish elite towards the Russian threat and the Swedish elite's lack of interest in conflicts in Holstein. Just as it was not clear for a long time – until 1263 – that medieval Scandinavia would be composed of three states, the break-up of the Union – more precisely, the secession of Sweden – did not create a clearly-defined division. The state of affairs only crystallized with the conclusion of Count's War (Grevens Fejde, 1534–1536, the great civil war in Denmark), and it

173 Barfod, *Flådens fødsel*, 159.

174 According to the *håndfæstning's oprørsparagraf* (approximately "uprising clause"), if the king did not fulfil the agreement, they would first inform him, giving him the opportunity to change, and if this did not help, their loyalty to him would cease. At the end of the civil war, by agreement between the council and Christian III, the clause was deleted.

175 Gustafsson, *Gamla riken*, 77.

was not until the peace conference of Stettin in 1570 that the two Scandinavian kings renounced their claims to each other's territory. The spirit of the Union lived on in many forms, some institutional (such as the meetings held by the Danish and Swedish councils even in the seventeenth century) and some mental (for instance, as the precursor of nineteenth-century Scandinavianism).

The most important change concerning military history at the turn of the fifteenth and sixteenth centuries was certainly the birth of the navies. The royal fleet was the main instrument of the defence of Denmark and of control of the Baltic and North Sea routes, which were of increasing economic importance in the sixteenth century. Until 1522, it also provided the Union monarch with an unassailable tactical advantage over his Swedish opponents.

Warfare on land in our period predominantly meant the struggle between the king and a section of the Swedish aristocracy. The latter, with much different resources, tended to avoid open battles, and the outcome of sieges in Sweden was decisively influenced by the ability to supply forts by sea. The insurgent-turned-king Gustav Eriksson was obliged to make increasingly efficient use of his resources to hold on to power, notably by establishing a standing army in 1543. The Danish kings preserved the medieval model of reliance on mercenaries for land manoeuvres, and did not start to build a standing army until 1614.

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FIGURES

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'THE DEVELOPMENT OF FIREARMS IN EUROPE'

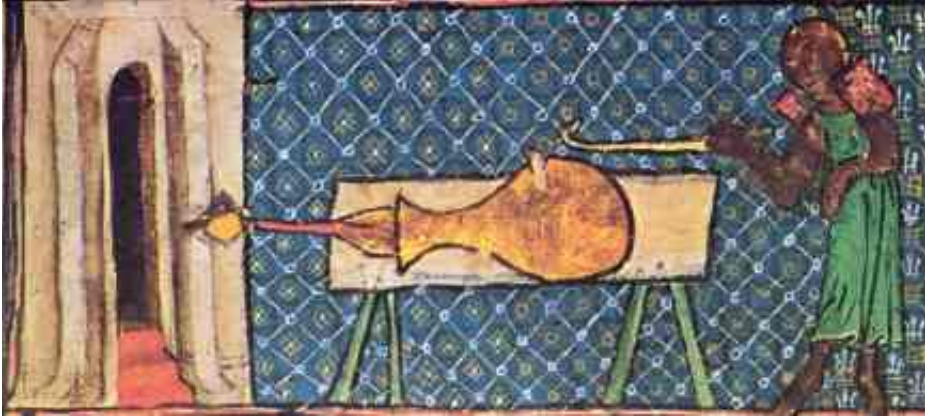


FIG. 1: EARLIEST PICTURE OF A EUROPEAN CANNON, 1326



FIG. 2: LOSHULTSBÖSSAN (LOSHULT GUN), POSSIBLY THE EARLIEST SURVIVING HANDGONNE,
SOUTH SWEDEN. CAST BRONZE, CALIBRE 31 MM, MID-FOURTEENTH CENTURY



FIG. 3: THE TANNENBERG HANDGONNE, FOUND IN THE CISTERN OF BURG TANNENBERG
IN SOUTHERN HESSE IN 1849. LENGTH 32 CM, CALIBRE 15.16 MM, WEIGHT 1,235 G.



FIG. 4: PUMHART VON STEYR, FROM STYRIA, AUSTRIA, THE LARGEST-KNOWN (BY CALIBRE) WROUGHT-IRON MEDIEVAL BOMBARD. MORE THAN 2.5 METRES LONG, WITH A CONICAL BARREL OF DIAMETER 76–88 CM

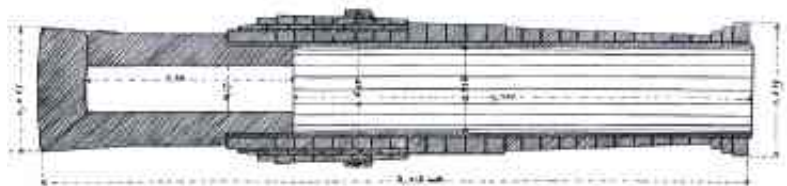


FIG. 5: THE DULLE GRIET (“MAD MEG”), A MEDIEVAL LARGE-CALIBRE GUN CAST IN GHENT. IT IS NAMED AFTER A FIGURE FROM FLEMISH FOLKLORE

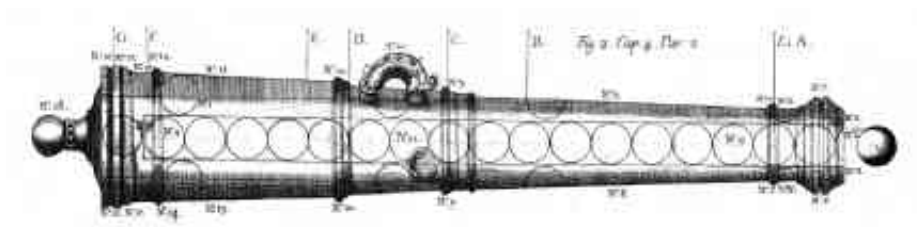


FIG. 6: CROSS-SECTION OF A 16TH-CENTURY BRONZE SIEGE CANNON, SHOWING HOW ARTILLERY PIECES WERE MEASURED IN CANNONBALL DIAMETERS



FIG 7: THE BURGUNDIAN GUN CARRIAGE



FIG. 8: SCHÖNE TREIBERIN, A SAXON FIELD GUN (FELDSCHLANGE) FROM 1521. SIX-POUNDER, CALIBRE 90 MM. NOTE THE TRUNNION IN THE MIDDLE OF THE BARREL UNDER A SEMICIRCULAR IRON PLATE



FIG. 9: A LIMBER (CENTRE) IN AN ILLUSTRATION FROM THE ZEUGBUCH OF EMPEROR MAXIMILIAN I



FIG. 10: HAND CANNON (STANGENBÜCHSE) BEING FIRED FROM A STAND.
FROM KONRAD KYESER'S BELLIFORTIS, MANUSCRIPT, 1405



FIG. 11: HAKENBÜCHSE. FORGED IRON HANDGONNE WITH A BORE THAT WIDENS
TOWARDS THE MUZZLE. THE TOUCH HOLE IS ON THE TOP. BARREL LENGTH 22.5 CM,
OVERALL LENGTH 83 CM, CALIBRE 3 CM



