The Typology and Use of Staff Weapons in Western Europe c. 1400 – c. 1550

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The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others.

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Thesis Abstract

This thesis is an interdisciplinary study of medieval and early modern staff weapons, with the goal of creating a new typology and classification system. For the purposes of this thesis surviving material culture and iconography from several museums and collections have been examined and compared. The largest number of objects studied belongs to the Royal Armouries, where I had the privilege of closely examining key examples.

In contrast to most previous studies that usually approach the subject of the typology of staff weapons from a perspective of linear evolution, this thesis attempts to revisit and re-examine the relationships of different weapon groups by thoroughly investigating their forms and how they affected their function. A new typological system of categorization is suggested by combining previous scholarship and new ideas for easier identification of different staff-weapon groups and sub-groups whilst at the same time keeping it as simple, descriptive and precise as possible. The design of this new typological system relies on the use and comparison of iconography and surviving weapons.

This thesis also makes use of disciplines such as physics and materials science to better understand how certain technical feature affected the use of staff weapons. Disciplines that have not been widely used in this field can produce new data on the construction and function of the examined objects. Non-destructive experimentation and metallurgical analysis are used to analyze technical characteristics of staff weapons that have hardly been considered in previous scholarship.

The overall aim of this thesis is to create a typology that can be used as a reference point for future investigation of staff weapons. The alternative disciplines introduced and used will hopefully inspire new perspectives and further research.

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Chapter I: Introduction

1.1. Initial Information

This thesis examines the different forms and uses of staff weapons which developed and were wielded throughout the fifteenth and first half of the sixteenth century in central and Western Europe. Through the study of surviving weapons and artistic representations, an interpretation of their use will be attempted. This will culminate in a typology of staff weapons. A classification of the different types of this group of weapons will be made, and the complexity and confusion caused by previous studies and organizational systems will be discussed. Considering their military importance and the number of surviving examples from the late Middle Ages and the Early Modern period staff weapons have been largely understudied in modern scholarship. Both brief and lengthy works tend to assess the form of smaller groups of staff weapons from an evolutionary perspective, ignoring the realities of their use. The aim of this research is to bring together previously studied topics, address problems, and introduce an interdisciplinary approach in order to investigate details of this important weapon group.

The choice of the timeframe is influenced by the fact that although the use of staff weapons increased in the early fourteenth century, as can be seen in contemporary art, as well as in surviving material culture, the peak of their use and production came later in the fifteenth and early sixteenth century. This increase is connected to the changes of military organization and conduct of war, which influenced the technological production of weapons and vice versa. These changes were integrated in the martial culture of the examined geographical area even further in the fifteenth century, as the production of artistic depictions of staff

weapons in addition to surviving examples increased significantly. In the sixteenth century weapon forms developed further, always as part of ever-evolving warfare, and military themed artistic production focused often on the soldier, with a variety of staff weapons being illustrated. As a weapon group staff weapons are part of the equipment used by infantry. The examination of the wider use of staff weapons can be better understood considering that the context is the major conflicts that took place within the aforementioned geographical and chronological boundaries, such as the second half of the Hundred Years' War, the Hussite Wars, the Wars of the Roses, the Burgundian Wars, the German Peasants' War and the Italian Wars (sometimes also referred to as the Habsburg-Valois Wars because of the opposing forces in its their later years). Most of the conflicts mentioned triggered some form of artistic production, often literary or pictorial in nature, and in these survive several depictions of staff weapons across the wide chronological spectrum studied herein. Because the examination of material culture and consistent iconography is necessary for this research, the starting point will be the early fifteenth century. Earlier examples from most weapon categories are scarce and the artistic mediums and techniques do not depict weapons with a level of detail that is sufficient to produce solid observations base on art-material culture comparison. Artistic production flourished in fifteenth century Europe and artistic techniques progressed often towards the direction of realism, which makes the study of objects in the more precise. This continued in the early sixteenth century, and after the spread of printing, artistic mediums such as the woodcut, detailed-based iconography became common even outside the boundaries of painting. The bulk of surviving staff weapons is roughly dated after the middle of the fifteenth century and especially after the first quarter of sixteenth century. The examination of

weapons is paramount to this research and the lack of material examples in certain weapon categories will be addressed.

The main issue that this study has to face is the problem of terminology. When it comes to the identification of weaponry both modern scholarship and primary material often use unidentifiable generic terms and generally do not go into detail regarding the use of weapons. Classification systems are necessary artificial concepts that help in the study of objects. Because of the chronological spread of the relevant scholarship and the lack of communication and consideration within the current terminology and classification varies in different works. This thesis will bring together previous scholarship and new ideas and will create a new system for the categorization of staff weapons. The terminology that will be used for the different groups and sub-groups will be a combination of new ideas and well established terms.

The structure of this thesis is based around the directly connected dipole of form and use. The first chapter provides a brief survey of previous research on staff weapons, a description of the methodology to be followed in the thesis, and a brief overview of the military background of the period as discussed in secondary literature and how it affected the spread of staff weapon use. The following chapters will revolve around the classification and the technical characteristics of staff weapons, which are amongst the usual themes explored in pre-existing scholarship but usually separated examining only smaller groups or aspects of staff weapons. Additionally, certain mechanical aspects of the weapon will be discussed through the lens of physics and materials science in order to better understand more of the weapons and their use, through an approach that has rarely been used

before. The final chapter is a case study on a specific staff weapon that will serve as an example to apply the different theories explored in this thesis.

The combination of iconography, science and surviving weapons facilitates the investigation of the development of staff weapons and their use. Expanding the potential of research by approaching the form and use of staff weapons via different perspectives and disciplines such as archaeology, art history, physics, mechanics, and kinesiology, can produce answers and results that have not been considered by previous research, or in some cases at least raise new questions.

1.2. The Staff Weapon (1400-1550)

A staff weapon is a two-handed weapon used on foot, which depending on its type can have different offensive uses such as thrusting, cutting, pulling, throwing and bludgeoning. It can be edged or blunt. It mainly consists of two parts: a long wooden shaft surmounted by a metal head. Additional parts are sometimes added on the shaft as part of a finishing process such as reinforcing metal strips, called langets. On occasion the shaft is made of steel or other metals, and the head can sometimes include wooden parts. The length of the shaft varies depending on the category of the staff weapon and can be from one up to six metres. Additional parts might be attached to the weapon such as a spike on the lower end of the shaft, protective hand-guards, or mechanisms to safely secure the head on the shaft. The utility of staff weapons revolves around the reach they can provide to the user as well as the different offensive potential based on the technical characteristics of the weapon's head. Their versatility depends on these characteristics and can potentially allow the user to perform a succession of hits

with the consecutive use of different features, or complex actions such as disarming, tripping, tangling and pushing. The aim of the wielder is to increase his threat at range and by an increased power deriving from the kinetic energy produced through perpendicular thrusts and centrifugal strikes. Staff weapons can be devastating against both infantry and cavalry, as most were designed to penetrate armour. Their length allowed the user to fight enemies on foot from distance and to be able to withstand a cavalry charge, or to cut down a mounted opponent. At the same time the increased length was also their weakness as they could not be used effectively in close quarters combat.

Simpler staff weapons used for thrusting, such as the spear, have been in use for thousands of years. Variations of long spears of up to six meters long have been used in antiquity, as well as throwing spears and javelins in Europe, the Near East and the Mediterranean. However, most of the weapons examined and included in the aforementioned definition are more complex than their predecessors and many of them initially originated from agricultural tools or other weapons with the addition of the shaft. This will have to be addressed individually for each weapon category. Before most staff weapons became obsolete in warfare, after the examined period, certain types became heavily decorated and were used for display, which signaled their decline.

1.3. The Military Context of the Use of Staff Weapons

1.3.1. A Time of Wars

The fifteenth and sixteenth centuries were a period of conflict across Europe. It was also a time of innovation and transition in technology, which affected military technology. New instruments of war in combination with further developments in military thinking changed the conduct of war. War changed significantly both on land and at sea, possibly reflecting the socio-political changes in the organization of different European forces of this time.[1] It is pointless to argue, at least in the context of this research, to what extent military technological changes such as the extensive use of artillery or the development of specific staff weapons affected the conduct of war from a technologically deterministic point of view or if these weapons were developed to fit into a certain military way of thinking.[2] What is important is to construct an initial framework for the better understanding of the historical context in which staff weapons were used.

The importance of infantry warfare was not something that occurred only in the examined period. Already from the late thirteenth century the role of infantry was increased and the equipment used was often specialized to fight against cavalry.[3] Changes in warfare such as the increased use of combined arms, that is to say infantry, cavalry, and artillery working in conjunction, become

[1] Frank Tallett and D.J.B. Trim, "Then Was Then and Now is Now': An Overview of Change and Continuity in Late-Medieval and Early-Modern Warfare', in *European Warfare: 1350-1750*, ed. by Frank Tallett and D.J.B. Trim (Cambridge: Cambridge University Press, 2010), pp. 1-26. The article discusses changes in warfare, and problems that arise discussing them, such as cultural differences, technological determinism, and state problems in the funding and organization of an army.
[2] The interpretation and importance of technological determinism in military history is a lengthy subject which will not be discussed here, because of the lack of space and due to the factor that it remains a topic of subjective approach for modern academics.
[3] John France, *Western Warfare in the Age of the Crusades: 1000-1300* (London: UCL Press Limited, 1999), p. 28.

discernible from the early fourteenth century onwards.[4] Through several battles such as Courtrai (1302), Bannockburn (1314), Morgarten (1315), Laupen (1339), Morlaix (1342) and Crécy (1346), infantry forces started to demonstrate their importance in determining the outcome of a conflict.[5] This was a major change that ended the dominant role of the cavalry on the battlefield.[6] The shock caused by the charge of the cavalry often lost its effectiveness against the thicket of long staff weapons. Through several successful battles infantry forces started claiming their importance to the outcome of a conflict, alongside the cavalry, which had previously been the decisive factor of a battle. These changes kept developing and becoming more and more evident as many European forces were tangled in a situation of near-constant war, and with the technological improvements brought into warfare, the face of battle kept changing.

The fifteenth century not only saw the continuation of the Hundred Years' War which lasted for the better part of it, but major conflicts were fought throughout Europe as borders kept shifting and forces were reshaped. Great conflicts of the fifteenth century that reflect these changes in warfare include the Hussite Wars (1419-1434), the Old Zürich War (1440-1446), the Revolt of Ghent (1449-1453), the Thirteen Years War (1454-1466), the Wars of the Roses (1455-1487), the Swiss-Burgundian Wars (1474-1477), the War of Ferrara (1482-1484), the Swabian War of 1499, the German Peasant Revolts (1524-1525) and many

[4] For the study of the evolving importance of infantry in warfare see Kelly DeVries, *Infantry Warfare in the Early Fourteenth Century: Discipline, Tactics and Technology* (Woodbridge: The Boydell Press, 2006). The author discusses the increasing involvement of infantry in decisive victories, and its value and use as a disciplined defensive line, in period when the composition of the troops would not be completely professional. DeVries tackles problems of studying narratives that discuss the battlefield, the number of participants and their positioning. The study focuses on the ability of infantry to counter opposing cavalry forces through positioning, choice of battlefield and disciplined tactics. One of the few drawbacks of this study is the lack of addressing the infantry equipment, but perhaps this is entwined with the lack of information from primary sources.

[5] Charles W. C. Oman, *A History of the Art of War: Middle Ages from the 4th to the 15th Century* (London: Methuen, 1924), pp. 426-27.

[6] Malcolm Vale, *War and Chivalry: Warfare and Aristocratic Culture in England, France and Burgundy at the End of the Middle Ages* (London: Duckworth, 1981), pp. 100-105.

more. The Italian Wars (1494-1559), which can be broken down into smaller conflicts depending on the shifting political and military alliances, were the greatest conflict of the period. This is not true only in scale, as it involved all the great European powers in one form or another, but also because its outcome had a significant impact on shaping modern Europe.[7] Most importantly, for this research, most staff weapons examined were produced and used during this time. This was a result of the increasing use of larger and better equipped infantry forces. Besides the increasing importance of infantry in battle the same period was marked by the increasing use and development of artillery. Additionally, in contrast to what many historians have supported even in this period, the role of cavalry was far from being obsolete, and cavalry forces were often the decisive factor in major victories.[8] The fifteenth and early sixteenth century are sometimes famous or infamous for the decline of cavalry and the dominance of infantry and artillery, but the best way to describe the changes in warfare in this period is by acknowledging the combination of the aforementioned forces on the battlefield.

1.3.2. Professional soldiers and mercenaries

The fifteenth century also saw a drastic change in the composition of armies, mainly through the transition to a wider use of professional soldiers. From the middle of the fifteenth century the Holy Roman Empire, the Swiss Confederacy, the Italian City States, France, Spain and Portugal started to increasingly maintain standing armies composed of professional troops, auxiliaries, and employ foreign

[7] Michael Mallett and Christine Shaw, *The Italian Wars: 1494-1559* (Harlow: Pearson Education Limited, 2012), pp. 290-300.
[8] Christopher Allmand, *The Hundred Years War: England and France at War c. 1300 – c. 1450* (Cambridge: Cambridge University Press, 2001), pp. 66-67.

or domestic mercenaries, especially during campaigns.[9] Charles V of France (1338-1380) was the first to start reforming his army to maintain permanent professional cavalry after 1360.[10] However, actual professional armies only started emerging a century later with the aforementioned standing armies of Milan, Florence, and Venice, maintained by the respective city-state to defend them or even seek employment under third parties for local military needs.[11] Part-time service gave its place to permanently stationed troops that would drill together.

Throughout the fifteenth century the Swiss would demonstrate an important superiority over other armed forces. Swiss soldiers were well-trained as a result of a localized military tradition. After the reform of the Swiss Confederacy in the first decade of the fifteenth century, conscription became mandatory in the Swiss cantons, which meant that most men had significant military training and that every city always had a standing army, which also became the Confederacy's most popular export in the fifteenth and early sixteenth centuries. The frequent campaigns and conflicts of the second half of the fifteenth century and the early sixteenth century which involved different belligerents, and the constant threat of war was what may have led to this new model of standing armies consisting of professionals in long or permanent service. The increase in manpower that was a result of unemployment and civic disorder lead to the increase of larger fighting forces that would fight for anyone that was able to pay for their services.[12] This was augmented during the Italian Wars due to the fact that campaigns lasted longer and the level of trained troops resulted in experienced soldiers of all sides. This meant that the need for drilled professional troops escalated quickly after 1494. Of

[9] Vale, p. 147.
[10] Philippe Contamine, *Guerre, État et société à la fin du Moyen Age* (Paris: Mouton, 1972), pp. 3-131.
[11] Michael Mallett, *Mercenaries and their Masters: Warfare in Renaissance Italy* (Barnsley: Pen and Sword, 2009), pp. 25-75.
[12] Vale, pp. 154-55.

course a standing force would only be a fragment of an army, and during a campaign or defensive war more soldiers would be conscripted from amongst the local populace or employed as mercenaries. Untrained soldiers of fortune were a common thing in the second half of the fifteenth and the beginning of the sixteenth century.[13] Many of the inexperienced soldiers that joined mercenary armies stayed in service for long periods and their experience was reflected in increased wages. The stability of service and the constant threat of war contributed to military development in technology, tactics, and the general transformation of war in ways faster than ever before. It is no wonder that contemporary vocabulary started including specific terminology for the description of organized mercenary companies that would act as regular armies once hired, such as the Italian *condottieri*, the French *soldats de fortune* or the Spanish *aventureros*, as well as the two most famous types of soldiers in the examined period, the Swiss *Reisläufer* and the German *Landsknechts*.[14]

1.3.3 Training in the fifteenth century

By the early fifteenth century tournaments no longer served as a militarily valid form of training, especially for cavalry warfare. In times of peace and by the end of the century they were events at which to display pageantry and showcase individual martial prowess in different forms of foot combat. Tournaments differed significantly on rules depending on where they were held but they were still largely exclusive to the social elites. Those able to participate could do so in a variety of

[13] Bert S. Hall, *Weapons and Warfare in Renaissance Europe: Gunpowder, Technology, and Tactics* (Baltimore: Johns Hopkins University Press, 1997), pp. 234-35.
[14] J.R. Hale, *War and Society in Renaissance Europe: 1450-1620* (Baltimore: The Johns Hopkins University Press, 1985), p. 38.

competitive formats which included but were not limited to jousting, foot combat, wrestling, and archery. Foot combats were often fought with staff weapons, most notably the axe-hammer, the flail, or halberd, and in these combatants were able to demonstrate their expertise. However, mercenary companies and armies of the time did not comprise only nobles, or those able to pay for a weapon master who could teach them how to fight. Professional soldiers would refine their skills within a company and would also perform drills with their comrades. Some soldiers would invest into personal training under a weapon master, the experience thereby qualifying them for an increased pay such as in the case of the German *Doppelsöldner*. The ways in which wars were fought and the creation of fighting guilds where fencing masters would provide training in central Europe for civilians and professional soldiers, led to a significant evolution in the morphology as well as in the use of staff weapons. For example, this included the development of organised bodies of troops who specialised in the use of staff. Other weapons such as the crossbow, harquebus, and other early firearms, also increased in use, but this was primarily due to drilling and training within a company or army.[15] Training and performing drills before going into a combat situation was a great change for the infantry in the late fourteenth and fifteenth century. Infantry contingents trained and fought together constantly were able to change the basic reactions of their infantry line in depth of time and were able to hold off better cavalry charges, as well as to perform coordinated assaults.[16]

[15] Clifford J. Rogers, 'Tactics and the Face of Battle', in *European Warfare: 1350-1750*, ed. by Frank Tallett and D.J.B. Trim (Cambridge: Cambridge University Press, 2010), pp. 203-35 (pp. 208-24).
[16] A. Logan Thompson, 'The Decline of the Armoured Knight Part 1: The Rise of the Halberd and the Emergence of Gunpowder', *Classic Arms and Militaria*, May 1998, pp. 34-37.

1.3.4 The Swiss and the Effectiveness of Specialized Infantry

The most renowned soldiers of this period were, as previously mentioned, the Swiss. The soldiers of the Swiss Confederacy, known as *Reisläufer*, were trained and drilled in the use of staff weapons, mainly pikes and halberds, and dominated battlefields in several conflicts either fighting under the banner of their canton such as in the Old Zürich War, the Swiss-Burgundian Wars, and the Swabian War, or were employed as mercenaries by different sides in other conflicts, including the Italian Wars. The Burgundian Wars (1474-77) raised the demand for Swiss mercenaries. Their success against the forces of Charles the Bold advertised their skills and for the next three quarter of a century they were employed by different belligerents in most conflicts of the period.[17] The Swiss gained their reputation for their effectiveness and ferocity even in battles where they were outnumbered. Their discipline and their expertise in the effective use of their weapons allowed them to emerge victorious with the zenith of their devastating military performance being the Battle of Novara (1513).[18] It is not an exaggeration to say that on many occasions the Swiss played a key role in forming early modern Europe, as in the case of the Battle of Nancy (1477), where the Swiss helped the Duke of Lorraine crush the opposing army and kill Charles the Bold, Duke of Burgundy, allegedly with a Swiss halberd blow to the skull.[19] Even when they were on the losing side the Swiss made formidable opponents. Their lines were not easy to break as they were drilled to withstand most attacks by enemy cavalry or infantry, such as in the Battle of Marignano (1515). The Swiss way of war involved using pikes, halberds, and other staff weapons to provide reach and protection in

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[17] Vale, pp. 154.
[18] Stephen Turnbull, *The Art of Renaissance Warfare: From the Fall of Constantinople to the Thirty Years War* (London: Greenhill Books, 2006), p. 71.
[19] Richard Vaughan, *Charles the Bold* (Woodbridge: The Boydell Press, 2004), pp. 427-32.

addition to relying on the shock-march, an aggressive and organised manoeuvre that aimed a frontal assault at the opponent.[20] This well-drilled moving line was able to obliterate enemy cavalry after it successfully received a charge, or would lock into a pike push with the enemy infantry and usually put it to flight. This method of fighting was used by the Swiss from the late fourteenth century, it was perfected in the fifteenth, and was still used effectively until the middle of the sixteenth century, when portable firearms became extensive and started once more changing warfare. Swiss infantry was usually organised into two or three separate forces: a vanguard, the main force and a rear guard. The vanguard was often deployed as a side detachment of the main line, and the rear guard would act as a relief force.

The effectiveness and continuous success of the Swiss on the battlefield inspired other armies to begin a process of reorganisation.[21] The Holy Roman Emperor Maximilian I (1459-1519) created a separate military force, the *Landsknechts*, professional troops that were equipped, trained, and used on the battlefield in the fashion of the Swiss. The Spanish also imitated the same organisation and introduced staff weapons, the shock-march and pike-push, leading to what would later become known as the *tercios* that would dominate battlefields in the second half of the sixteenth century. The Swiss, the German *landsknechts* and the Spanish faced each other numerous times during the Italian Wars and for the better part of them the Swiss prevailed. Their demise came with the extensive use of portable firearms that the Spanish, for example, were able to

[20] David Eltis, *The Military Revolution in Sixteenth-Century Europe* (London: Tauris Academic Studies, 1995), pp. 44-46.

[21] B. Ann Tlusty, *The Martial Ethic in Early Modern Germany: Civic Duty and the Right of Arms* (New York: Palgrave Macmillan, 2011), pp. 8-31. Tlusty examines the social structures of civic defence, state military organization, and the process of training and equipping civilians in sixteenth-and seventeenth-century Germany. The organization was influenced by the example of Swiss cantonal civic military service example, where most men were trained to serve in their city's standing army for a period of time.

incorporate faster in their infantry formations.[22] From the second decade of the sixteenth century the Swiss and the Swiss style of fighting with the implementation of the shock march and the pike-push became less effective with the increased use of mobile artillery and handguns, as in the Battle of Pavia (1525), or due to the introduction on the battlefield of troops that could directly counter their type of warfare and tactics. The Spanish *rodeleros* were lightly armoured troops armed with swords and bucklers who would dive and crawl beneath the tangled pushing pikes and cut down from below the enemy front lines and thus break the front. Of course the *rodeleros* sometimes perished when the Swiss could react, but they incapacitated the Swiss contingent in major battles for the Spanish such as the Battle of Ravenna (1512). Regardless of their decline the Swiss, and their manner of fighting defined European warfare for nearly a century. The weapons, equipment, and the extravagant military fashion displayed by the Swiss and the *landsknechts*, deeply affected contemporary culture and ways of military thinking.[23]

1.3.5. The Fate of Staff Weapons

Over the examined period the simpler spears and staff weapons which resembled agricultural tools, such as long axes and flails, were replaced by pikes and more complex weapons such as halberds, glaives, axe-hammers, and partisans. These well-designed weapons could offer versatility and extra adaptability against different opponents on a variety of battlefields. Staff weapons became increasingly

[22] For a description of the interaction of the Swiss infantry and the *rodeleros* see Frederick Lewis Taylor, *The Art of War in Italy: 1494-1529* (London: Greenhill Books, 1993), pp-185-98.
[23] Frederik August Stoett, *Nederlandsche Spreekwoorden, Spreekwijzen, Uitdrukkingen en Gezegden* (Zutphen: W.J. Thieme & cie, 1915-16), p. 256. The author analyses an old Dutch proverb of French origin, "Geen geld, geen Zwitsers", which is translated as "no money, no Swiss". According to Stoett when Francis I of France, at the siege of Milan by Charles V, in 1521, could not pay his Swiss auxiliaries, they went home after saying this aphorism to him. The Swiss had become the most expensive military elite, a status worthy of their effectiveness on the battlefield.

widespread due to successful use in several wars and their efficient means of production, both technically and financially, in comparison to other weapons of the time such as swords and portable handguns. Their deployment also required less training than other weapons such as this period's artillery or even lances used effectively by cavalry. Their technology, the devastation they could cause, and the renown of some of their most distinctive forms led to an altogether different use after the face of warfare changed once again. From the second quarter of the sixteenth century 'pike and shot' formations emerged in the Spanish and Portuguese armies, a deployment method that became progressively popular for the next half of the century and afterwards.[24] This time the reformer was Gonzalo Fernández de Córdoba (1453-1519), a Spanish general and *condottierro*, who used his infantry armed with pikes and other staff weapons defensively in blocks of soldiers supported by hand-gunners used to weaken enemy charges. After the second half of the sixteenth century many staff weapons became so iconic for the ceremonial depiction of war in European courts that even after the decline of the weapon personal guards in Italy, France, Germany, and England continued to use them as part of their equipment.

1.4. State of Research

Surprisingly little dedicated work has been done on the study of staff weapons. In the context of this research this refers to either generic works on western staff weapons that include edged weapons from the Late Middle Ages, or specific research that focuses chronologically on staff weapons in the examined period. The aim of the following survey is to give a general overview of the work that has

[24] Eltis, pp. 50-51.

been done on the subject. In later specific discussions about each weapon category a brief specialized review of research will also be included for each group. One of the earliest attempts to classify the different forms and types was made by Eugène Viollet-le-Duc, who mentioned several different types of staff weapons, providing sketches of them as a useful companion.[25] This approach is helpful in order to examine how staff weapons were seen at this time, but the writer did not provide any references as to where he found the terminology for the arms he describes. Furthermore, he lacked a specialized knowledge of arms and armour, which is sometimes reflected in his work.

In the early twentieth century, Bashford Dean was the first to examine the development of staff weapons.[26] Dean was a zoologist, specializing in ichthyology, and he tried to apply biological evolutionary principles to the study of arms and armour. One of his works focused specifically on staff weapons from a curatorial perspective, and he grouped together European and American objects to observe their differences and changes in style.[27] Dean's theory was not very convincing because of its simplicity, and it lacked the mention of a possible alternative such as the non-linear development of weapons, or at least a discussion of why this would not work according to his theory. Nevertheless the idea of the evolution of staff weapons from one form to another was adopted or re-introduced by later authors. Dean's beautiful evolution diagrams were illustrated by Randolph Bullock and are often included in more recent arms and armour studies because of their aesthetic appeal and the ease of explanation provided by a linear evolution table. This

[25] Eugène Viollet-le-Duc, *Dictionnaire raisonné du mobilier français de l'Époque carolingienne à la Renaissance*, 6 vols (Paris: Librairie centrale d'architecture, 1879).
[26] Most of Dean's works included illustrations by Randolph Bullock. A compilation of them was produced for the Metropolitan Museum of Art and includes charts on most arms and armour categories from ancient times to the nineteenth century. Bashford Dean, *Arms and Armour Charts* (New York: Metropolitan Museum of Art, 1920).
[27] Bashford Dean, 'On American Polearms, Especially Those in the Metropolitan Museum of Art', *Metropolitan Museum Studies*, 1 (1928), 32-48.

approach must have been phenomenal and appealing for its time because it was developed in a period when theories of evolution and epistemology were peaking as a research trend. The problem with Dean's 'evolutionary model' is the necessity to fit objects into a continuous chronology based on the proximity of their technical features without taking into consideration individual or parallel development.

Viollet-le-Duc's use of terminology and Dean's classification system are early examples and indications of the problem of nomenclature in the study of staff weapons as they appear to use language-specific artificial terminologies without justifying their origin. Judging the quality of their work by that significant detail would be unfair considering that scholarship in the following century kept reproducing terms fundamentally different to that which they described even in the same language. However it would not be exaggerating to say that they laid the foundation for the further study and interest of staff weapons, especially because they presented the reader with detailed imagery to complement the examinations of individual objects.

Scarce individual studies on staff weapons from the first decades of the twentieth century usually focused on specific staff weapon categories. Bleuler attempted a detailed examination of the staff weapon that is generally known in modern research as *vouge* and included a study of different surviving weapons of the aforementioned type and mainly focused on their dating.[28] However, his research seems to be rather complicated by the terminology he uses as well as his broad definition of this type of weapon, which is used as a generic term that

[28] G. Bleuler, 'Die Vouge: Eine Stangenwaffe des späteren Mittelalters', *Anzeiger für schweizerische, Altertumskunde*, 3 (1901), 179-82. This applies to the works that use the term *vouge* to describe certain staff weapons with a long straight-knife-like head.

includes several staff weapons. Macoir's work on a single staff weapon with an axe element, the bardiche, revealed an early problem of classification as he attempted to compare weapons of different types based on a single technical feature.[29] Müller-Hickler produced two of the earliest individual studies for the halberd and the long spear/pike.[30] The same approach for studying a single staff weapon category was followed by Forrer, whose research focused on long spears from the fifteenth century.[31] Beard examined and commented on ffoulkes' general inventory focusing on the form of certain staff weapons.[32] He also produced one of the earliest curatorial studies on a specific axe-hammer, attempting to contextualize and compare it with other surviving examples.[33] It appears that the German academic tradition was the first to produce a wider enquiry into the classification of staff weapons and a discussion of the weapon group as a whole. In 1908 Kretschmar wrote a brief article that tried to raise the question of terminology and how it was attached to specific weapon categories.[34]

Specific studies on staff weapons were done sporadically in the middle and later twentieth century. This body of research focuses either on a group of weapons or on the examination of certain objects in museum collections. One of the earliest works which attempted to divide weapons of the same group into different types according to their distinct features was Gessler's article on the

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[29] G. Macoir, 'La Bardiche: Note sur un fer de hache d'armes du Musée de la Porte de Hal', *Annales de la Sociéte d'Archaéologie de Bruxelles*, 24 (1910), 229-380.
[30] Both of the works mentioned here were originally published before 1911 and were reprinted in 1972. H. Müller-Hickler, 'Studien über die Helmbarte', *Zeitschrift für Historische Waffen- und Kostümkunde*, 9 (1909), 199-203, and H. Müller-Hickler, 'Studien über den Langen Spiess', *Zeitschrift für Historische Waffen- und Kostümkunde*, 10 (1906), 293-305.
[31] R. Forrer, 'Neues Studienmaterial zur mittelalterlichen Bewaffung: Lange Spiesse im XV Jahrhundert', *Zeitschrift für Historisches Waffen und Kostümkunde*, 5 (1909-11), 161-66 and 330-32 (p. 331).
[32] C.R. Beard, 'Staff Weapons: A Comment on Major ffoulkes's "Inventory and Survey of the Armouries of the Tower of London"', *The Connoisseur*, 64 (1922), 163-65.
[33] C. R. Beard, 'A Fifteenth Century Poleaxe in the Redfern Collection', *The Connoisseur*, 70 (1924), 93-94.
[34] Oberst von Kretschmar, 'Zur Benennung der Stangenwaffen', *Zeitschrift für Historische Waffen- und Kostümkunde*, 4 (1906), 209-14.

halberd.[35] Bosson's two articles attempted a construction of identity for the halberd and the vouge weapon categories.[36] A notable work worth mentioning is Ash's *The Fighting Halberd*, which was one of the first works to examine not only the form but the use of the weapon as well.[37] Moreover, Martin Ellehauge's extensive work influenced the study of staff weapons and was the first to connect different types of weapons by noticing their common technical features.[38] He also produced a separate work in which he studied the development of the spear through the Middle Ages.[39] Buttin's generic work on staff weapons included an early argument on the terminology and the categorization of several types of weapons including the glaive, the bill, and the halberd, though without providing any solid results.[40] Later, Borg's *The Fighting Bill* was an analysis primarily concerned with the form and not that much with the use of the bill, mainly influenced by Ash's work.[41] Besides his work on the bill, Borg also wrote an article about the form of axe-like staff weapons, in which he tried to group together weapons with certain technical features.[42] Dondi's '*Del Roncone*' was something unusual for staff weapon studies because he focused on a specific bill sub-category with a distinctive design that was used in a limited geographic area.[43] Schneider also focused on the sub-category of staff weapons with an axe element, with the *mordaxt*, dealing not only with its form,

[35] E. A. Gessler, 'Das Aufkommen der Halbarte und ihre Entwicklung von der Frühzeit bis in das 15. Jahrhundert', *Revue Internationale d'histoire militaire*, 1 (1930), 144-56, 205-17.
[36] C. Bosson, 'La Hallebarde', *Genava*, 3 (1955), 147-182, and C. Bosson, 'La Vouge Française', *Musées de Genève*, 49 (1964), 5-6.
[37] D. Ash, 'The Fighting Halberd', *The Connoisseur*, 125 (1950) 101-105.
[38] Martin Ellehauge, *Certain Phases in the Origin and Development of the Glaive* (Copenhagen: Moller, 1945).
[39] Martin Ellehauge, *The Spear Traced Through its Post-Roman Development* (Copenhagen: Moller, 1948).
[40] Charles Buttin and F. Buttin, 'Les Armes d'Hast', *Bulletin trimestriel de la Société des Amis du Musée de l'Armée*, 44 (1936), 36-44.
[41] A. Borg, 'The Fighting Bill', *Heritage*, 1 (1974), 4-7.
[42] A. Borg, 'Gisarmes and Great Axes', *Journal of Arms and Armour Society*, 8, 6 (1976), 337-42.
[43] G. Dondi, 'Del Roncone, del Pennato e del Cosidetto Scorpione: Loro Origini', *Armi Antiche*, 1 (1976), 11-48.

but also with its origin and potential martial context.[44] Besides this definitive work, he wrote an article on the development of the long spear primarily from a historical perspective.[45] Seifert's work on the halberd was the first to focus on the use of the weapon, particularly the halberd, instead of focusing on the form.[46] Seifert also wrote a brief commentary on the form of the bill and the partisan.[47] Based on Dean's previously mentioned works, Brown tried to present and explore the continuation of staff weapons from the sixteenth to the nineteenth century, focusing on objects from collections based in the United States.[48] A brief survey of staff weapons as infantry equipment was written by Enlart.[49] However, the author did not go into great detail in the contextualization of staff weapons and spent most of his article in describing different weapon categories. Finally, Puricelli-Guerra's article explored the parallel evolution of the glaive and the bill, and the transition of agricultural tools to staff weapons.[50] Previous works had only briefly mentioned the subject, because they primarily dealt with the technical features of staff weapons, and not their origin and use. In his detailed article on the glaive and the bill Puricelli-Guerra includes a refined modernized version of Bullock's evolution charts designed by Scalini, which demonstrates the parallel development of the two weapons. Considering that the article was written nearly eighty years after Dean's works, it shows the influence of the latter work in the study of arms and armour, and regardless if they are correct or not, the value of visual examples and explanation.