FIG. 12: HANDGONNES (HANDBÜCHSE) FROM BERN (ABOVE), CA. 1390,
AND FROM ITALY (BOTTOM), CA. 1450



FIG. 13: SWISS SOLDIER FIRING A HAND CANNON, WITH POWDER BAG AND RAMROD AT HIS FEET, CA. LATE 14TH CENTURY



FIG. 14: VERY EARLY DEPICTION OF A MATCHLOCK, FROM JOHANNES HARTLIEB'S KRIEGSBUCH, 1411



FIG. 15: EARLY GERMAN MUSKET WITH SERPENTINE LOCK, A SUBTYPE OF THE MATCHLOCK

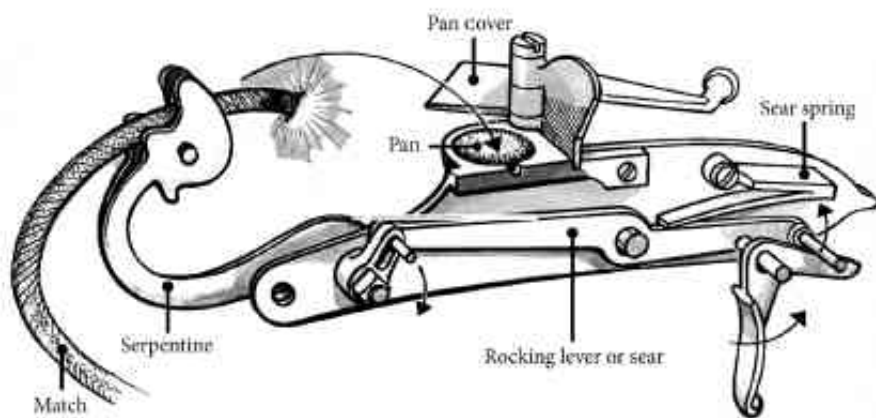


FIG. 16: THE MATCHLOCK



FIG. 17: LANDSKNECHT MATCHLOCK ARQUEBUS FROM NUREMBERG

FIGURES TO BUZÁS,
'LATE MEDIEVAL EUROPEAN MILITARY ARCHITECTURE'