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[44] H. Schneider, 'Die Mordaxt, Eine Schweizerische Schlagwaffe', *Zeitschrift für Schweizerische Archäologie und Kunstgeschichte*, 6, (1944), 39-52.
[45] H. Schneider, 'Der Langspiess', *Schriften des Heeresgeschichtlichen Museums*, 7 (1976), 7-24.
[46] G. Seifert, 'Die Helmbarte', *Deutsches Waffen Journal*, 6 (1966), 36-41.
[47] G. Seifert, 'Runka und Partisane', *Deutsches Waffen Journal*, 12 (1967), 958-59.
[48] Rodney Hilton Brown, *American Polearms 1526-1865: The Lance, Halberd, Spontoon, Pike and Naval Boarding Weapons* (New Milford: N. Flayderman & Co, 1967).
[49] C. P. Enlart, 'Les armes d'hast de l'homme à pied', *Gazette des Armes*, 4 (1971), 31-41.
[50] Arturo Puricelli-Guerra, 'The Glaive and the Bill: The Evolution of the Farm Tools into the Most Basic of Pole Arms', *Arts Arms and Armour: An International Anthology*, 1 (1979-1980), 2-12.

Further specific works, publications of museum collections and case studies on staff weapons were also published especially after 1970. Koerner published the French (or at least what he interpreted as such) staff weapons in the Dresden armoury.[51] The same was done for Zürich's armoury by Meier who also wrote a separate article focusing on halberds from the same collection.[52] Other sporadic small articles included specific studies on single objects with observations.

Some scholarship has also been dedicated to the aspect of mechanics, manufacturing and technical detail of staff weapons, subjects that will be discussed in this thesis. Schneider wrote a short but useful article that discussed the construction of halberds, mainly focusing on sixteenth century examples.[53] Rupp examined halberds from Bern paying special attention to their markings and metal corrosion.[54] Finally, a brief examination of the technical features of sixteenth century staff weapons and their technology was conducted by O'Hara and Williams.[55] Unfortunately their research was never expanded in order to further investigate the subject and perhaps answer some of the technical questions not tackled in their article.

An overview of the scholarship specific to staff weapons makes clear that as a subject it has been the interest of a small number of scholars, usually German, French, or Italian, and that each scholar produced short yet important studies that dealt with fragments of the complete whole. An interesting observation, that

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[51] E. von Koerner, 'Französische Stangenwaffen in der Dresdener Rüstkammer', *Zeitschrift für Historisches Waffen und Kostümkunde*, 1(1929), 11-19.
[52] J. A. Meier, 'Stangenwaffen aus Kempten für Zürich', *Rapport*, 3-4 (1979), 213-224, and J. A. Meier, 'Verbreitung und Herkunft der Halbarte im Alten Zürich', *Zürcher Chronik*, 2 (1971), 40-43.
[53] H. Schneider, 'Zur Fabrikation der Halbarte', *Zeitschrift für schweizarische Archäologie und Kunstgeschichte*, 19, (1959), 60-65.
[54] A. Rupp, 'Metallographische Untersuchung von Halbarten des Historischen Museums in Bern', *Jahrnuch des Bernischen Historischen Museums*, 59-60 (1980), 279-284.
[55] J. G. O'Hara and A. R. Williams, 'The Technology of a 16th Century Staff Weapon', *Journal of the Arms and Armour Society*, 5, (1979), 198-200.

should not be surprising, is that the origin of most authors or the place of publication coincides with countries that had a tradition in the use and preservation of staff weapons. At this point it ought to be mentioned that following this overview it may appear to the reader that staff weapons are not as understudied as the author has claimed. However, when compared to the sword in the same timeframe, and the scholarship done on it, the number of studies on staff weapons is underwhelming. The number of monographs and articles on the medieval sword is large, spread through the twentieth century, and peaking in numbers mid-century. For staff weapons the first dedicated, lengthy monograph was published a little less than a century after Viollet-le-Duc's work.[56]

Besides Ellehauge's aforementioned works, one of the earliest individual works of scholarship was Monelli's small book on the different forms of the bill, which also briefly explored the relevant nomenclature in Italy.[57] A decade later, in 1988, the most focused study on staff weapons that has been attempted thus far was published by Mario Troso.[58] A variety of forms and types are examined and described, usually with an extremely useful schematic design of the weapon as a reference. Troso thoroughly examined every type of staff weapon separately, grouping them according to their technical features. This typological approach led to the creation of different categories of weapons even for variations of the same type, which may be the biggest flaw of his research. For example the weapon groups widely referred to in modern research as halberd and bill were divided into

[56] A brief selection of important works on the medieval sword exploring different aspects of the weapon: E. G. Behmer, *Das Zweischneidige Schwert der Germanischen Völkerwanderungszeit* (Stockholm: Tryckeriaktiebolaget Svea, 1939) ; Geibig, *Beiträge zur Morphologischen Entwicklung des Schwertes im Mittelalter* (Neumünster: Wachholtz, 1991); A. V. B. Norman, *The Rapier and Small-Sword* (London: Arms and Armour Press, 1980); Ewart Oakeshott, *Records of the Medieval Sword* (Woodbridge: The Boydell Press, 1991); Jan Petersen, *De Norske Vikingesverd* (Kristiania: Dybwad in Komm., 1919) and Mortimer Wheeler, *London and the Vikings* (London: Lancaster House, 1927).
[57] Nanni Monelli, *Roncole e Pennati* (Florence: Libreria Editrice Fiorentina, 1977).
[58] Mario Troso, *Le armi in asta: Delle fanterie Europe (1000-1500)* (Novara: Istituto Geografico De Agostini, 1988).

separate categories, not as distinct forms of the same weapon but as completely different types. He did not, however, abuse categorization to the extent what Oakeshott had previously done in his typology of swords, which made a different category for every minor variation.[59] Troso's work is particularly detailed for staff weapons that survive and are located in collections in Italy. His research is heavily geographically focused there, and even his otherwise excellent research on nomenclature sometimes appears to be Italian-centric rather than exploring different problems that might not occur in his linguistic background. A brief attempt to examine the names of the various types of weapons is made, but his result was only a provisional catalogue of the modern names of them, focusing on the Italian terminology. This table is perhaps one of the most useful tools that Troso's research gave to scholarship. The strongest part of Troso's research is the study of bills, which he examined schematically, analysing more than sixty different forms and their differences. Furthermore, he used art contemporary to the weapons he examined to frame and sometimes compare forms. Art is used as a useful secondary tool but only really expanded on is a small part of the book. Unfortunately, the use of staff weapons is only mentioned briefly in Troso's work.

The most recent extensive work on late medieval/early modern staff weapons is John Waldman's monograph produced in 2005.[60] The writer uses an evolutionary approach, not moving far from the perspective of Dean and Ellehauge, but methodologically resembling more the latter than the first. His work mainly focuses on the development and the form of the halberd, but he also

[59] The sword classification system used by Oakeshott is an expanded version of Petersen's system in which objects are categorized according to minor variations, a method that led to the creation of numerous irrelevant self-contained sub-categories. The problematic categorization of late medieval swords is one of the subjects discussed in the upcoming Sword: Form and Thought conference proceedings by Boydell.

[60] John Waldman, *Hafted Weapons in Medieval and Renaissance Europe: The Evolution of European Staff Weapons between 1200 and 1650* (Leiden: Brill, 2005).

dedicated individual chapters to different types of weapons. The greatest advantage of Waldman's work is that he breaks down weapons into different groups depending on their features, but at the same time he groups together similar forms. The main problem of his research is that he does not make clear definitions of the weapon groups he creates. The confusion that derives from this problem is also connected to the fact that the placement of certain weapons in different groups is not justified. Another fundamental problem of this monograph is the referencing system used by the author, which appears to be confusing and inconsistent. Waldman also used contemporary depictions of the weapons as a simple reference to the form of certain weapon types, but just like Troso he did not include any detailed comments on their artistic representation. Finally, he attempted a brief approach on the use of the halberd, but he did not apply it to any other type.

A brief mention must be made of Csiky's monograph on Avar staff weapons and edged weapons.[61] The scope of this work is sixth and seventh-century Avar-related material, but the analysis proceeds from a purely archaeological perspective. Both the chronological context as well as the methodological approach that Csisky explores, sets this monograph apart from the previously discussed works. However, a different type of investigation such as this can provide the reader with ideas on how to generally perceive edged weapons, even in the Late Middle Ages, always considering the differentiation between the examined material and the different limitations and needs of research in the examination of staff weapons in the Early and Late Middle Ages.

Most of the works included in the body of modern research on staff weapons focus on the technical features of the weapons examined, restricting

[61] Gergely Csiky, *Avar-Age Polearms and Edged Weapons: Classification, Typology, Chronology and Technology* (Leiden: Brill, 2015).

research on material culture evidence rather than discussing other aspects of them such as their use. These studies can cause an important debate on the terminology used, because every author usually produced or presented his own terms without explaining why a specific term was chosen or discarded. Moreover, the development and the matter of evolution of staff weapons is an elusive subject that has been presented by some authors, but not discussed extensively. In addition to this, little relevant research has been done on the artistic contextualization of staff weapons and the implications of their representation in art. Examples of relevant weapons drawn from art are mentioned in many works but never in depth. Finally, the use of individual types of staff weapons has rarely been investigated by previous authors, but as in the case of Ash or Seiffert, the studies usually draw information only from narrative sources. The use of Fight Books in the specific context of this researched was briefly mentioned by Troso, but not extensively. Troso limits his research to Italian Fight Books, ignoring the vast information available on the use of staff weapons to be found in their German equivalents. What becomes apparent from the examination and discussion of works that exclusively have staff weapons as their subject is that rarely any focuses on their use, either as motion, or even investigating the potential threat a weapon can pose based on its form. The latter sometimes occurs in passing but never in detail, and the development of technical features is rarely, if ever, discussed in the context of their use.

1.5. Methodology

1.5.1. Art Interpretation as a Tool for the Study of Military Technology and the Use of Weapons

Interdisciplinarity is a rather modern research trend and even today military historians who bring together other disciplines will often overlook art as something that should be studied separately and usually only in the context of art history. Even brilliant studies of late medieval warfare from the past 30 years dealing with the arms and armour of the combatants and their use tend to approach art only as a supplement to frame and flourish their arguments. The first work to extensively if not exclusively use art as the means of study for military organization and arming of soldiers was Hale's *Artists and Warfare in the Renaissance* in 1990.[62] Hale was the first to strictly refuse to use artistic production as a simple gloss to the late fifteenth-and early sixteenth-century warfare. Instead he critically approached illustrations and extracted information based on the empiric factor he saw in the art pieces he studied. He tried to decipher different aspects of soldiering by studying a variety of artists and split the relevant artistic production in two trends that portrayed soldiers differently, the Italian and the German, using the south/north dipole to demonstrate differences. Even after Hale, historians treated this kind of approach with scepticism as artistic production can also be seen as an illustration of the artist's conscious aesthetic decisions that alter the historical value. Hale's work is extremely thorough and he used enough material for more than one monograph, and written to a standard that can rarely be reached. More recently the work that follows up on Hale's attempt and approach to establish art as a precious tool in the study of late medieval and early modern warfare is the

[62] J. R. Hale, *Artists and Warfare in the Renaissance* (New Haven: Yale University Press, 1990).

volume edited by Cuneo.[63] As a work it reflects a methodology progressively gaining in popularity in the past decade, that the debate between art and warfare is profoundly important and cannot really be separated as it is a debate between art and history.

Fifteenth and sixteenth-century artistic production can be used as a tool with ease because of the development of different mediums and techniques. The increasing detail and attention to mannerism, anatomy, and precision of shape can provide precious information in the study of military equipment as well as in the study of its use. For example in the period examined more than at any time before, body and hand positioning can be studied as examples of a realistic approach in an historical context where a large number of artistic workshops worked closely to areas of conflict. A brief example of that: illuminated manuscripts, paintings and engravings from the middle of the fifteenth century appear to focus mainly on the form of the soldier, and not on intricate details of the arms and armour, therefore limit the information that can be extracted. The aforementioned developments of production techniques, however from the last few decades of the fifteenth century and onwards allow a closer examination of the use of weapons. The positioning of hands on the object and the place of the soldier in a battlefield with visual depth, allow a whole new perspective in the contextualization of battle and soldier, which can provide a more rounded approach. A special mention needs to be made at this point to fight books, a whole genre that often combines text and image to demonstrate the use of a variety of arms and armour and also develops drastically within the same chronological boundaries.

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[63] *Artful Armies, Beautiful Battles: Art and Warfare in Early Modern Europe*, ed. by Pia F. Cuneo (Leiden: Brill, 2002).

1.5.2. Combining Art and Material Culture

The use of depictions of staff weapons has been used to some extent in scholarship to examine certain forms and their development, including in the more recent and longer monographs by Troso and Waldman. However, the development of the artistic medium and the importance of that process is something that is usually ignored. For several staff weapon groups or sub-groups it is necessary to rely on depictions of weapons to establish the timeframe of their use and to observe their development before that period.

The lack of material examples for certain weapons is one of the issues that has to be addressed. The absence of surviving weapons does not mean a weapon was not used in a certain period. In fact the majority of material culture is only dated to the second half of the examined period. Most staff weapons survived as objects that were used for display, so it is possible that weapons that had less aesthetically pleasing forms did not survive. This becomes easier to observe with weapons that were made of poor quality material or resembled more common objects and tools, that survive in much smaller numbers. The quantity of surviving staff weapons should be taken into consideration but those numbers under no circumstances reflect the popularity of their use. Most staff weapon survived because of their visual intricacy. Of course the same problem can sometimes also appear in art as objects with more artistic complex potential could be chosen over others, but generally the quantities representation is more balanced in the latter. Therefore, a combination of artistic depictions and surviving material will be used to complement each other in investigating the timeframe of each weapon group and the variations in the form of each weapon.

Surviving weapons will be examined closely to extract additional information on the materials that were used in their production and how they affected the use of the weapon, as well as their preservation. Basic material science and chemistry will be used to demonstrate what information can be extracted from the examined staff weapons and especially the metal used on the weapons' heads, and how the information varies depending on the dating of the object. This process will reveal certain aspects of the structure of the staff weapons including how they were bound together. Artistic examples will also be used to briefly investigate additional features of staff weapons that rarely survived in material examples.

1.5.3. Addressing the Problem of Terminology and Categorization

The categorization and investigation of the variations of the form of staff weapons is a common subject in specialized scholarship. A recurring problem in the study of this field is the inconsistent terminology and the different boundaries for weapon groups which are rarely discussed and justified. Providing a definite terminology was one of the main goals since the beginning of this research. However, I came to the conclusion that such a task is impossible because the categorization and labelling of staff weapons is a modern and artificial process. Instead of attempting to find the root in scholarship of each term used for different weapon groups, the different terminology used for each of them is compiled and compared. Depending on the needs and the situation of terminology for each group, a specific term is chosen as a label, and the decision process is explained. This is a part of research that is rarely included in any relevant studies.

Additionally, in some cases new descriptive terms are created to label weapon groups that have been the subject of ambiguity in scholarship. The aim of this is to tie together previous research and create a more refined and articulated system of terminology that can be used by specialists and non-specialists alike to refer to a specific weapon group, as well as to previous work that has been done on the subject. Of course in order to produce my own terminological system it was necessary to categorize the different staff weapons in the examined period. Just like terminology, this has been somewhat problematic in scholarship, because most authors define the boundaries of each weapon group in a different way, and varies as to how wide or narrow it is. The labelling and categorization of weapons appears to be an integral element of hoplology studies. The division of weapon categories produced for this research was based on the morphological similarities of objects and how they affected their basic use.

1.5.4. Interdisciplinarity and the Use of Staff Weapons

One of the goals of this research is to provide new insight as to how staff weapons were used and how that affected their design. To discuss that, the investigation will be moved on two axes: mechanics and metallurgy. The exploration of the mechanics is achieved by examining smaller technical characteristics, the structure, and physical attributes of objects and the information that can be extracted about how they affected the overall outcome. In some aspects this is a reverse approach, starting from a detail to define the purpose, but in the process of finding it different tools of research are used. This happens because the aim is the utility of the object, which included motion, and organic and inorganic material, which were factors that affected the outcome of the use of the examined staff weapon. To be

able to discuss some of the aforementioned factors simple theoretical experiments including elements of mechanics and physics will be presented, that provide a new approach in the study of staff weapons.

Metallurgy is a discipline that has previously been used for the study of certain types of weapons in different periods. In the relevant chapter I will demonstrate how a simple non-destructive metallurgical analysis is beneficial for the better understanding of staff weapons. Certain aspects of the interpretation of metal parts and their properties such as pitted corrosion and discoloration can provide additional data in the study of specific objects.

The discussion of terminology and the categorization presented in this thesis will hopefully answer questions and address some of the problems that have persisted in the narrow field of staff weapon studies. The hoplology studies approach followed here is not new as a concept. However, an assessment of previously studied material and scholarship combined with a thorough examination of material culture and art, and the application of new disciplines can produce fresh ideas. The conclusions at the end of this research will show how the thesis can be used in the future for the study of staff weapons. Additionally, ideas for further consideration in this field of study will be mentioned inspired by the multidiscipline approach I followed in the past few years.

Chapter II: Nomenclature

2.1. The Problem of Terminology: Analysis of the Problem and Detailed Methodology

Writing in 1941, in his generic hoplological study in the form of a glossary, George Cameron Stone noted in the entry for staff weapons, 'There is no class of weapons regarding the nomenclature of which there is so much confusion. There are great many varieties, some of which are quite distinctive in form, but there are many intermediate forms that are very difficult to classify. To add to the confusion certain specialized forms are called by different names by those who have studied the subject carefully, and totally different types are called by the same name by those who should know the most about them'.[64] This sentence perfectly summarizes the most important inherent problem in the study of staff weapons, consistent terminology and description. It also highlights that this problem is artificial, created by scholars and maintained by them by the misuse of terminology and artificial under-discussed divisions. It often becomes clear in the prologues of specialized works on staff weapons or in generic weapon studies the authors often attempt to define this problem and explain the difficulties in the study of staff weapons.[65] Some approach it with caution and proceed into the analysis of some of the terms they use, while others focus on the form and the relationship between some of the different staff weapon groups. Ellehauge wrote in one of the first

[64] George Cameron Stone, *A Glosary of the Construction, Decoration and Use of Arms and Armor in All Times Together With Some Closely Related Subjects* (New York: Jack Brussel, 1961), p. 512. The version of this book used throughout this thesis is the 1961 reprint.

[65] According to Oakeshott, who recognized the problem of terminology, the confusion was rationalized following the publication of Blair's publication on weapons in 1961. Blair's publications did not include any conversation on the problems of staff weapon terminology, and in fact Oakeshott's publication that discussed the technical features and names of several staff weapons was often inconsistent and only added to the ongoing problem. Oakeshott's mistake is something that highlights the problem even in cases where the author is aware of the general terminological issue. The publication he refers to is: Claude Blair, *European & American arms: c. 1100-1850* (New York: Crown Publishers, 1962). Ewart Oakeshott, *European Weapons and Armour* (Woodbridge: The Boydell Press, 2000), p. 52.

specialized studies on staff weapons, 'The names of the old pole-arms are nearly all of an international character. But no fixed system in their use has as yet been established, at least in the case of a number of types. Different authors employ different terms for the same weapon and the same term for different weapons. And although a somewhat greater regularity is ruling within the single countries, yet there is, too, no national uniformity. On the other hand most recent publications reveal more marked tendencies towards such uniformity'.[66] This touches different aspects of the problem of terminology. The linguistic inconsistency exists both on the wider geographical frame of origin and study of European staff weapons, which can generally be considered the central and Western Europe, as well as within smaller linguistic systems which exist within the same language. Ellehauge tried to trace the origin of certain terms used for staff weapon groups based on dictionaries and linguistic proximity to determine which term would be the correct to use to describe certain weapons. The most important observation made throughout his essay was that the terminology of staff weapons in scholarship is artificial, that there is no way to determine the original term for each weapon because of the flexibility and fluidity of each language and the way terms often become interchangeable because of the simple meaning of words that might mean 'axe', 'blade' or 'scythe', and most importantly that the key element in the research of staff weapons is the development of the form. This approach has been most influential for this thesis.

The study of literary primary sources can provide some insight in the name of certain staff weapons but in most cases it leads to an impasse. Terms used in fifteenth and even sixteenth century chronicles, fight-book and other accounts are

[66] Martin Ellehauge, *Certain Phases in the Origin and Development of the Glaive* (Copenhagen: Nordlundes Bogtrykkeri, 1945), pp. 5-6.

usually too generic such as in the case of the axe, mentioned as *Ax* or *Axt* in German and *hache* in French. The term is used to describe anything from an axe as a tool, a battle-axe, a pollaxe or a halberd.[67] The same principle applies to weapons that derived from straight blades and often the modern terms that can be used to describe them can be linked to common objects, thus we get the example such as of the glaive, a term that has been argued derives from *gladius*, or the bill from *Beil*, a German word for the axe. The linguistic connection might be correct and even these objects might have been the forerunners of the later staff weapons but this is nothing more than a possibility. Another problem is caused by terms that have been used for a variety of weapons. The infamy of the French term *vouge* on this matter is magnificent as it has been attached by scholars at one point or another to most staff weapon groups discussed in this research. The term can be traced to sources even before the fourteenth and it is still in use in the sixteenth century. However, there is not a single description of what a vouge actually was. Modern authors attach the term to either a straight bladed weapon or some types of halberd, but the truth is that there is not a convincing explanation for either. The most likely explanation for this mix-up is that the vouge initially defined all staff weapon with a cutting component to separate them from the spear. In the nineteenth century Viollet-le Duc attempted to define what a vouge was, and whilst he had made specific definitions for other staff weapons, when it came to it, he categorized a variety of objects under that term with some having little

[67] A great demonstration of this problem and the axe as an interchangeable term for a variety of objects and purposes has been made by Raynaud. The whole focus of that research is the usage of a common term and how it was used in a civic, military or symbolic context, with the main point being that there was no need for specification because the readership would have the context to perceive the meaning of the object's form because of their everyday experience. The problem in modern perception and interpretation is the retrospective analysis which lacks the background knowledge the contemporary audience would have. Christiane Raynaud, '*À la Hache!'. Histoire et symbolique de la hache dans la France Médiévale (XIIIe-XVe siècles),* (Paris: Le Léopard d'Or, 2002).

similarities to others.[68] It is possible that other technical terms now used to describe specific weapons were initially used to describe staff weapons in general.

The problem of the original terminology is only one of the reasons behind the problem of the consistency in terminology used in scholarship. The internationality of the terminology, as mentioned by Ellehauge, stems from the wide use of most of the staff weapons that are subject to this research from the fifteenth to the middle of the sixteenth century in Europe. Scholars that attempted the categorization of staff weapons or even a more specialized research focusing on a narrower staff weapon group suffer from the variety in nomenclature often spread in several languages. Research has primarily been conducted in English, German, French and Italian, and most authors chose to follow a combination of terminology from the above. The choice behind each term is usually not explained in depth, of course exceptions exist, and often the choice of individual terms and categories can be traced to early arms and armour scholars from the nineteenth and early twentieth centuries such as the likes of Viollet-le-Duc and Dean. The primary aim of this thesis is to link previous research, and attempt to group the different terms attached to different weapon categories by modern scholars. This can help this field of research in the future as a reference point that has gathered the previous theories of specialists. This has only been done previously and individually in smaller regarding specific staff weapon groups. By bringing together all the information gathered, the reader will be able to better understand the problems in the research of this subject and subsequently potentially use this material as a pivotal point of discussion.

[68] Eugène-Emmanuel Viollet-le-Duc, VI, pp. 357-62.

This research will also discuss the development and the changes that each weapon group went through, as well as variations of each weapon and how they relate to the other objects in their group. The discussion will also include the existing theories of scholars on the evolution, development or any other relationship that specific weapons might have to others, but the main scope will be to create wherever possible a new categorization system either based on original ideas or by reinforcing dominant and sensible pre-existing theories. Of course this implies that specific terminology is used to define each staff weapon. In the same manner as with the development theories, sometimes the terminology used will be borrowed by aligning with other authors, but wherever needed, new suggestions will be made to relabel certain weapons. The main criteria for the terminology chosen or crafted are, first the uniqueness of a term and how distinctive it is in order to avoid confusion, and second descriptive terms that can be attached to certain weapons to highlight their form. Of course the nature of the subject is such that the terms used are drawn from the previously mentioned terminology in four languages.

Much has been said about how secondary sources are used in the context of this research, but the main source of information will be first and foremost existing objects that survive in collections. The categorization in different groups and the theories of development of staff weapons is based on these objects. They can be compared and examined both within the wider group they are grouped in as well as in relationship to other groups from the same period.

The catalogues of museum collections were utilized in the case of the examined surviving weapons, and the dating provided for objects unless specified otherwise is that the curator of each collection have provided. However, the

terminology used in these catalogues was dropped as part of the overall problem. Even within the same collection staff weapons of the same type will often be categorized under different names or the same term will be used to categorized and characterize different objects. This occurred because of the inherent problem of terminology in the study of staff weapons which was previously mentioned, which is also the prime concern of this research, as well because different people often create the entries for a collection, which leads this inconsistency. There are of course many surviving European staff weapons spread in a variety of international collections. In the course of this research one of the parameters that had to be decided was which weapons and which collections would be taken under consideration. This division only happened after examining the material existing in most collections that have a good number of staff weapons. After the initial stages of research it became clear that there is a large amount of staff weapons spread either in bigger groups in large collections or smaller in others. An initial quantification of surviving objects and the consideration that the number of surviving staff weapons per category do not reveal anything else other the modern popularity of each one of them lead to the decision of using extant examples from collections that had either better access or contained any number of objects important to this research. The main bulk of surviving objects included in this thesis are from the Royal Armouries of Leeds, the Metropolitan Museum of Art in New York and the Philadelphia Museum of Art. Most of the weapons mentioned from these collections were examined in person. These three museums with the addition of the Wallace Collection in London have the most consistent and accessible catalogue. A number of objects from the Deutsches Historisches Museum in Berlin were also examined through the online collection. Most of them were previously part of the Museum für Deutsche Geschichte in Berlin until it

closed down. Odd objects or a smaller amount of weapons were examined from other collections in Europe. The most important collection that is under-represented in this analysis in the form of examples is the Musée de l'Armée in Paris. However, the collection and key objects were examined and included in this research.

This research also includes a significant number of iconography featuring staff weapons from manuscript miniatures, to paintings and woodcuts. They are also from an even wider variety of institutions. The dating used here for them is the dating used from their respective collection or museum. Generally, this is more accurate than the dating provided for weapons because their production is easier to be traced. Because of that, art can be a valuable tool that can be used to provide a chronological frame of use for the weapons depicted. However, not all weapons were consistently featured, so artistic representation only remains a secondary tool. The question of consistency applies both to the chronology as well as to the detail or lack of detail a depicted weapon might have, and to the extent artistic freedom affected the portrayal of an object. This problem mainly applies for art from the first three quarters of the fifteenth century. The evolution of artistic mediums in the late fifteenth and later in the sixteenth century, and the re-invention of the classical mannerism and artistic realism helped in the production of weapon illustrations of the highest detail, which makes the comparison of artistic presence and surviving objects progressively easier.

The examined period of 150 years is split into quarters of a century for the purpose of dating weapons groups and subgroups. The choice of this division was made based on the potential divergence in the dating of an object. Surviving weapons are dated by collection (and not always correctly), based on a series of

factors such as the material and method of production, maker marks and often even comparison to art. The latter is the main danger of a circular argument or in this case agreement, but there is only a certain extent research can reach. With that in mind the dating provided by museums is used with the consensus that it is not full-proof and ideally needs to be verified through the comparison with similar objects and cross-referencing with art. Usually, collections attach specific dates to staff weapons and not a slightly more generic characterization such as a space of ten years, but with a few exceptions it is impossible to know the date with such great detail. The choice of timescale of twenty-five years is because it is a period long enough for a weapon to have a significant presence as an object that also affected art, and short enough to be able to monitor roughly when certain weapons started being used or at least became popular enough in order to appear shortly after in art. Additionally, it is important for this research to establish a development timeframe for the different weapon groups and quarters of a century is long enough for objects to technologically evolve and for important changes to be reflected either on surviving objects or their depictions.

In general the larger part of this research is structured by dividing staff weapons into different groups. This division is based on their technical features and on how they would affect their use. It is important to note that the discussion and division of staff weapons are based on the examination of the weapon heads, the upper metal part, and without examining or considering the length, shape or construction of the shaft. The head of the weapon bears in the majority of cases all identifying features and was what separated the function of one or another weapon. Of course the part where the head connects to the shaft is also taken under consideration, as well as any additional features that are added after the

mounting of the head and are attached to it. The shaft of course cannot be disregarded completely but the fact that in most cases it is a modern replacement, and it is hard to tell apart the original and replaced examples, makes the data connected to it potentially faulty and the discussion futile. Of course the problems of the wooden shaft need to be addressed, but not in the context of identifying the different weapon groups.