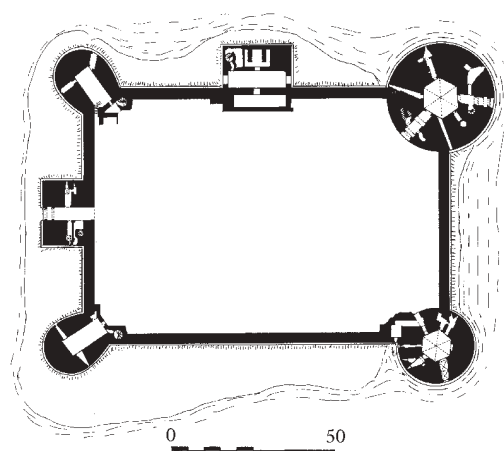


FIG. 1: PLAN OF CHÂTEAU DE HAM

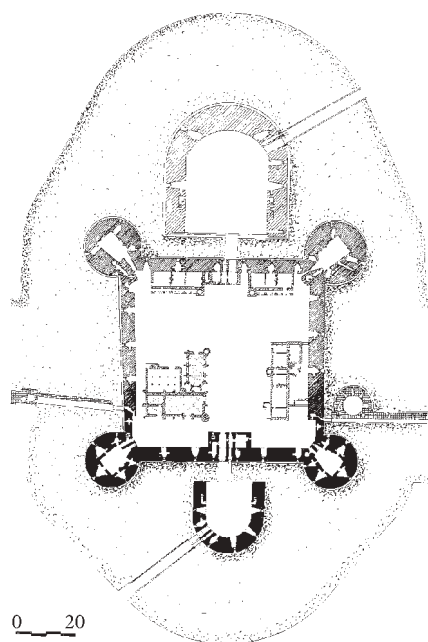


FIG. 2: PLAN OF THE CITADEL
OF DIJON



FIG. 3: ARTILLERY TOWER
IN CHÂTEAU DE FOUGÈRES

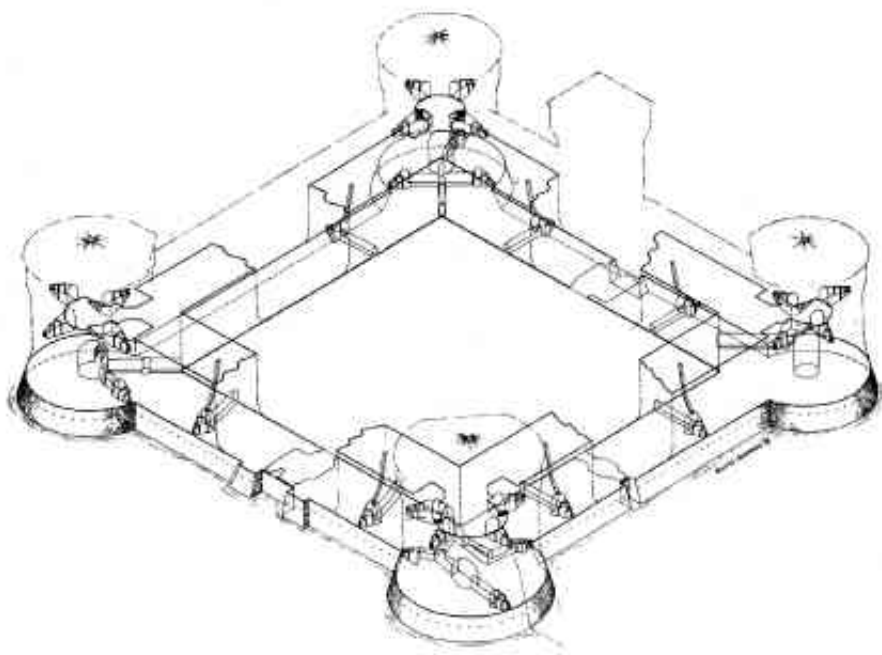


FIG. 4: EMBRASURES IN THE INNER CASTLE OF RAVENNA



FIG. 5: FORTRESS OF SENIGALLIA



FIG. 6: FORTRESS OF OSTIA



FIG. 7: CORNER BASTION OF CASTEL SANT'ANGELO, ROME



FIG. 8: BROLIO CASTLE

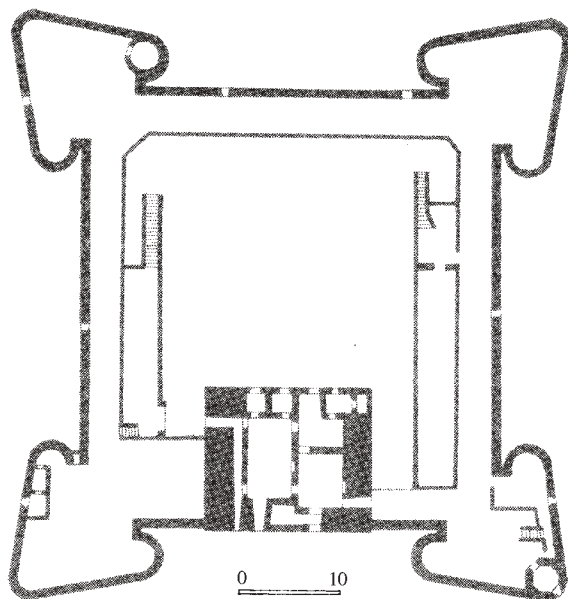


FIG. 9: PLAN OF THE FORTRESS OF NETTUNO

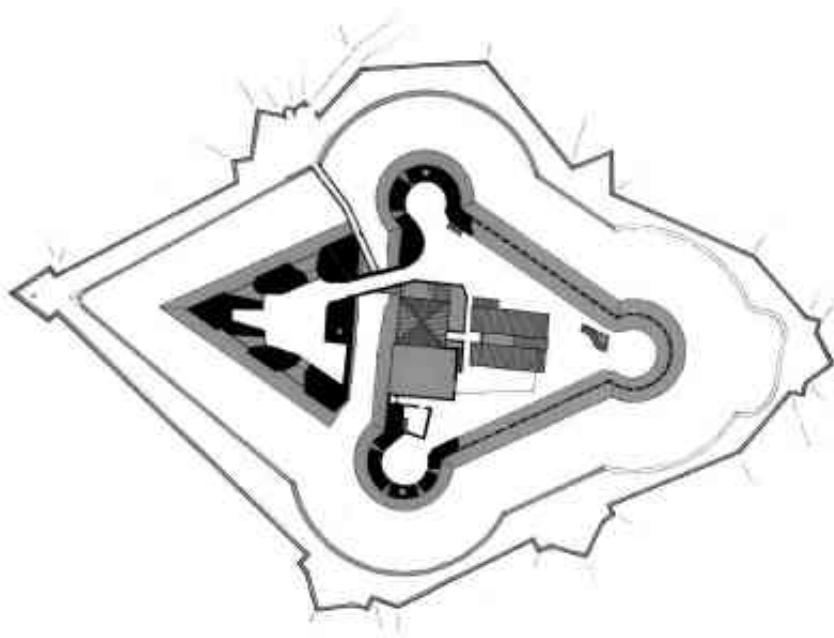


FIG. 10: PLAN OF THE FORTRESS OF SARZANELLO



FIG. 11: PLAN OF THE YEDIKULE, ISTANBUL

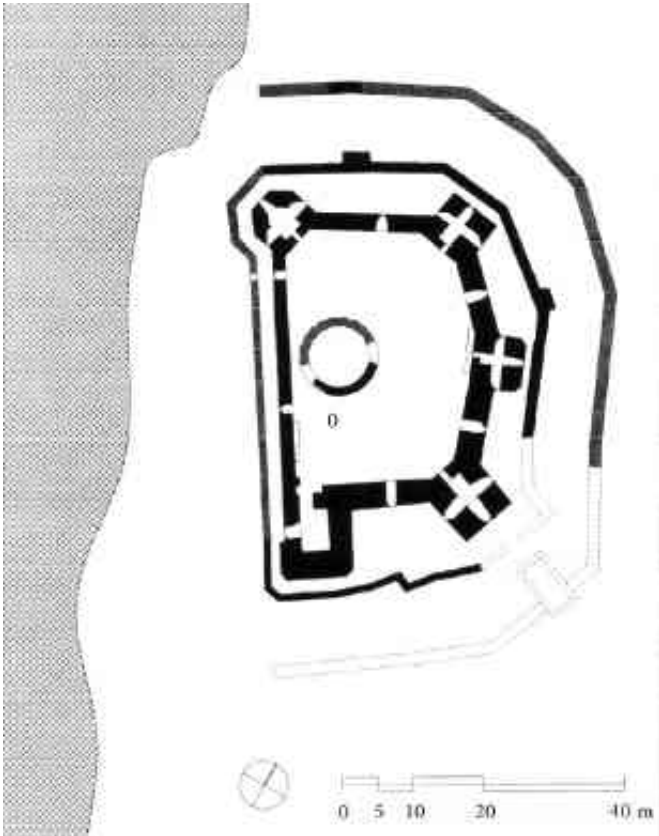


FIG. 12: PLAN OF THE FORTRESS OF RAMA (RAM)