The weapons chosen and included in this study are those that developed in the chosen period and generally those that developed in Western Europe. At this point it is important to explain why certain weapons were excluded. A brief examination of artistic as well as written sources from the examined period easily reveals that the most popular weapon in what can be called the rise of the infantry, already from the fourteenth century, is the long spear and the pike. The spear has been used for millennia and the pike, as a much longer version of it was what became really popular in the examined period. Scholarship has covered their forms and use efficiently, but most importantly as objects they do not have the same problems of terminology or classification that other staff weapons have.[69] The doloir, a type of an axe-like staff weapon is excluded because of the lack of examined objects and depictions.[70] It was most likely in use towards the end of the fifteenth and in the early sixteenth century. Finally, the Lochaber axe and the

[69] Works have covered different aspects of the spear from ancient times all the way to the Renaissance. It can be argued that the structure and use of the pike and the long spear are a reinvention of the Macedonian *sarissa*. The comparison of these weapons is an example of the circular use and reinvention not only of tactics but also of military equipment, but without necessarily having an imitation. For notable examples that are useful in understanding more about its form see Manolis Andronikos, 'Sarissa', *Bulletin de Correspondance Hellénique*, 94 (1970), 91-107; Ellehauge, *The Spear*; Jan Petersen, *De Norske Vikingesverd: En Typologisk-Kronologisk Studie Over Vikingetidens Vaaben* (Kristiania, I kommission hos J. Dybwad, 1919); Hugo Schneider, 'Der Langspiess', *Schriften des Heeresgeschichtlichen Museums in Wien*, 7 (1976), 7-24.

[70] For some additional information on the doloir and its potential origin see Waldman, pp. 199-202.

Jedburgh staff are also excluded because their use was limited to Scotland and it is unsure if and to what extent they were ever used in continental Europe.[71]

In the early stages of this research the goal was to provide a definite terminology for each staff weapon. This goal persists, but after investigating the subject further it became clear that besides a comprehensive terminology, it is also necessary to provide an appropriate classification system. The scholarship revolving around staff weapons often follows a path of either of two extremes, it either sees each weapon as an individual object that it forms its own group or uses groups too broad that include weapons that sometimes are not necessarily related. The classification created for this thesis takes the middle ground on this. The groups created, or adopted and modified are big enough to group together weapons that are presented as subdivisions but at the same time aimed to be used as carpet terms for the overall reference of a wider group of weapons with a single name. The terms adopted to label those groups are usually chosen because they fulfill most of a series of criteria based on the needs and overall terminological problems of each group. The general consensus of scholarship on nomenclature was taken under consideration and the terms used in English, German, French and Italian were gathered wherever possible. Then terms that carry certain ambiguity because of their extensive use for different weapons were dropped. Descriptive terms were used for subtypes that have been the subject of long debate so that the discussion can be contained within the group and the same will also hopefully happen in future research. In some cases a non-English pre-existing term was

[71] Caldwell's article on Scottish staff weapons covers in depth the origin, dating and morphology of both weapons. David H. Caldwell, 'Some Notes on Scottish Axes and Long Shafted Weapons', in *Scottish Weapons and Fortifications: 1100-1800*, ed. by David H. Caldwell (Edinburgh: John Donald Publishers Ltd, 1981), pp. 253-314.

chosen either because the English term is too generic and too easily associated to a different weapon.

In the context of this classification, each group will contain certain information about the objects in them. The nomenclature and origin of the different weapon groups in scholarship will be discussed first where applicable, but in the case of bigger subgroups that have extensive terminology problems, the discussion will be made within the subgroup. Ideally, the structure of each subchapter on each weapon would follow the same structure in every case, starting with the form of the weapon, continuing with a discussion on its terminology in scholarship and whether it is problematic or not, as well as what the suggested solution is, followed by a presentation of extant examples of surviving weapons of that weapon group accompanied by similar contemporary depictions, and finally, a discussion on the chronological frame of use of the weapon group and the changes it went through in the period of its use within the wider chronological limits of this research. Unfortunately, the amount and type of data for each of the weapon groups varies, therefore the order of discussion is shifted around to fit the nature of each group and its subgroups in order to better highlight the arguments and observations made. The combination of material examples and art to determine the potential dating of a weapon will be mixed whenever there is a plurality of data from both categories that can be directly compared, and separated in the cases where there are only but a few examples of either type, or when a direct comparison of a surviving weapon and art is not fruitful because of the morphological gap between them.

In the following sub-chapters the term used for weapon will be italicized if they are in a non-English language. However, as has been mentioned in some cases

non-English names will be used to describe some groups. In those cases the first time a foreign term is introduced it will also be italicized but in subsequent uses it will not be because it will have the status of the term that describes a group or subgroup as suggested in this thesis.

The thesis is divided into weapon groups and their respective sub-groups. The weapon group that the discussion will start from is the halberd. This is not only because of the popularity and wide use of the weapon in its original context but also because of the plurality of the material. Also the variations in its design create the perfect frame to lay out the some research questions that reappear as a pattern in most staff weapon categories. The order of the subsequent weapon groups is based on two factors, the pluralism of material and the presence and problems of the weapon in scholarship.

2.2. A Division Based on Function

Before proceeding to the discussion of individual staff weapon categories, it is useful to make an initial division based upon their use and function, as defined by their discernible technical features.[72] This division is made through analysis of individual components which comprise staff weapons, which includes axes, hammers, spear-blades, hooks, spikes, and clubs. The terms mentioned might refer to simpler tools or weapons that manifested in different staff weapon categories, adding to them their individual attributes. Based on a categorization dependent on their technical features, staff weapons can be divided in to six categories according

[72] This division and discussion *is* based on the weapon's head and not on any additional technical features that can be found on the bottom of the shaft, such as spikes or fortified ends. Unlike the head it is hard to always say whether the shaft is the original or a later replacement, and if any additional parts would have been initially in place.

to the potential function of their parts. This includes cutting, thrusting, striking, pulling, pushing and of course hybrid, a combination of any number of the previous functions.[73] Cutting refers to weapons with flat blades, such as that of an axe, or blades similar in appearance to those belonging to swords. These come in a variety of shapes and sizes and can be found in weapons such as the bardiche, the axe-hammer and the proto-halberd. Thrusting staff weapons share the function of spears, but their technical features can either have the form of a spearhead or a sharp spike. Again, these come in a manifest variety of sizes. An example of a staff weapon used exclusively for thrusting is the *Ahlspiess*, others such as the standard halberd count thrusting amongst their other uses. Striking weapons usually have solid features used for crushing armour or inflicting wounds categorised as blunt trauma. The technical characteristics of such weapons can vary from simple club heads to multiple protruding spikes. This is the case with military flails and generally most weapons of the morgenstern group. Pulling staff weapons nearly always have a hook-shaped feature to drag an opponent off balance. As with other weapon designs, these are of different lengths, shapes, and angles. No staff weapon can be defined solely on this function because as a motion pulling is not offensive towards a target except situationally, so this is a secondary function used in combination with another. This rule can also be applied to weapons that could be used for pushing or levering, functions that could only be used under certain circumstances. Weapons mainly have features that could perform these actions as a secondary function such as the corseke or the proto-bill (roncola). Finally, hybrid weapons use features from two or more of the previous categories. Most staff weapons can fall in this category as they were designed for multiple functions. The

[73] Stone also discussed the division of staff weapons based on their use into four classes, as he called them, weapons solely designed for thrusting, weapons designed mainly for cutting, weapons meant for cutting and thrusting, and special purposes. See Stone, p. 512.

primary example is the standard halberd and other weapon groups such as the axe-hammer and the bill. A general rule that can be applied to this categorization is that the features which define the use are nearly always those which have been sharpened.[74]

[74] Troso demonstrated this idea with line drawings of staff weapons where the non-sharp main part of the head is painted solid black and the sharpened, therefore usually threatening parts, are highlighted white. Troso, pp. 21-42.

Chapter III: The Halberd Group

3.1. A Brief Description of the Group

One of the most easily recognized types of staff weapon, the halberd, has been produced and used in many different shapes and forms. This variety makes the study of the form of the halberd and the terminology used to describe and define it problematic. The basic form of a halberd can be defined in a simple way by its use and its features. A halberd has a blade for cutting, a vertical spike used for thrusting, and sometimes a minor horizontal element on the back of the weapon used for pulling and piercing. This definition roughly covers most weapon forms in this group and can be used as a generic description of the halberd, but in order to include the different variations in this wider weapon group, several sub-definitions must be produced for them.

3.2. The Standard Halberd

For research purposes the term that has been created and used for the first halberd type described is the standard halberd.[75] The weapon is a hybrid, consisting of cutting, thrusting, and pulling elements. On one side of the weapon's head there is a rectangular or trapezoid blade, and a spike rises vertically on the axis of the shaft.[76] The length of the vertical spike seems to vary greatly in surviving examples of this type of halberd. On the opposite side of the blade there is a horizontal spike, usually angled downwards, which in modern research is generally called a beak. The lower (inside) part of the beak is sharpened to cause cutting damage

[75] The choice of the term used is based on the generic recognition of this form as 'the halberd'.
[76] The description of weapons in this thesis assumes that the weapon is examined in a vertical orientation where the head in on top and the shaft at the bottom.

when pulling. All three features of the weapon can have a variety of shapes and decorations which are primarily aesthetic. The head of the weapon is attached to the staff with a socket, a metal piece that engulfs the top of the shaft completely, and around which the technical features of this type of halberd developed. Sometimes long metal plates were used to secure the head with nails. These metal plates extended vertically from the head to the staff and were usually placed in opposing pairs. Usually, two pairs of them were used, or even an odd number like one or three. The most common term used in modern research for these metal plates is langets. The langets would sufficiently secure the head of the weapon to the staff, enabling the user to deliver strong blows and thrusts. Another technical characteristic appearing in standard halberds from the fifteenth century and onwards is that the beak did not simply spring from the back of the weapon, but instead was an elongation of a plate, parallel to the blade, that grew from the base of the socket. This feature is called a flange and it is sometimes sharpened to form a blade underneath the beak.

The earliest surviving examples of standard halberds are dated to the late fourteenth and early fifteenth centuries. An early example of a standard halberd dated to the last decade of the fourteenth century is located in the Historisches Museum in Basel.[77] The blade on the front side of the head is rectangular and the beak on the back is rather short. The weapon also has a flange. A standard halberd with a trapezoid rectangular blade can be found in the Metropolitan Museum of Art and is dated to the middle of the fifteenth century.[78] A nearly identical halberd dated to the third quarter of the fifteenth century can also be found in the same

[77] Basel, Historisches Museum, 1910. 93, Standard halberd. **Figure 1**.
[78] New York, The Metropolitan Museum of Art, 42.50.18, Standard halberd. **Figure 2.**

collection.[79] The sockets of both weapons extend down the shaft to create langets. The beak is concave on the top and extends to create a flange to the bottom. The weapons are similar to the halberds illustrated in the top right corner of a woodcut dated to 1500.[80] A standard halberd with a bulky rectangular blade and a thick vertical spike dated to the second or third quarter of the fifteenth century has a different overall design than most standard halberds from this period.[81] A surviving example from the fifteenth century that is worth mentioning because of its unique feature has the vertical spike growing above the back part of the weapon, behind the axis of the shaft (considering that the front is the side of the trapezoid blade because of its size).[82] This halberd is similar to the previous examples dated to the fifteenth century, with the exception that the vertical spike growing on the back seems to be a vertical elongation of the flange.

The weapon that I have defined as a standard halberd is what is generally recognized in modern research as the archetypical halberd. Buttin simply referred to this as *hallebarde* and did not examine any of the other types.[83] He noticed and mentioned the changes that progressively underwent in the form of the standard halberd in the sixteenth century, with the form become more elaborate and decorated and later declining to a simple display weapon when its blade stopped being straight and became concave. Mario Troso refers to weapons of this form as halberds, defining them by their multiple uses because of their three basic technical features (blade, vertical spike and beak).[84] Ash in his lengthy discussion on the halberd refers to this weapon as the finalized form of the weapon, which occurred

[79] New York, The Metropolitan Museum of Art, 42.50.17, Standard halberd. **Figure 3.**
[80] Hans Wechtlin, *Christ before Anna*, 1508, Private Collection.
[81] Leeds, Royal Armouries, VII.1497, Standard halberd. **Figure 4.**
[82] New York, The Metropolitan Museum of Art, 52.208.8, Standard halberd. **Figure 5.**
[83] Buttin, *Catalogue*, p. 97.
[84] Troso, p. 34.

after all features became standardized from the middle of the fifteenth century.[85] Claude Blair also agreed with this definition of the halberd.[86] Stone simply referred to this weapon as the halberd, and avoided connections to other subgroups.[87] According to John Waldman, standard halberds were a phase in the general evolution of the halberds, with the halberds of the fifteenth and later in the sixteenth centuries reaching the zenith of the development of this category of weapon.[88] The problem with Waldman's theory is that he approaches the different types of halberds, as divided in this chapter as well as his monograph, as something which belongs to an evolutionary process which lasted through a period of four centuries (thirteenth to sixteenth centuries). In his work, standard halberds are the 'late form' of halberds, which belong to the fifteenth and sixteenth centuries. Judging by surviving weapons, the timeframe he suggests for standard halberds is not wrong, and he does not take into consideration other forms of halberds that were used at the same time. However, he does effectively suggest a chronological progression or evolution of the form of the weapon.

The form of the standard halberd starts to slightly change in the first quarter of the sixteenth century, becoming more and more slender and featuring decorations. By the end of the same century the weapon was produced extensively for display, parade, and ceremonial purposes. The front rectangular blade changes the most as the flat and angled axe-blade becomes smaller and heavily decorated, often with punched-through elements, and its shape changes either to concave or crescent, or to multiple smaller crescents. These decorations and new shapes are

[85] Douglas Ash, 'The Fighting Halberd', *The Connoisseur*, 125 (1950), 101-5 (p. 101-2).
[86] Blair, *European and American Arms*, p. 26.
[87] Stone, p. 275.
[88] Waldman, p. 53.

against the initial devastating nature of the halberd and show its transition to the already mentioned new roles.

3.3. The Proto-Halberd

The problem with the study of halberds occurs when examining weapons that have many technical resemblances to the standard halberd, but lack some of its main features, such as the socket or the beak. The second form of the halberd, the proto-halberd, is also a hybrid, but can only be grouped as a cutting and thrusting weapon in contrast to the standard halberd that also has a pulling element. The weapons that I define as proto-halberds have a rectangular blade on one side of the staff, which becomes elliptic towards the top, forming a long spike.[89] Therefore, the spike is above the blade and not on the axis of the shaft. Proto-halberds do not have a beak, and thus all the features of the weapon can be found only on one of the sides of the staff. The head is attached to the top of the staff with two metal tubes, rings, or straps, which are also called eyes.[90]

An early surviving example of a proto-halberd is dated to the late thirteenth century and has a long and curved corroded blade that rises to create a long spike.[91] The blade of the weapon looks similar to an illustration of a halberd of the same type from a late thirteenth-century German psalter, specifically from a depiction of the *Betrayal and Arrest of Christ*.[92] The vertical spike formed in both cases extends high above the height of the upper eye. A surviving proto-halberd with a completely straight blade that is angled back towards the top to create the spike is

[89] The choice of term is based on the fact that this form (pictorial and material examples) does indeed predate the other two halberd forms examined in this chapter.
[90] Stone, p. 654.
[91] Bern, Historisches Museum, 1873.24, Proto-halberd. **Figure 6.**
[92] Paris, Bibliothèque nationale de France, MS Latin 17961, fol. 113^{v}. **Figure 7.**

dated to the last decade of the thirteenth century.[93] An interesting weapon that resembles this type of halberd can be seen in the upper left corner of an Italian painting dated to 1337.[94] The lower end of the blade is slightly elliptic, becoming straight and finally angling backwards to create a tall and long spike. A proto-halberd of French origin and dated to the first quarter of the fourteenth century has a rectangular blade that curves inwards towards the top to form a short spike.[95] A similar halberd, dated to 1300-20, has the back side of its spike sharpened all the way down to the upper eye, as well as between the two eyes.[96] Another halberd of the same type dated to 1350 has a long lower eye and is also sharpened between the two eyes.[97] The sharpened part between the two eyes faces the shaft and was definitely not used for hitting in any way. Perhaps this peculiar feature has something to do with the production process, and it makes sense if the blade was produced and sharpened first and the two eyes attaching it to the shaft were added later. A surviving proto-halberd with a smoother elliptic top is dated to the third quarter of the fourteenth century.[98] A 'refined' version of a proto-halberd from the last quarter of the fourteenth century has a perfectly rectangular blade and the vertical spike simply rises above the back half of the top of the blade.[99] Finally, a proto-halberd dated around 1400, has a long straight blade that grows outwards from the height of the lower to the upper eye and then is angled backwards to form a spike.[100]

Two of the better preserved examples of proto-halberds are dated slightly later. The first is dated around the end of the fourteenth or the early fifteenth

[93] Zürich, Landesmuseum, 4327, Proto-halberd. **Figure 8.**
[94] Ugolino Di Vieri, *The Capture of Christ*, 1337, Museo dell'Opera del Duomo, Orvieto. **Figure 9.**
[95] Zürich, Landesmuseum, LM 6345, Proto-halberd. **Figure 10.**
[96] Bern, Historisches Museum, 3463, Proto-halberd. **Figure 11.**
[97] Zürich, Landesmuseum, KZ 11476, Proto-halberd. **Figure 12.**
[98] Zürich, Landesmuseum, 3453, Proto-halberd. **Figure 13.**
[99] Berlin, Deutsches Historisches Museum, W 59/241, Proto-halberd. **Figure 14.**
[100] Private Collection, Proto-halberd. **Figure 15.**

century.[101] It has a long pointed reinforced spike and two long eyes. The top eye nearly engulfs the top of the shaft. Two langets are attached on the lower eye on the front and back of the weapon. The langet on the back in welded and nailed on the eye, but the langet on the front is placed under it. The second example is dated to the second quarter of the fifteenth century.[102] Its blade is long and rectangular and the spike on the top is short. It has a long single langet on the back that is formed as an elongation of the lower eye. Compared to previous examples the blade of this weapon not only appears to be more refined but also it is obvious that the material used is different, perhaps richer in carbon with lower iron concentration, which made the blade less dented and was later polished easier.

Iconographical examples of proto-halberds can be found in art even later. In Giovanni Boccati's *Capture of Christ* (1445) a halberd can be seen in the top middle of the painting.[103] Many proto-halberds can be seen used alongside standard halberds and composite halberds (composite halberds will be discussed later) in a depiction of the battle of Dorneck, which is dated around 1499.[104] The woodcut illustrates the fight of the troops of the German Emperor Maximilian I against the combined forces of the Swiss Confederacy. The depiction, and most likely the use, of proto-halberds did not stop after the fifteenth century. In a miniature illustrating the battle of Grandson in 1476, which is dated to 1513, the soldiers of the Swiss Confederation hold several proto-halberds that have the same form as those already described dated to the late fourteenth century.[105] In a woodcut of the Battle of Sempach from the third quarter of the sixteenth century, the majority of the

[101] New York, The Metropolitan Museum of Art, 14.25.103, Proto-halberd. **Figure 16.**
[102] Leeds, Royal Armouries, VII.1657, Proto-halberd. **Figure 17.**
[103] Giovanni Boccati, *Capture of Christ*, c. 1447, tempera on wood, Galleria, Perugia. **Figure 18.**
[104] *Battle of Dorneck*, 1499, woodcut, Kupferstich Kabinett, Basel. **Figure 19.**
[105] Lucerne, Korporation Verwaltung der Stadt, Diebold Schilling Lucerne Chronicle, fol. 100^{r}. **Figure 20.**

Swiss soldiers depicted are holding proto-halberds.[106] There is no evidence to draw a line somewhere as to when the use of the proto-halberds ended because of the lack of clear material evidence. It is likely that the weapon was still in use in the beginning of the sixteenth century but the continuous depiction of it in iconography might be a reaction to the strong association of the weapon with the Swiss and therefore included as a signature iconographic tool to underline their identity.

In modern research proto-halberds are not always recognized as belonging to the wider group of halberds. Mario Troso mentions this weapon as a Type A Swiss *vouge*.[107] He acknowledges that this weapon has similar characteristics to the standard halberd but chooses to separate it completely for research purposes. Stone refers to this weapon simply as a *voulge*.[108] In contrast to Troso's theory, Waldman describes this form of weapon as an early form of a halberd, or a thirteenth century version of the halberd.[109] Although Waldman recognizes that this form was used even later than the timeframe that he suggests, his theory on halberds seems to be fixated on proving a linear progression of forms. Prior to Waldman, Charles Buttin had also developed the theory that weapons of this form are an early version of the later standard halberd.[110] Ash also discussed the proto-halberd as an origin point for later forms of the weapon.[111] Because of the morphological similarities he considered it a forerunner of the fifteenth century halberd. He also mentioned the term *Sempach halberd* which he encountered in his research as a synonym to the proto-halberd, but discards it immediately as a term

[106] Niklaus Manuel, *The Battle of Sempach*, , C15th, woodcut, Bildarchiv, Lucerne. **Figure 21.**
[107] Troso, p. 31.
[108] Stone, p. 654. Voulge is simply another spelling for the vouge. Stone also provides two more additional spellings for this term: boulge and bouge.
[109] Waldman, p. 105.
[110] Charles Buttin and Francois Buttin, 'Les Armes d'Hast', *Bulletin Trimestriel de la Société des Amis du Musée de l'Armée*, 44 (1936), 36-44 (p. 37).
[111] Ash, pp. 101-2.

that should only be limited to weapons used at the Battle of Sempach in the late fourteenth century.[112] Holmes refers to the proto-halberd, or to at least what he believes is an early halberd, as a Sempach halberd.[113] However, he associates that form to early examples of the standard glaive and the proto-bill.[114]

So, in conclusion, judging from both iconographical evidence and surviving examples of weapons, proto-halberds indeed appeared before standard halberds, in the fourteenth century, but they were used simultaneously after the appearance of the standard halberd in the late second half of the fifteenth and possibly in the early sixteenth century. The extended parallel use of both weapons suggests that they were different types of the same weapon group, rather than different evolutionary stages of the same weapon. Moreover, it does not seem practical to completely separate the proto-halberd under a different category of weapon simply to examine it closely, as Troso suggests. The division can also happen within the same group as it is suggested here. A more conventional terminology was used to describe the proto-halberd by Claude Blair.[115] The way that Blair chose to describe this type of weapon is as a 'halberd of the so-called Swiss Vouge type'. What Blair effectively did, was to recognize that the proto-halberd belongs to the halberd weapon category, and used the term 'Swiss Vouge' as a sub-category. The argument of the categorization of this weapon or not in the halberd category, or even its acknowledgement as an early form of what would be later known as a halberd (standard halberd), becomes more complex because of the existence of another halberd-like weapon. The idea behind the term 'Swiss Vouge' combined

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[112] Ash's decision is wise considering that identification of the weapon used at Sempach is most likely based on depictions of the weapon from the fifteenth century, since there are no contemporary depictions or descriptions of the weapons of the Swiss at the battle.
[113] Martin R. Holmes, 'Some Hafted Weapons of the Middle Ages', *Archaeological Journal*, 91 (1934), 22-31 (pp. 4-5).
[114] Both of these terms are manufactured for this research and will be discussed further later.
[115] Blair, p. 24.

the popular, in French literature, term *vouge* or *voulge* (which will be discussed later) with the fact that proto-halberds appear often in the depiction of battles that the Swiss participated in throughout the late Middle Ages, as well as the fact that they can be found in numerous Swiss armouries and collections.[116] In fact, these weapons were deeply rooted in Swiss military tradition, and even in the early sixteenth century depictions of the Swiss in war showing several weapons of the mentioned form.[117] It is however important to consider that this might be an anachronistic approach or a weapon elevated to a cultural military symbol and a display of identity. The choice of the term 'Swiss' also excludes art examples produced in adjacent but different areas such as France or Germany.

3.4. The Composite Halberd

The weapon which is related both to the standard halberd and proto-halberd has a rectangular blade that indents on the top towards the top to form a sharp spike. The spike just like in proto-halberd rises above the blade and not on the axis of the staff. The head of the weapon is attached to the staff with two eyes. Sometimes the upper eye fully encloses the top of the staff to add extra stability, almost looking like a socket. The most important feature of this weapon is a small horizontal spike, either growing from one of the eyes or totally independent between them. This spike on the opposite side of the blade clearly resembles the beak of the standard halberd. Examples of this weapon exist with strips of metal connecting

[116] Several illustrations of these weapons are included in the Swiss illuminated chronicles created between the early fifteenth and early seventeenth centuries. The most famous of them are the four Schilling Chronicles created in the late fifteenth centuries, which narrated the recent history of the Swiss Confederacy. The heavily illuminated manuscripts often focused on the significant military achievements of the Swiss in the same period and featured illustrations of battles or armies on the march.

[117] For example Manuel's *The Battle of Sempach* from the first quarter of the sixteenth century, cited above, shows the Swiss fighting exclusively with proto-halberds.

the lower eye to the staff in order to increase the stability of the weapon's head. These metal strips resemble to some extent the langets which can be found on standard halberds, or even on other staff weapons. For research purposes the term I shall use for this form of weapon will be the composite halberd.[118] This third form is a hybrid, and just like the standard halberd it can be grouped as a cutting, thrusting, and pulling weapon.

A surviving example of a composite halberd from the last quarter of the fourteenth century has an individual spike attached on a narrow metal strip on the back side, placed between the two eyes.[119] In addition to that, two metal straps on the front and the back side secure the lower eye to the staff. Several examples of composite halberds with the beak attached as an extra piece between the two eyes can be found in the painting *Dorneck 1499*, which has already been mentioned and is dated around the same period. A different version of a composite halberd, which is dated to the early fourteenth century, has a long slightly angled downwards beak growing on the back side from the upper eye.[120] The lower eye is connected to the staff with a pair of langets on the front and the back. The inner part of the blade between the two eyes seems to be sharpened and corroded. Just like the examples of proto-halberds mentioned before having the same feature, that sharpened part of the blade can be explained if the blade was produced before the eyes were attached, and sharpened on both sides, or if this weapon was constructed using an older blade. Another surviving variation of composite halberd has a small beak growing from the upper eye.[121] The lower eye is long and the upper eye fully

[118] Example of a composite halberd. The term is based on descriptive criteria, to act as a connecting point for the other two types.
[119] New York, The Metropolitan Museum of Art, 14.25.35, Composite halberd. **Figure 22.**
[120] Berlin, Deutsche Guggenheim, W 59.203, Composite halberd. **Figure 23.**
[121] Bern, Historisches Museum, Unknown inventory number, Composite halberd. **Figure 24.**

encloses the top of the staff. The dating of this halberd is unknown but the blade is similar to the other composite halberd dated to the early fourteenth century.

Composite halberds are usually approached in modern research as an alternative version of a proto-halberd. Ellehauge introduced the term Swiss halberd to describe this weapon most likely affected by the use of the term Swiss *vouge*.[122] He made an in depth analysis of early forms of certain staff weapons but seemingly he saw the proto-halberd and the composite halberd simply as small variations of the same stage. Mario Troso names this type of weapon Type B Swiss *Vouge*.[123] His approach is consistent with his definition of the proto-halberd, which he calls a Type A Swiss *Vouge*, recognizing that their difference is the addition of the beak as an extra feature. Blair, who had previously labeled proto-halberds as 'halberds of the so-called Swiss Vouge type', uses the exact same terminology to define composite halberds.[124] In that way, even though he accepts that proto-halberds and composite halberds are a sub-category of the halberd group, he does not make a distinction between them. This separation must be made because the extra feature of the composite halberd possibly allowed more variations, both in form and use, than the proto-halberd. The same categorization is made by Stone who also does not differentiate between weapons with a spike between the eyes or without it and simply groups both under the term *voulge*. [125] Waldman approaches this weapon as the second step of evolution of halberds, with proto-halberds being the first and standard halberd the third.[126] He places this form of weapon in the fourteenth century, dating which seems to be too generic. Although the first surviving examples of composite halberds are indeed dated to the early fourteenth century,

[122] Ellehauge, p. 20.
[123] Troso, p. 35.
[124] Blair, p. 24.
[125] Stone, p. 654.
[126] Waldman, p. 105.

their depiction and production did not stop there, but kept going on for the following centuries. Bashford Dean, introducing the same 'evolutionary' approach, placed this weapon in the early stages of the evolution of the halberd, somewhere in the third quarter of the fourteenth century, under the generic term 'pole axe'.[127] At this point it is interesting to mention Holmes' approach on the halberd from his generic article on medieval hafted weapons. The author proposes an imaginative but exaggerated idea, following evolution theories, which suggests that the form of the standard halberd is a result of the progressive elongation of the blade of a flat knife to non-symmetrical axes.[128] This theory is beautifully drawn as an artistic design, and of course it cannot be denied that weapons did start at some point from simpler forms, but it is ridiculous to try and trace every individual form and weapon to its initial ancestral state. Ash described the proto-halberd and the standard halberd as the earliest and the later more developed form of the weapon respectively, and although he did not attribute this term to the composite halberd he noted that this type of weapon was some kind of middle step from one form to another.[129] He expanded in this line of thought noting that the standard halberd occurred once the middle detached spike fitted in the composite halberd became an integral part of the weapon.

3.5. Certain Phases in the Development of the Standard Halberd

The title of this subchapter is a tribute to Ellehauge's title of his work on the development of staff weapons. As a weapon group the halberd and specifically the standard halberd presents a unique opportunity in the observation of different

[127] Dean, *Charts*. **Figure 25.**
[128] Martin R. Holmes, p.27.
[129] Ash, p. 101.

phases the form of the weapon went through from the third quarter of the fifteenth to the end of the second quarter of the sixteenth century. This discussion is placed after the mention of all three halberd types to highlight the variation of the standard halberd based on surviving examples compared to the other two types. The basic technical features that make a standard halberd as well as the development and evolution of the generic weapon group have already been discussed. The extensive representation of the later form of the halberd in art especially after 1500 in combination with the plethora of surviving material examples allows a further analysis of the weapon. There is no point in dividing the standard halberd subgroup into even smaller categories because the function and basic elements of the weapon remained the same throughout its lifespan. However, a variety of different design trends can be observed during its lifespan. Certain of these phases were consistent and clearly popular which is why they were imprinted in art and others are presented to us through a handful of surviving weapons. It is important to mention here that the phases of the standard halberd described here did not occur in a certain chronological order but they developed laterally often overlapping and branching out from previous forms. This will help with laying out the designs for future research and observing distinctive forms but without using more labels that would only impair the general research of staff weapons.