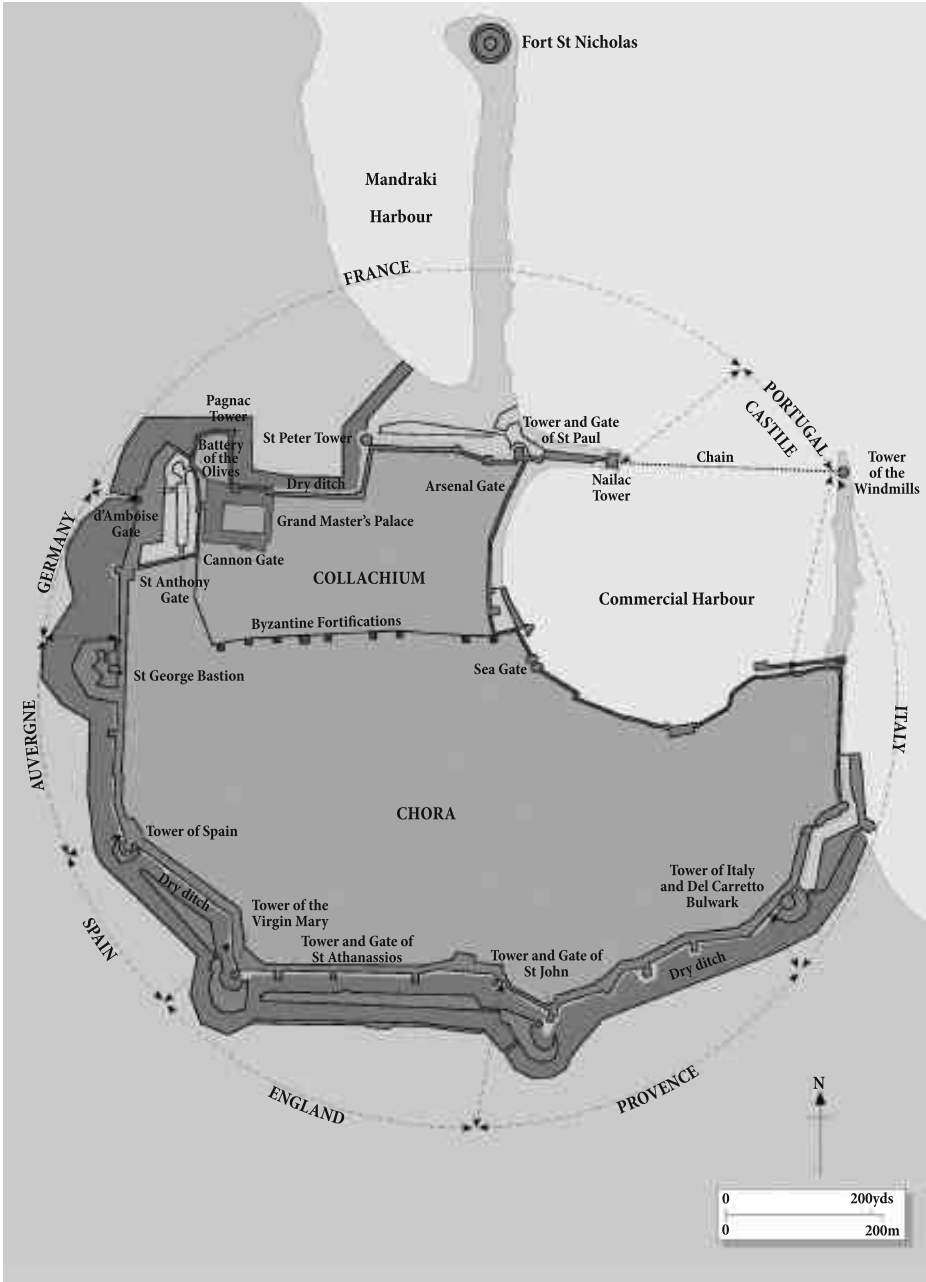


FIG. 13: PLAN OF THE FORTIFICATIONS OF RHODES IN 1522



FIG. 14: PLAN OF THE FORTIFICATIONS OF RAGUSA (DUBROVNIK)



FIG. 15: PLAN OF THE FORTIFICATIONS OF MONCASTRO (BILHOROD-DNISTROVSKYI)