The first form can be traced to the middle of the fifteenth century and includes standard halberds that maintained the roughly rectangular or slightly trapezoid blade that was the key feature of the proto-halberd and composite halberd which both predated the standard halberd. The heads of these weapons are usually bulky or in the cases that are narrower they look plain. Most of the examples of this category also have langets on the two flat sides of the weapon. A

halberd from the third quarter of the fifteenth century has that type of blade with the top of it only slightly angled upwards.[130] The part of the blade that is projected in front of the shaft has a small concave on its top and bottom. What is most interesting about this object even within this certain phase is that the spike on the top of the head is not coaxial to the shaft. Instead it is placed above the blade, which is a design reminiscent of the shape of the predecessors of the standard halberd. The displacement of the blade creates a 90 degree angle empty space above the axis of the shaft between the spike and the top part of the beak. A truly odd example from the second quarter of the fifteenth century has a rectangular blade but the spike on the top is displaced the other way this time, above the back side of the weapon and it forms a vertical extension.[131] This makes the spike on the back to grow from a long straight surface that is created by the alignment of the back of the spike with the flange which is rare for the halberd group. Additionally, the top corner of the front of the blade is slightly curved and blunt and it is impossible to say if this was by intention of the original design or it is a result of later sharpening. Towards the end of the second quarter and in the third quarter of the fifteenth century there is a good number of surviving halberds with a smaller slightly trapezoid blade that appear to also be affected by previous forms and they are the best example of a transition to most complicated forms. Such a weapon from the second quarter of the fifteenth century has a wide spike on the vertical axis of the shaft, and regardless of the small beak and flange on the back, it is not aligned with them.[132] It is interesting to also notice the smooth angled upwards blade of the weapon, which becomes progressively more prominent during the second half of the same century. Similar to that, a halberd from the third quarter of

[130] Philadelphia, Philadelphia Museum of Art, 1977-167-306, Standard halberd. **Figure 26.**
[131] New York, The Metropolitan Museum of Art, 52.208.8, Standard halberd. **Figure 27.**
[132] New York, The Metropolitan Museum of Art, 14.25.52, Standard halberd. **Figure 28.**

the fifteenth century has the top and bottom of the blade angled upwards but parallel to each other.[133] A halberd with much sharper angle on its blade from the beginning of the third quarter has a large head with a large triangular spike on its top.[134] At first glance the weapon looks more refined than it is, but a closer look and comparison to similar weapons from the next quarter of a century reveal that the blade is rather bulky. By the third quarter of the fifteenth century the blade was still sometimes narrow but the rectangular general frame gave way to the smooth trapezoid. A weapon from this period can be interpreted as the forerunner of later forms of the standard halberd with more sharp angles on the top and bottom of the blade.[135] This creates a small trapezoid in front of the shaft which became bigger and more angled in forms that appeared towards the end of the fifteenth century. Generally this phase of the standard halberd can be considered to be more primitive than those that followed because of the lack of decoration both on the shape of the blade as well as on the blade itself. This phase is not very popular in art but resurgence in shapes that became more rectangular occurred towards the second quarter of the sixteenth century. A weapon from that period has a rectangular blade in front of the shaft whose top and bottom are decorated with a discreet wave pattern.[136] The back of the head is also interesting because the part above the beak is also decorated with a wave pattern which ends on the beak itself projecting a little edge which looks like a mock beak on top of the original. A very similar weapon to that dated to the very end of the second quarter of the sixteenth century has the same wave decorative on top and bottom of the blade on the front as well as on the back.[137] The main difference is that the pattern on the back

[133] New York, The Metropolitan Museum of Art, 49.120.11, Standard halberd. **Figure 29.**
[134] Philadelphia, Philadelphia Museum of Art, 1977-167-314, Standard halberd. **Figure 30.**
[135] New York, The Metropolitan Museum of Art, 42.50.18, Standard halberd. **Figure 31.**
[136] Leeds, Royal Armouries, VII.1668, Standard halberd. **Figure 32.**
[137] New York, The Metropolitan Museum of Art, 48.149.33, Standard halberd. **Figure 33.**

creates the small edge right above the beak and not on it. These two last examples are an indication that forms were revisited and reused and how half a century of technological and decorating progress affected them. They are also great examples on the change of approach towards weapons in the first half of the sixteenth century and to how some type of decoration became nearly integral to the form of staff weapons even before their complete decline to decorative and parade objects.

The second form also includes weapons that maintain a rectangular or slight trapezoid blade but their identifying feature is a wide spike on the top of the weapon in the form of a small scalene blade, whose lower side towards the back of the weapon often merged with the beak. The first difference with the first form previously discussed is that the second form appeared only in the first half of the sixteenth century. Therefore, it was generally more refined than the weapons just discussed with smooth shapes and presented great craftsmanship but at the same time their heads looked less defined and definitely less decorated than other examples of the same period. One of the earliest examples of this form has a head in the form of a scalene trapezoid.[138] The vertical spike is triangular and merges with the top of the beak with a wide angle. The lower part of the blade has a cut out decorative cross. This weapon's blade has a unique feature that is extremely rare amongst any type of halberds. The trapezoid shape is wider on the bottom this way making the lower part of the blade more prominent. It most likely affected the use of the weapon because the downwards angle of the blade would go against the flow of a cut when the weapon was used. Another example of this form from the end of the first quarter of the sixteenth century has a straight blade on the front that is parallel to the shaft.[139] It also has the decorative cross cut out of the lower

[138] New York, The Metropolitan Museum of Art, 48.149.34, Standard halberd. **Figure 34.**
[139] Leeds, Royal Armouries, VII.1498, Standard halberd. **Figure 35.**

part of the blade. The spike makes a smoother transition from a concave shape that merges with the beak. The front of the blade projects its back corner in the middle of this concave. The function of this is purely aesthetic and it was by choice left in place because it would have been easier to smooth the whole surface out. The third example of this form presented is from the second quarter of the sixteenth century.[140] In comparison to the previous two weapons it looks plainer and does not have any decorations other than a maker's mark. The blade is slightly convex. The spike is narrower and longer than the other weapons. The transition of the spike to the beak is nearly straight and only marginally convex. The spike is not directly on top of the shaft and it is dislocated a few centimetres towards the back of the weapon. That way, the back of the bump created by the enclosed socket is projected upwards towards the spike as a reinforcing spine. A final example of this form from the end of the second or the early third quarter of the sixteenth century has some most puzzling technical details.[141] The blade of the weapon is straight but instead of a top end it becomes convex and blunt, and then concave towards the triangular spike. The bottom edge of the blade is also blunt. It is unclear if this was part of the original design of the weapon or if it is a result of later sharpening or conservation. The top of the spike goes down and with a wide angle merges with the beak. The cross-section of the spike is diamond shaped. Most importantly, the shaft does not fully enclose the shaft. The upper part is completely covered from the part of the head that the spike raises from, and a narrow strip of metal connects the lower part of the blade like an eye. Between these two points the shaft is visible. Exposed part of the wooden component of the weapon was not uncommon for other staff weapon heads during this period especially in examples where the socket is folded over the top of the shaft, it is

[140] Leeds, Royal Armouries, VII.1497, Standard halberd. **Figure 36.**
[141] Philadelphia, Philadelphia Museum of Art, 1977-167-328, Standard halberd. **Figure 37.**

however rare in the case of halberds. Moreover, it is interesting because the inner part of the blade looks cut unevenly, which suggests this might have been a later modification to the weapon's head perhaps a repair to swap a broken shaft.

It is worth noticing that the wide triangular spike found in weapons of this type has a narrow diamond cross-section because its middle is reinforced on both sides nearly forming a spine. Additionally, this type of form has an extra threat because the concave or straight transition from the spike to the beak is sharpened, and therefore, the whole back of the weapon can be used to cut. The beak of this form of halberd is nearly always identical. The bottom part of it is flat and horizontal and creates a 90 degree angle with the back of the weapon.

The third form of the weapon has a large trapezoid blade with its top and bottom being angled downwards and upwards towards the socket in the centre of the weapon. The tip of the blade itself is angled upwards. This is the most iconic form of the standard halberd, and most likely of the whole halberd group. The identifying features of this form are the large straight or barely curved lines of the shape of the weapon that form the blade and a long spike on top of axis of the shaft. An early example of this from the third quarter of the fifteenth century has the aforementioned features and a reinforced spike.[142] The only decoration is a small hook on top of the beak. The upper part of the blade is straight and becomes concave to meet the spike. Compared to other weapons of this form the blade is narrower. This is what changes in the fourth quarter of the fifteenth century, when the width of the blade increases projecting further from the shaft, something that can be seen as an evolutionary change throughout the sub-group. A halberd from that period has a wide trapezoid head whose top and bottom is formed by

[142] New York, The Metropolitan Museum of Art, 14.25.193, Standard halberd. **Figure 38.**

perfectly straight lines.[143] The spike of the weapon is unusual as it not just reinforced at the tip but flattened in order to create a small blade with a diamond shaped cross-section. A third example, from the end of the fourth quarter of the fifteenth century, has a large blade and a long spike that is reinforced towards the top.[144] The top and bottom of the blade are concave. At the base of the spike three decorative circles have been hit with a tool but they are not punched through the head. The back of the weapon, part of the beak and the flange are decorated with a wave pattern. The form of the weapon remained similar in the first quarter of the sixteenth century as it can be seen from another example that has the same shape but the reinforced part of the spike is slightly longer.[145] Notable additions to this weapon are langets on all four sides of the shaft. This weapon, as well as another example that is nearly identical, has a small decorative indent on the top of the beak.[146] Both weapon heads are bulky with clearly defined shapes. A slightly different halberd from the same period has a narrower head and a shorter spike with a reinforced top.[147] The features of this form of halberd can also be observed in an example from the end of the second quarter of the sixteenth century with additional decorations.[148] Three decorative small circles are punched through the back of the head and several more form a small circular pattern on the middle of the blade. The rare detail of this weapon is the reinforced tip of the beak. Most examples of this form have long langets at the sides of the weapon that are welded on the bottom of the socket and nailed on the shaft. The only decoration of this form is the odd indent on the flange or the beak and sometimes cut-out shapes from the blade. This form of the weapon has been quite popular in art from the

[143] New York, The Metropolitan Museum of Art, 14.25.51, Standard halberd. **Figure 39.**
[144] Philadelphia, Philadelphia Museum of Art, 1977-167-323, Standard halberd. **Figure 40.**
[145] Philadelphia, Philadelphia Museum of Art, 1977-167-332, Standard halberd. **Figure 41.**
[146] Philadelphia, Philadelphia Museum of Art, 1977-167-333, Standard halberd. **Figure 42.**
[147] New York, The Metropolitan Museum of Art, 42.50.20, Standard halberd. **Figure 43.**
[148] Philadelphia, Philadelphia Museum of Art, 1977-167-338, Standard halberd. **Figure 44.**

end of the fifteenth and the first half of the sixteenth century. In a woodcut by the Dürer School from the last quarter of the fifteenth century, a halberd of this form can be seen in the crown having the three decorative holes on the blade.[149] A halberd from Hans Holbein's Ecce Homo from the same period truly highlights the trapezoid shape of the head with the prominent upper edge.[150] The halberd held by a soldier in a woodcut from the first quarter of the sixteenth century has the same blade of this form but the spike is replaced by a long knife-like blade.[151] In a miniature showing the Swiss crossing the Alps, the halberds held by them are all of this form and regardless of the small size of the illumination the long langets of the weapons and the marginally decorated backs of the heads have been depicted closely.[152] A detailed depiction of a short shafted halberd of this form from the second quarter of the sixteenth century shows the head narrower than usual and the beak being plain but is highly detailed, especially on the form and length of the langets, which generally appear to also be a constant in this type of halberd.[153]

The fourth standard halberd form that will be displayed and discussed has a similar shape to the third form but is identified by the extensive decorations on the objects, particularly decorative indents along parts of the head. A typical example of this form from the last quarter of the fifteenth century has a trapezoid head and a long spike with a reinforced tip.[154] The blade is slightly angled. The top and bottom parts of the blade are decorated with a concave pattern that creates a

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[149] Dürer School, *Christ Bearing the Cross*, 1498, woodcut, Albertina, Vienna. **Figure 45.**
[150] Hans Holbein the Younger, *Ecce Homo*, 1515, pen and brush in black and brown ink, grey and brown washes, Staatsgalerie, Stuttgart. **Figure 46.**
[151] Lucas Cranach the Elder, *Beheading of St Barbara*, 1510, oil on wood, Alte Pinakothek,Munich. **Figure 47.**
[152] Lucerne Chronicle, fol. 327^{v}. **Figure 48.**
[153] Virgil Solis, *Halberdier Walking Left and Carrying a Halberd Over his Left Shoulder*, 1550, woodcut, The Metropolitan Museum of Art, New York. **Figure 49.**
[154] Philadelphia, Philadelphia Museum of Art, 1977-167-322, Standard halberd. **Figure 50.**

wave effect. The back of the head is also decorated with small concaves which can be seen above the beak and most importantly on the flange. An example from the first quarter of the sixteenth century has an even more prominent decoration created by concaves.[155] The indents are smaller and they cover the top and bottom of the blade as well as the flange and they create a saw pattern. It is also worth noting that most part of the spike is reinforced, in contrast to most halberds that only the very top of the spike bears that feature. An intricately decorated halberd from the same period has cut-out decorations both on the blade as well as at the base of the beak and small saw-teeth designs and patterns on the top of the blade and at the back of the head.[156] The spike of this weapon is quadrangular and not circular. A third weapon also from the same period has a quadrangular spike and the saw-teeth pattern on the flange and at the top part of the beak.[157] The blade has to a small concave at the top and the bottom going horizontally towards the shaft and then another deeper concave closing towards the same direction. This creates the impression of a nearly separated sharp part of the blade. A halberd with a quadrangular spike from the second quarter of the sixteenth century has deep concaves on the top and bottom of the blade and cut-out decorations on the blade, at the base of the beak and on the flange.[158] As briefly demonstrated with these examples, halberds of this form are characterized by extravagant shapes and decorations that affected their shape. This was also reflected in art during the period of their use. A group of halberdiers are shown holding halberds with the wave pattern on the and the three hole decoration on the blade in a woodcut from the early sixteenth century.[159] A very similar weapon is seen in a woodcut of St

[155] Leeds, Royal Armouries, VII.964, Standard halberd. **Figure 51.**
[156] Leeds, Royal Armouries, VII.965, Standard halberd. **Figure 52.**
[157] Leeds, Royal Armouries, VII.1239, Standard halberd. **Figure 53.**
[158] Philadelphia, Philadelphia Museum of Art, 1977-167-342, Standard halberd. **Figure 54.**
[159] *Der Weisskunig*, p. 407. **Figure 55.**

Ladislas from the second quarter of the sixteenth century, with the spike of the weapon being in the shape of a leaf.[160] Two similar halberds from a woodcut also from the second quarter of the sixteenth century are decorated with concave indents and small cut-out designs on the blades, which because of the patterns have narrow prominent sharpened edges.[161] This form of the halberd was infused by the imagination of the workshops that created them and demonstrated their skill, and gave artists the material they needed to depict objects of intricate detail. The perfect example on how this form affected art is a sketch by Dürer from the last quarter of the fifteenth century.[162]

The fifth form of the standard halberd that will be discussed here only appeared from the second quarter of the sixteenth century and it signaled the decline of the weapon to a state of non-combat use in parades, displays, and ceremonial guards, and with it the slow decline of staff weapons. This group has been identified as a product of truly remarkable craftsmanship, refined thin shapes, extensive cut-out decorations, but most importantly by the change in the shape of the blade, which slowly changed from being straight to being crescent-shaped. An early example of this form has the same concave pattern that can be found in the previous form discussed but the difference is that the blade is significantly smaller in size and concave on its edge.[163] The finalized version of this form can be observed in a halberd with a crescent-shaped blade, cut-out decorations on the blade and on the back and a long quadrangular spike.[164] The head of the weapon is

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[160] Hans Sebald Beham, *Patron Saints of Hungary Stephen, Ladislas and Emmerich*, 1527, woodcut, Bodleian Library, Oxford. **Figure 56.**
[161] Hans Sebald Beham, *Wounded Man in the Army's Train*, 1530, woodcut, Staatsgalerie, Stuttgart. **Figure 57.**
[162] Albrecht Dürer, *Soldiers*, 1489, sketch in watercolour, Staatliche Museen Preussischer Kulturbesitz: Kupferstichkabinett, Berlin. **Figure 58.**
[163] Leeds, Royal Armouries, VII.1658, Standard halberd. **Figure 59.**
[164] Leeds, Royal Armouries, VII.996, Standard halberd. **Figure 60.**

missing the size and the bulk of the other forms and the top and bottom of the blades are decorated with small projections like hooks.

The separation of the standard halberd in five forms is of course an artificial divide just like any other classification in groups or subgroups in hoplological studies. The different forms can often overlap and become mixed. The aim for this artificial subdivision was to briefly demonstrate the different trends in the design of a truly remarkable object. The categorization and labelling of wider weapon groups and subgroups is useful primarily for referencing purposes, whereas the division of these forms is a study that shows not only the linear but also the lateral development of the only staff weapon that has the numbers to be examined this way.