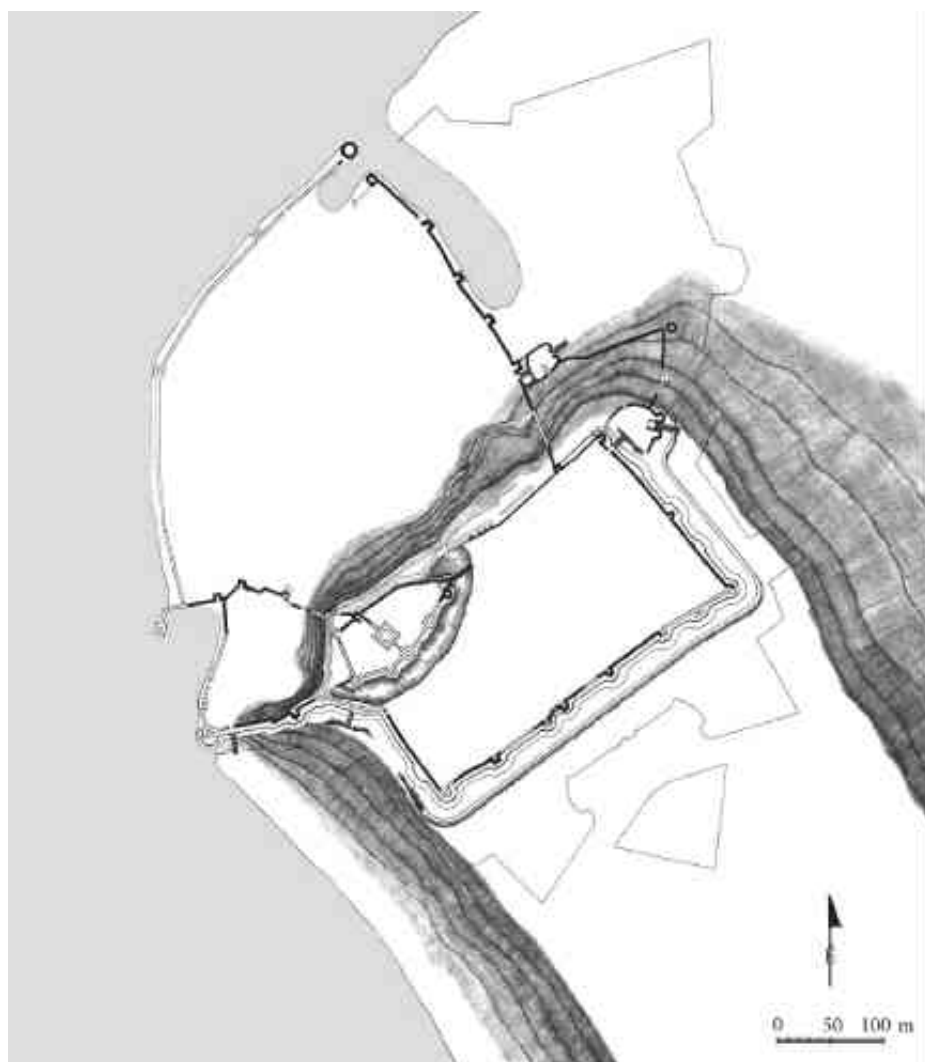


FIG. 16: PLAN OF THE FORTIFICATIONS OF NÁNDORFEHÉRVÁR (BELGRADE) IN 1521

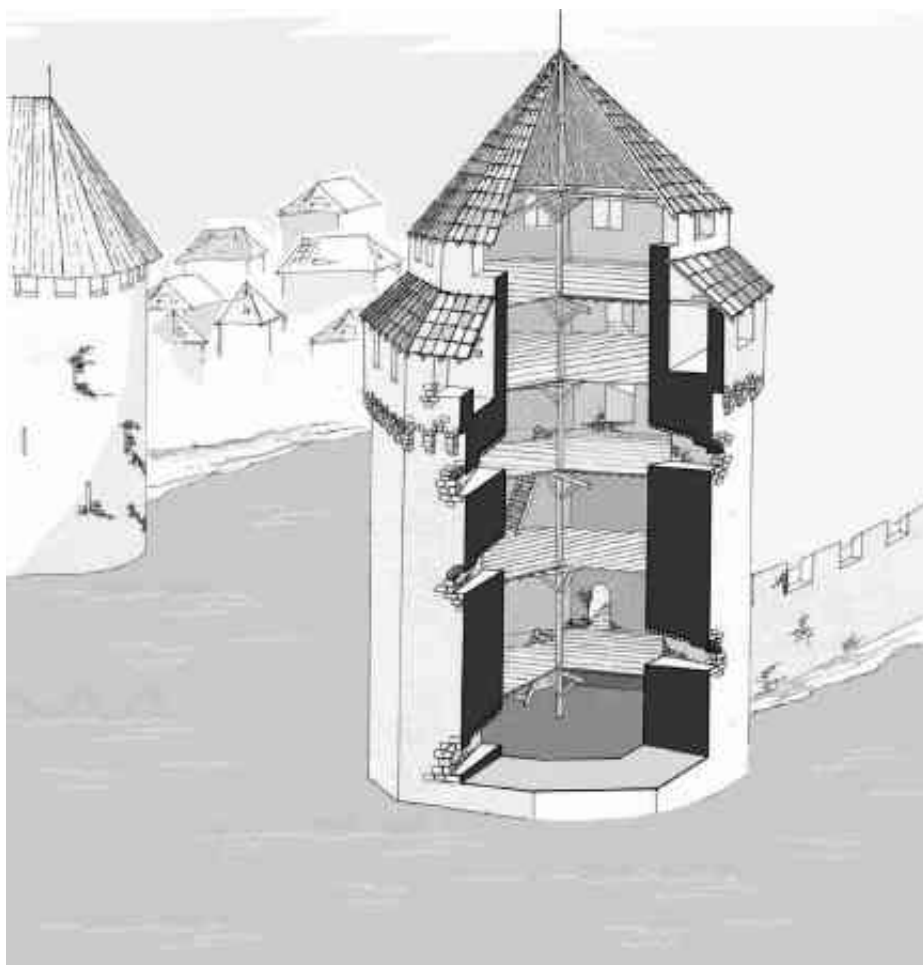


FIG. 17: ARTILLERY TOWER DEFENDING NÁNDORFEHÉRVÁR (BELGRADE), RECONSTRUCTION

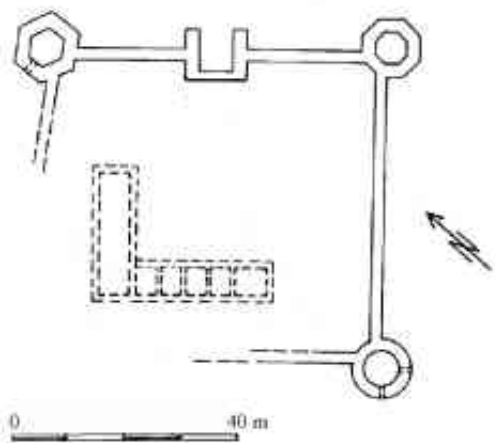


FIG. 18: PLAN OF THE FORTRESS OF KÖLPÉNY (KULPIN)

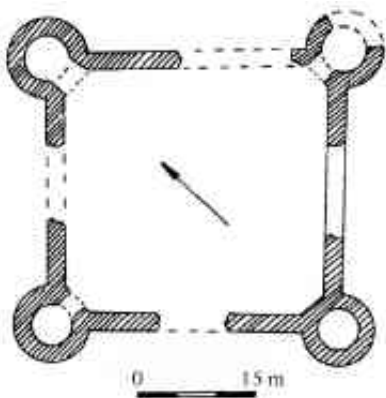


FIG. 19: PLAN OF THE FORTRESS OF ZIMONY (ZEMUN)

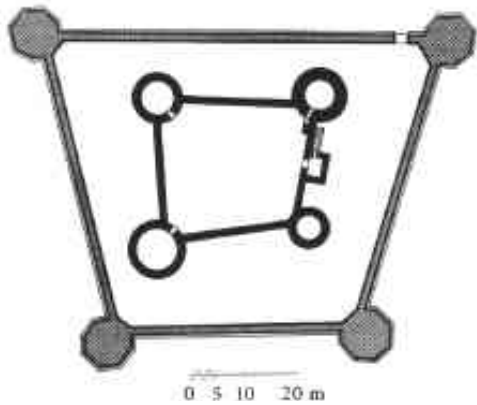


FIG. 20: PLAN OF THE FORTRESS OF BUZZSIM (BUŽIM)

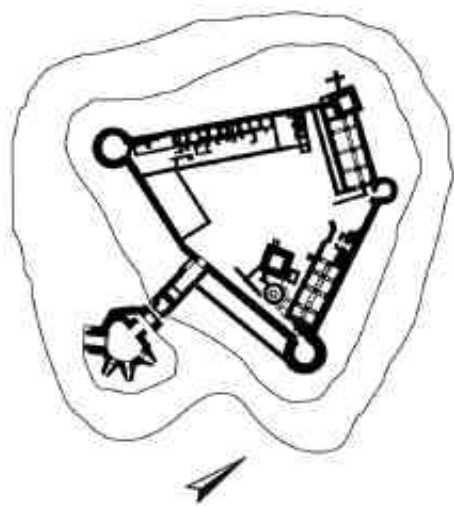


FIG. 21: PLAN OF THE FORTRESS OF BÁCS (BAČ)

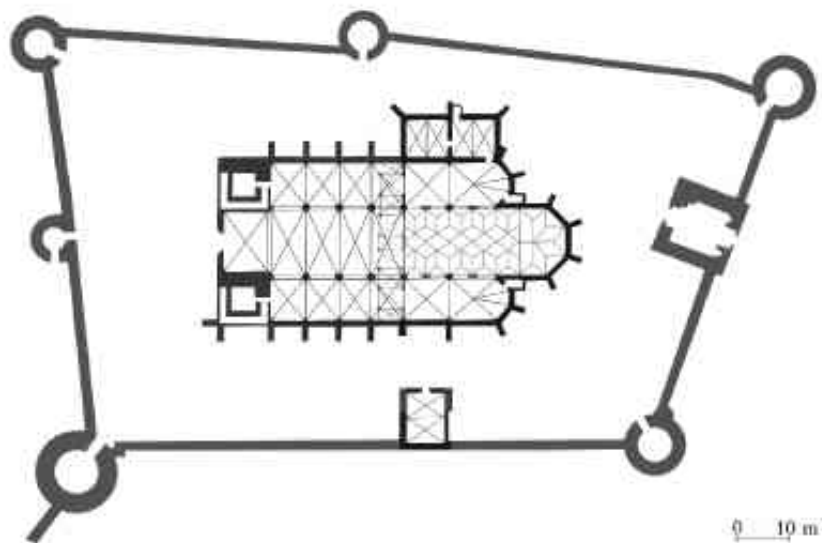


FIG. 22: PLAN OF THE FORTRESS OF ZAGREB IN THE LATE FIFTEENTH CENTURY

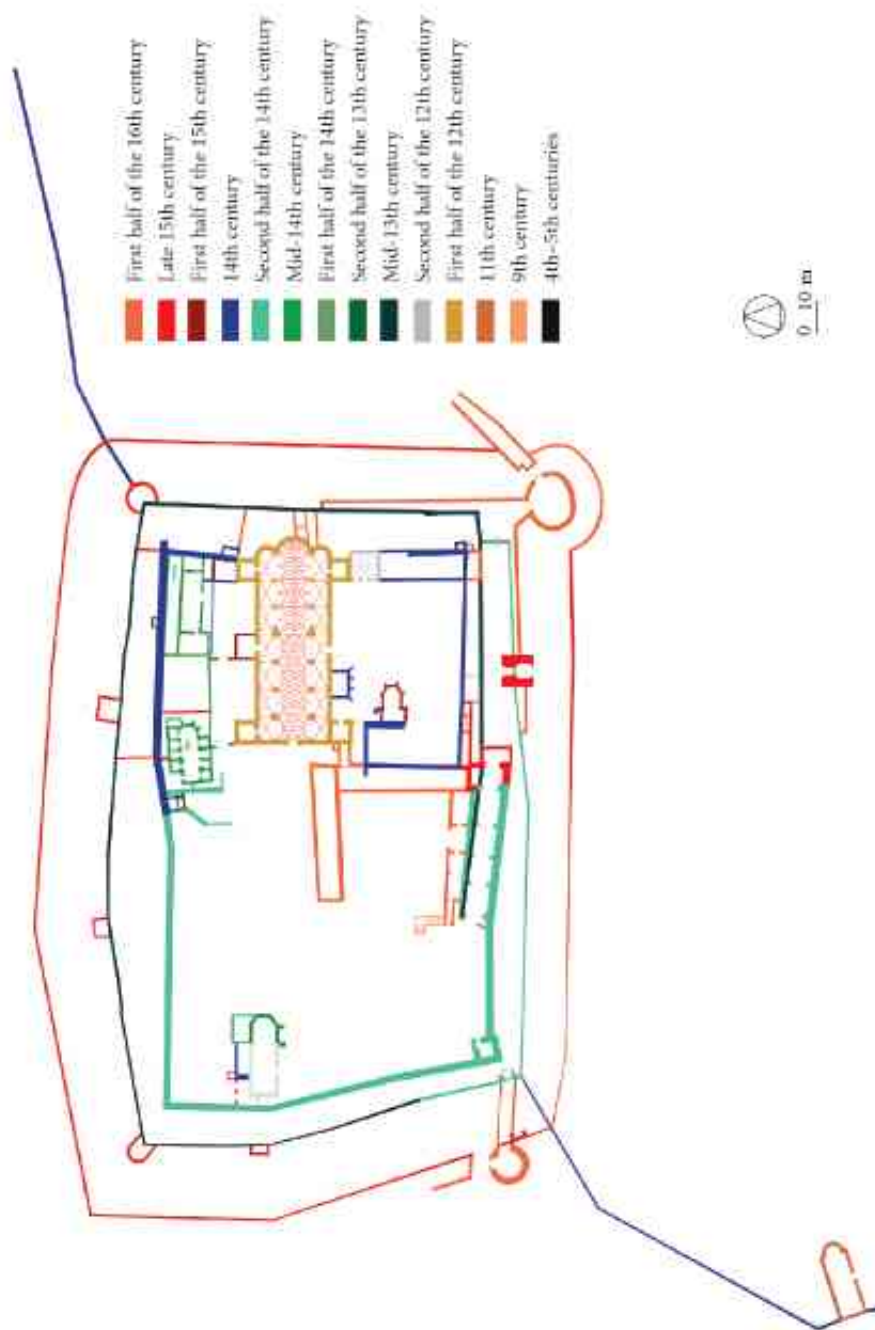


FIG. 23: PLAN OF THE FORTRESS OF PÉCS IN THE EARLY SIXTEENTH CENTURY



FIG. 24: BARBICAN OF THE FORTRESS OF SIKLÓS

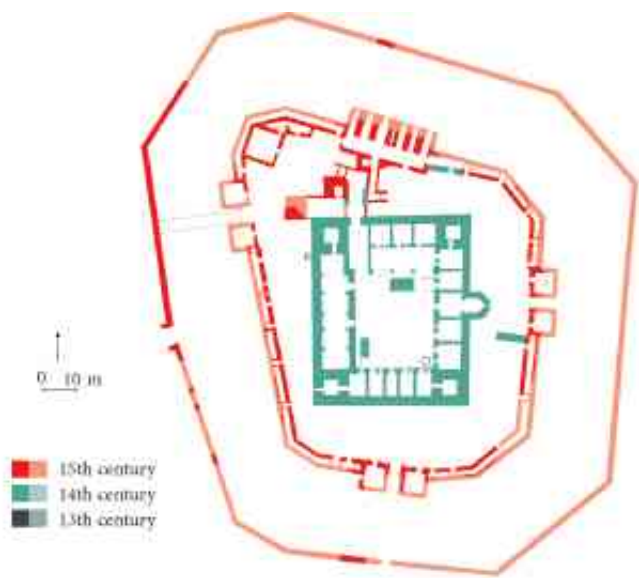


FIG. 25: PLAN OF DIÓSGYŐR CASTLE IN THE LATE FIFTEENTH CENTURY

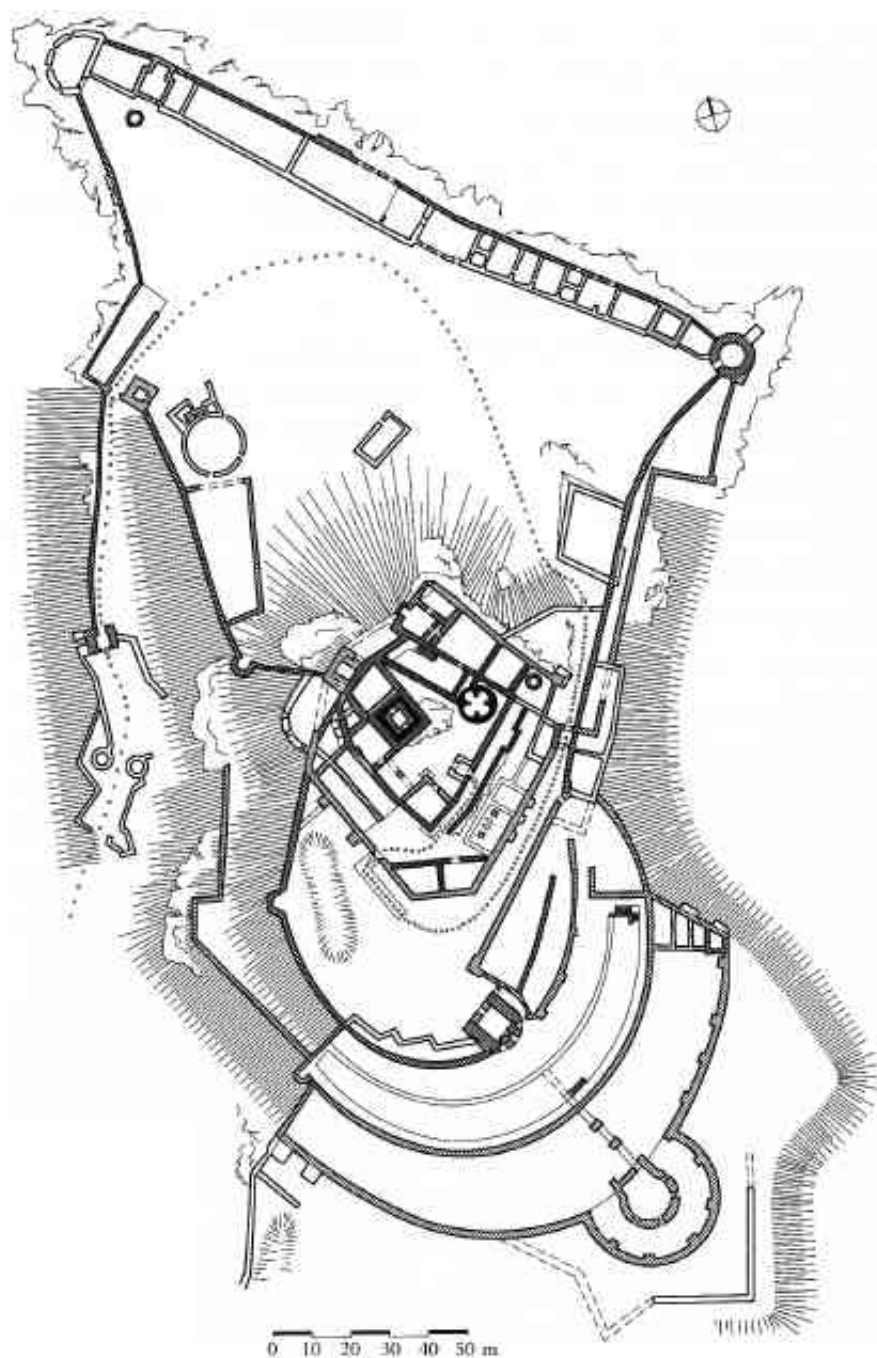


FIG. 26: PLAN OF THE FORTRESS OF TRENCSEN (TRENCÍN)

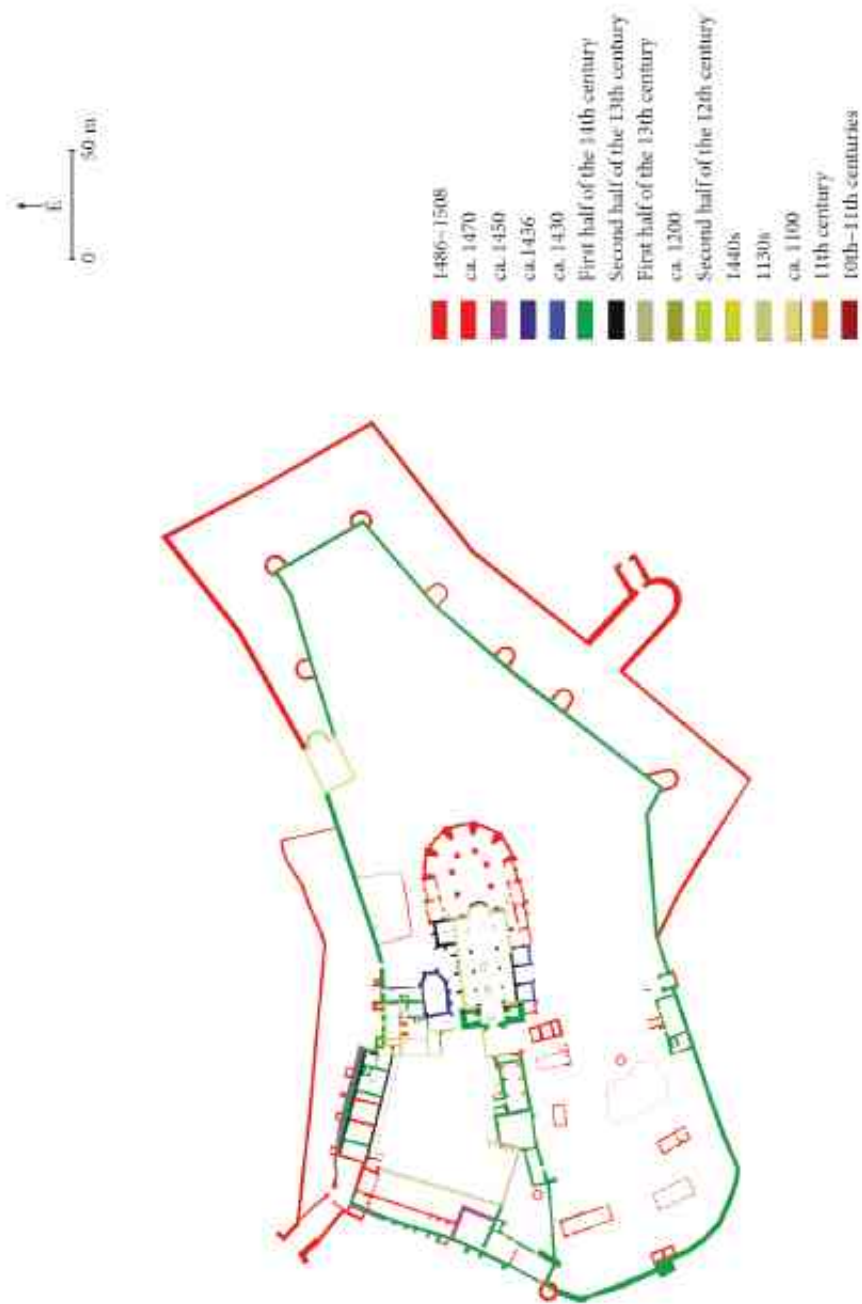


FIG. 27: PLAN OF THE FORTRESS OF ÉGER IN THE EARLY SIXTEENTH CENTURY

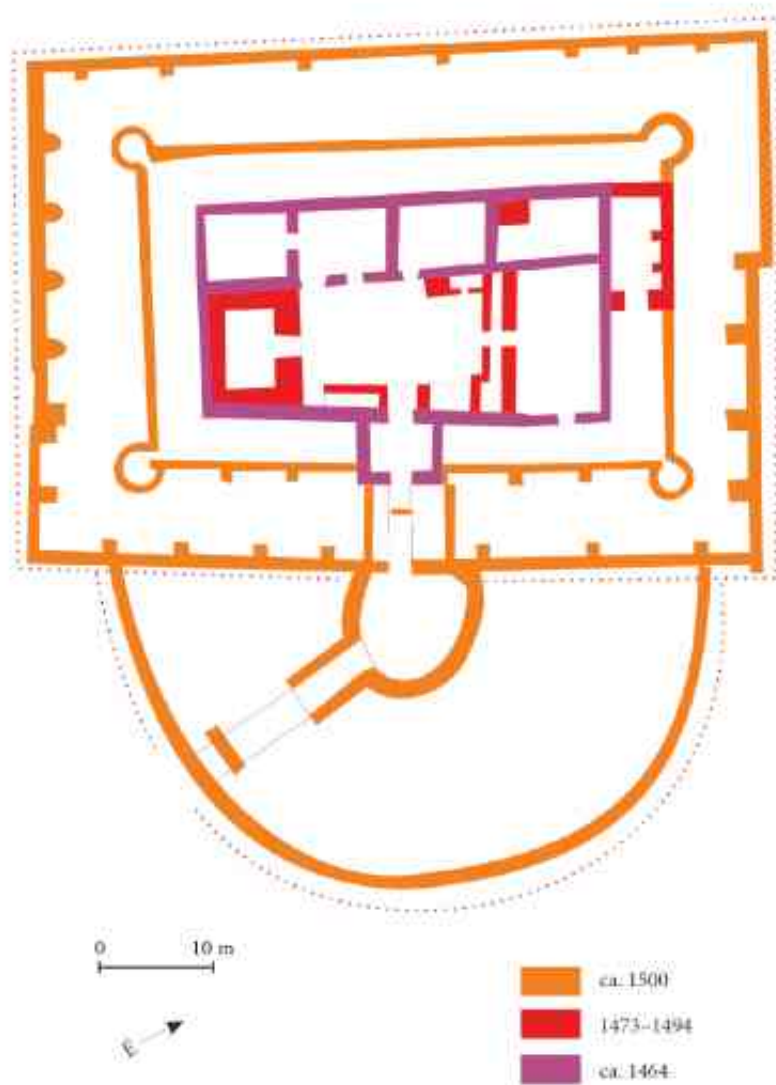


FIG. 28: PLAN OF THE FORTRESS OF NAGYVÁZSONY IN THE EARLY SIXTEENTH CENTURY

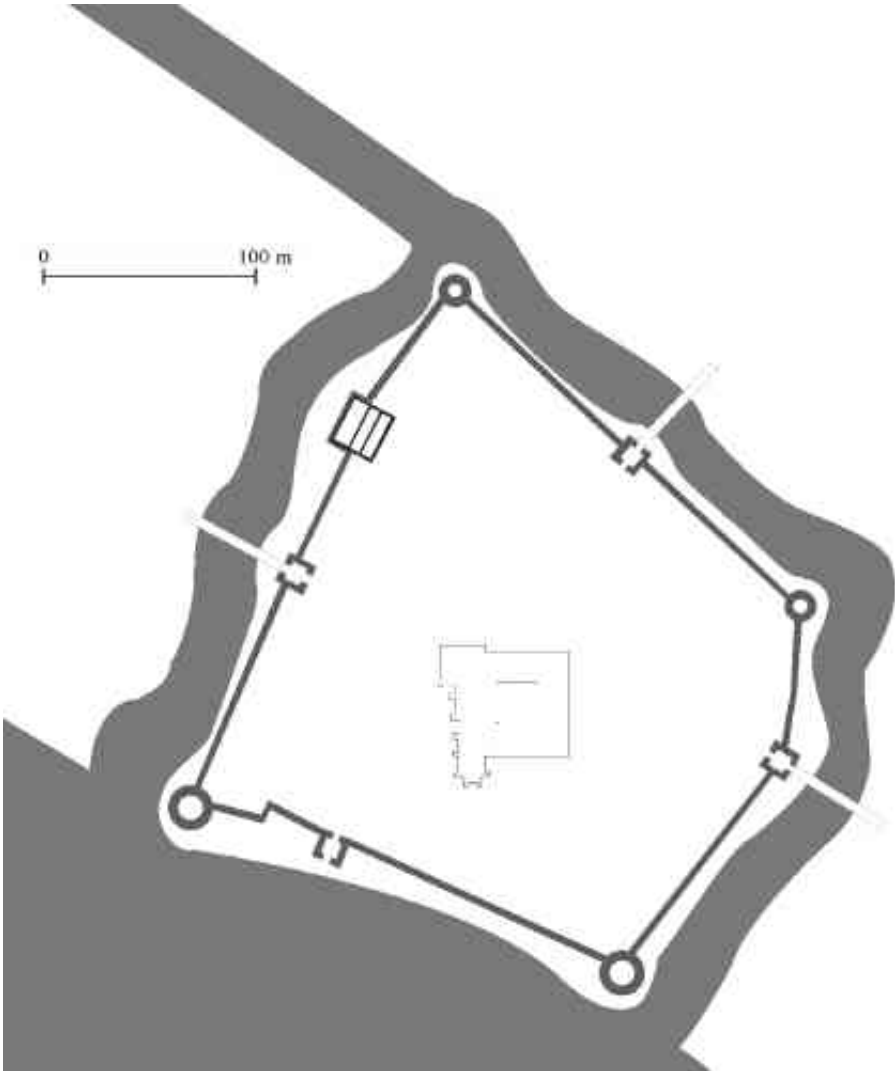


FIG. 29: PLAN OF THE FORTRESS OF SZEGED IN THE EARLY SIXTEENTH CENTURY



FIG. 30: VIEW OF THE FORTRESS OF SZEGED IN THE LATE SEVENTEENTH CENTURY

FIGURES TO SASHALMI,
‘THE MILITARY ORGANIZATION AND ARMY
OF THE GRAND PRINCIPALITY OF MOSCOW’



FIG. 1: REPRESENTATION OF THE BATTLE OF ORSHA, 1514,
IMAGE FROM THE RUSSIAN ILLUSTRATED CHRONICLE



FIG. 2: POLISH PAINTING OF THE BATTLE OF ORSHA, 1514. CIRCLE OF LUCAS CRANACH THE ELDER, 1525-1535

FIGURES TO SZOKOLA,
‘THE MILITARY ORGANIZATION
AND ARMY OF THE POLISH-LITHUANIAN
COMMONWEALTH’



FIG. 1: HUSSARS
IN THE 1514 BATTLE OF ORSHA.
DETAIL OF POLISH PAINTING
OF THE BATTLE OF ORSHA,
1514



FIGURE 2:
INFANTRY HANDGUNNERS
IN THE 1514 BATTLE OF ORSHA.
DETAIL OF POLISH PAINTING
OF THE BATTLE OF ORSHA, 1514



MOHÁCS 1526–2026 RECONSTRUCTION AND REMEMBRANCE

The Battle of Mohács (29 August 1526) is a singular event of symbolic significance for Hungary and the whole of Central Europe. Over the last thirty years, extensive work by Hungarian historians to revise the “dark legend” of Mohács has resulted in a much more balanced account of the ruling Jagiellonian dynasty (1490–1526) and the thirty-five years that preceded the battle. The battle itself also has come to be viewed differently: having been previously dismissed by military historians as an “insignificant” encounter (where the “obsolete medieval Hungarian military organization” met its end), Mohács has been revealed as one of the largest battles of the early modern period, fought between two armies that were equally “modern”.

This book attempts to give further points of reference for connecting the battle to general military history. The authors present the military organizations and armies of the principal European empires and states, examining how they fought their wars, at a time when all participants were obliged to make fundamental changes. The military affairs of each country are presented in chapters of more or less uniform structure, starting with the key indicators of military capabilities: territory, population and state revenues. Hopefully, this European roundup will also contribute to a more

realistic assessment of the options and performance of the Hungarian political elite that fought the Battle of Mohács.

The book will be useful for those interested in the general military history of the era and as a textbook for university students.

ON THE VERGE OF A NEW ERA



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