3.6. Conclusions

The dating of halberds in a relevant progression is not entirely inaccurate, but Waldman's approach is too linear, excluding the appearance and use of composite halberds after 1400. Even though the division of halberds into different sub-types named standard halberd, proto-halberd, and composite halberd seems to be plain and somewhat confusing, it serves a purpose. Those terms aim to be memorable and descriptive, and to help the reader immediately recall the weapon category used. The terminology used, for example, by Troso might be useful, but it divides the halberd weapon group suggested here into two completely different categories. It is important to incorporate all different forms of the same weapon under the same group, which is defined both by its general technical features as well as by the use of the weapons included in it. The division suggested here is not chronological

but instead, internal. Proto-halberds and composite halberds definitely seem to pre-date standard halberds, but they were also used alongside each other after every other type appeared for the first time. As mentioned before, the choice of names for the three different categories is made based on a unique aspect of the weapon that can remind the reader of the form. Standard halberds appear consistently in iconography after their first appearance in art or as surviving objects, and they are the most developed and complicated form of the halberd. Proto-halberds are also popular in iconography, while several examples survive as well. They also appear to be the earliest surviving form of the halberd. Composite halberds are no less important than the others, so they are categorized third as the connecting link between the other two forms. Furthermore, surviving composite halberds are rarer compared to standard halberds and proto-halberds. In addition to that, it is important to mention once more that although composite halberds appear to be in use since the early fifteenth century, they are consistently depicted in later iconography.[165]

The concept of more complicated and elaborate weapons being the most recent makes the dating of weapons such as the proto-halberd and the composite halberd particularly difficult. Most of the surviving weapons of these two categories are dated to the thirteenth and fourteenth centuries, but there is a possibility that some of these weapons are dated later, as suggested by more recent iconography. Some depictions of these two halberd forms that have already been mentioned can be dated to the late fifteenth or early sixteenth centuries, and it seems rather peculiar not to have any surviving examples of these weapons from

[165] Both proto-halberds and composite halberds are depicted in war iconography showing the Swiss in battle throughout the examined period. This does not only occur in iconography produced in Switzerland. It is an indication that both weapons were linked to the Swiss, without necessarily meaning that they were only used by them.

that period, whilst at the same time the number of surviving examples of standard halberds increase. The dating of later proto-halberds and composite halberds might have been affected by their close resemblance to earlier examples of the same forms. Unfortunately, there is no way to prove if any of these weapons were produced later only based on scarce iconographic evidence.

Nonetheless it is important to group together the weapons of all three types in order to examine their form and later their use, both of which have similarities because of the existence of the same, or at least most of the same, technical features. According to the evidence examined proto-halberds appeared first, while standard halberds and composite halberds appeared later. Furthermore, the different forms of halberds do indeed create the impression of a nearly evolutionary development, an idea that cannot be discarded altogether, but must not be forced in the study of this group of weapons and allowed to overshadow their function and the examination of their unique characteristics in the wider context of the study of staff weapons. Even though the appearance of the different forms was not simultaneous, according to contemporary iconography after all three types had developed, their usage was continuous and overlapping.

Chapter IV: The Glaive

4.1. Nomenclature and Origin

A matter that needs to be addressed at the outset of this subsection is the choice of the term glaive to describe this weapon group. This weapon is also known in English as a fauchard, which derives from the French term *fauchart*. It is also referred to in some museum catalogues as a late form of the bill.[166] The modern Italian term for the glaive is *falcione*, due to its resemblance to the blade of a falchion.[167] The hand-weapon with the same name generally is considered to be a straight or slightly curved blade that is only sharpened on one side, therefore resembling the simplest forms of the glaive. The subject of the origin of the term fauchard and when it was first attached to the examined weapon needs further investigation, but for now the term glaive will be used to avoid confusion with any other terms because the terms *fauchard* has been attached more widely by some authors to a variety of different weapons.[168]

It has been argued that the glaive derived directly from the agricultural scythe, when peasants mounted the scythe's head vertically on a pole.[169] Puricelli-Guerra based this assumption on two axes. The first was the similarity in the form of the weapon and the tool because of the existence of the vertical blade that is slightly curved. The second is the use of the term *falcione* in Italian to describe the weapon in scholarship, which also literally means scythe. However, neither of these points is full-proof and able to justify Puricelli-Guerra's assertiveness. The blade of

[166] *Fauchard* or *fauchart* appears to be problematic even for bigger collections such as the New York Metropolitan Museum of Art, where even some weapons that clearly belong to the bill weapon group are categorised as such. A prominent example of this problem is a heavily decorated bill from the second quarter of the sixteenth century that has been categorised as a *fauchard*. New York, Metropolitan Museum of Art, 35.26.2003, Standard Bill (Roncone).
[167] Troso, p. 99.
[168] Stone, p. 226.
[169] Puricelli-Guerra, p. 6-8.

the scythe is sharpened on the side the top of the weapon curves inwards but the blade of the glaive is only sharpened on the opposite side. Additionally, no surviving glaive examples bear marks that could justify the assumption that the top of the blade was recurved to change sides. The basic function of the glaive is different than that of the scythe because the latter does not have a straight tip that could be used for thrusting. The literary origin is also not enough to connect the specific weapon to the tool. Puricelli-Guerra mentioned the *latinised falco*, *-onis*, that he found in his research in public archives from as early as the fourteenth century and referring to a weapon and not a scythe. The problem of this is the same general problem of the 'original' names of staff weapons, the term indeed refers to a weapon but there is neither a description nor a depiction to be sure what weapon the term refers to. It is worth remembering the curved sword that is known in scholarship as falchion and clearly has the same root. Without a specific description the old reference to the *falcione* might be correct or might refer to the falchion or even something entirely different. It is even worth considering that the glaive originated from the idea of mounting a large blade such as a sword on a shaft. This does not seem impossible considering sword form from this period that were slightly curved and only sharpened on the side outside the curve itself such as the already mentioned falchion or the German *messer* knife.

4.2. The Standard and the Composite Glaive

The conventional description in modern research for the weapon that is labelled here as a glaive, is a large asymmetrical weapon, that based on its use it is a hybrid

featuring cutting, thrusting, and sometimes pulling elements.[170] Only one side of the weapon is fully sharpened. The sharpened blade side is either: totally straight, curved, or straight and angled towards the top. The back side is straight or slightly curved inwards towards the axis of the shaft. The front and the back sides rise to form a sharpened edge that was used for thrusting, which raises either vertically on the axis of the wooden shaft or is slightly curved towards the back. Moreover, two features stylistically and practically connected with the glaive exist in some surviving examples on the back of the weapon. In some versions of the glaive a small swelling exists on the back of the weapon below the sharpened edge. Some other versions include an even more distinctive characteristic; a spike that rises vertically from the back of the weapon, and parallel to the back from a 90 degree angle. This spike sometimes follows the curve of the weapon and sometimes is curved outwards away from the back. The head of the weapon rises above the shaft and it is attached to it with a socket, a piece of metal that fully encloses the top of the staff. Some forms of the glaive include two small spikes growing horizontally above the socket on the back and the front of the weapon's head, resembling in a way the cross-guard of a sword.[171]

The typological approach to glaives in modern research varies greatly. Ellehauge used the glaive as an overall descriptive term for the majority of staff weapons that derived from cutting tools.[172] His justification was mainly etymological and he went on to utilize other terms to define the categories included. According to Mario Troso, there are two types of glaives, depending on their technical features. Type A includes the glaives that only have the two main

[170] Only the composite glaive (see later definition) sometimes qualifies as a pulling weapon, as the spike on the back could be used for trapping and pulling weapons and/or opponents.
[171] Stone, p. 591.
[172] Ellehauge, pp. 8-9.

cutting and thrusting components, the blade of the front side and the sharpened edge on the top.[173] Troso's Type B glaives have the addition of the angled spike in their back side, which is also partially sharpened.[174] Viollet-le-Duc refers to glaives as *faucharts* and he makes the same division as Troso but he calls the simple glaive *couteau de brèche*.[175] Buttin used the term fauchard to describe all the weapons of this group and he briefly discussed that specifically the composite glaive varies because of the potential different elements on the back of the head.[176] This however is a term that in more recent scholarship is attached to a different weapon with a convex blade projected in front of the shaft even though the head is still mounted on top of it. As already mentioned, Ellehauge used the term glaive differently but he also discussed the weapons of this group. In his monograph on the origin of certain staff weapons, he includes in the glaive weapon group all staff weapons with a long blade used for cutting with a minor thrusting component, and he refers to them as fauchards.[177] Ellehauge's definition is too generic, however, and is open to misinterpretation because some versions of weapons, such as the bill, can be described in the same manner, without belonging to the same weapon group.[178] His division of the glaive group into two different subgroups works better as their description becomes more specific. In fact the division followed in this thesis follows the simple but effective criteria that Ellehauge introduced. His primitive fauchard has a long slightly curved blade, which forms a tip on the top and below it on the back of the weapon becomes concave. This forms a pointed projection roughly on the back of the blade. Ellehauge's term for the composite glaive is the

[173] Troso, p. 30.
[174] Troso, p. 36.
[175] Viollet-le-Duc, V, p. 422.
[176] Buttin, *Catalogue*, p. 94.
[177] Ellehauge, p. 24-25.
[178] Two examples of bills that can be described by Ellehauges glaive definition can be found in Troso, p. 121, and in Waldman, p. 118.

typical fauchard and is composed of a blade similar to that of the primitive fauchard, but with the addition of a parrying hook and a smaller projection at the back.[179]

In Bashford Dean's *Arms and Armor Charts*, glaives seem to evolve in a linear way, with the additions of the elements on the back of the weapon occurring chronologically.[180] In Dean's charts, glaives are separated chronologically into several groups. According to the charts, the first form of the glaive, which appeared in around 1200, only consisted of a curved blade on the front and a sharpened edge on the top. Dean argues that this form `evolved` in around 1400 with the addition of the angled spike on the back of the weapon's head, and continued to evolve throughout the fifteenth century. This first occurred with the addition of two horizontal spikes on the top of the weapon's socket, and then in the second half of the fifteenth century with the addition of the small swelling. This theory works to some extent, but much must be discarded or updated because the chart does not include all types of surviving weapons. Dean's theory works to some extent but it must be discarded because the chart does not include all types of surviving weapons and ignores lateral development. Specifically he has left out of the chart glaives that disprove the whole idea of the linear evolution with the constant addition of new elements, such as glaives that have a swelling without having an angled spike on the back.[181] He also avoided including weapons that are simpler, even though they are dated after the glaive has 'evolved' to something more complicated.[182] John Waldman's approach on glaives is rather confusing.[183] Initially he tries to define the different forms of glaives but seems to be trapped in

[179] Ellehauge, p. 16.
[180] Dean, *Charts*.
[181] Troso, p. 113.
[182] Private Collection, Standard Glaive. **Figure 61.**
[183] Waldman, p. 107.

descriptions of different weapons without producing any results. Waldman also tries to make a chronological division of glaive types but he does not explain precisely how this division works, with the exception of using the addition of new elements as criteria of evolution just like Bashford Dean before him. It is unclear though if he deliberately follows Dean's theory on the evolution of weapons at this point or if he re-invents that approach. Puricelli-Guerra's approach on glaives is more thorough and specialized, but also uses the same, already mentioned, evolution motif, connecting the glaive to the military scythe and the vouge because of the proximity of their basic form.[184]

Troso's division of glaives into two categories, depending on the existence of extra elements on the back of the weapon, seems to be the most complete and flexible way to approach the different forms of this weapon group. Even though this division works typologically with the different forms of glaives, it can be confusing when examining glaives chronologically. The problem that occurs is that glaives of both types were produced and used at the same time. Nevertheless, Troso's approach should not be discarded. In order to clarify the problem with Troso's division, it is useful to make a chronological assessment of the different forms of the glaive.

Early examples of glaives can be found in iconography of the thirteenth century. In folio 10r of the Maciejowski Bible, a French manuscript illuminated around 1250, a soldier can be seen holding a glaive.[185] The weapon's form is

[184] The connection to the military scythe will be discussed further in this thesis, and the connection to the weapon referred to as *vouge*, in the appropriate sub-chapter. Puricelli-Guerra recognises and records many of the problems in the study of staff weapons because of their fluidity of form and terminology. However, the author uses a deterministic approach solely based on form, reproducing this way sometimes the same mistakes and problems he criticises. This is one of the best examples of the inherent difficulties in the study of staff weapons, even when the study is limited to a narrower area. Puricelli-Guerra, p. 7.

[185] New York, Pierpont Morgan Library, MS 638, fol. 10^{r}. **Figure 62.**

simple, with the front of the weapon's head slightly curved and sharpened, whilst the back is straight and the top rises to form a sharpened edge. A nearly identical weapon can be found in folio 10v of the same manuscript.[186] The difference is that the weapon has a short shaft and is held by a knight on horseback, which is rather peculiar because he holds it with both hands and is not holding the horse's bridle at all. A similar weapon can be found in a mosaic dated to the last quarter of the twelfth century in Monreale, Duomo.[187] The glaive can be seen on the top right of the *Capture of Christ*. The weapon is curved on the front and straight on the back, although the top does not seem to be sharpened, while the socket that attaches the head to the shaft is visible. A larger glaive can be found in a painting of Cimabue from the last quarter of the thirteenth century.[188] The blade is thicker and curved towards the top, forming a sharpened edge.

One of the earliest surviving examples of glaives is dated to the early fourteenth century.[189] The head of the weapon is long and nearly rectangular. An interesting feature of this weapon is that the sharpened edge on the top is formed above the front side by an inner curve on the back of the weapon. The socket of the weapon is also formed clearly, having three holes for spikes to attach the blade to the shaft. Because of the simplicity of the form of this type of glaive, as mentioned before, Puricelli-Guerra tried to prove that the glaive was an evolution of the military scythe.[190] As previously discussed this theory does not seem to be correct. The blade of this weapon is straight and not curved like the military scythe

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[186] New York, Pierpont Morgan Library, MS 638, fol. 10[v]. **Figure 63.**
[187] *The Treason of Judas*, 13th century, mosaic, Duomo, Monreale. **Figure 64.**
[188] Cimabue, *The Capture of Christ*, fresco, Church of St Francis, Assisi. **Figure 65.**
[189] Private Collection. Standard glaive. **Figure 61.**
[190] The author of the article suggests that the scythe was simply reversed and evolved to glaive. However, there is no evidence other than the convex head. Such a potential evolution implies that at some point a scythe was sharpened at both sides, and later only had the outer side sharpened and the inner blunt, but there is no surviving examples or depictions of such weapon. Puricelli-Guerra seems to fall in the same 'evolution' argument that Waldman also used later. Puricelli-Guerra, p. 3.

was, and there is no example of a weapon with both the inner and outer curves sharpened. Moreover, the top forms an edge on the vertical axis of the shaft, something that never occurs in the case of the scythe.[191] Waldman makes an important observation on the matter, stating that the military scythe developed straight from the farming scythe and retained the concave blade through the whole period of its use.[192] The general confusion on the matter is understandable when examining weapons with a long and concave blade resembling a scythe with a long, angled upwards, spike on the back.[193] Puricelli-Guerra included this weapon in his theory of the evolution of the glaive from the scythe. This weapon is however a spiked-scythe bill, and is usually found in scholarship in the wider bill weapon group. It does in fact look like something that developed from the scythe but the initial premise of Puricelli-Guerra's theory of the evolution of the glaive from the scythe is flawed, and therefore the glaive and the spiked-scythe bill must not be included in the same weapon group just because they have the back-spike as a common feature.

A different form of a glaive can be found in a French manuscript of the *Chroniques de France ou de St. Denis*, dated around 1380.[194] The blade is straight on the front side and slightly curved towards the top. The back is concave on the top, forming a protruding spike on the lower end of the curve. A horizontal spike grows on the middle of the back of the weapon's head. The same concave back that forms a spike at the lower end of a glaive can be found in a fighting scene

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[191] The main characteristic of the form of the military scythe is the simplistic modification of an agricultural scythe's blade vertically on a staff and usually attached with spikes. For more information on the military scythe see Stone, p. 545, and, Waldman, p. 191.
[192] Waldman, p. 108.
[193] Puricelli-Guerra, p. 6. Examples 9 and 10 from his article of such weapons are standard examples of a weapon that is generally categorized in scholarship as a bill. In the case of this research the term attributed to this weapon category is spike-scythe bill.
[194] London, British Library, MS Royal 20 C VII, fol. 41^{v}. **Figure 66.**

depicted on a tapestry from France dated nearly ninety years later.[195] It is notable that even though the shape of the two depicted weapons is nearly the same, the latter does not have the horizontal spike of the earlier one. The same type of glaive can be seen in a depiction of the *Adoration of the Magi* by the artist Jean Fouquet.[196] The miniature is dated to about 1460. Two glaives depicted with great detail can be seen in the left part of the picture. The front of the weapon is straight and the top part of the back is concave, with the lower end of the curve reaching down to the middle of the weapon's head. The concave part seems to be sharpened. Two horizontal metal parts grow on the base of the weapon's head, possibly used as a guard for the user's hands from glancing hits. A weapon similar to these glaives from the first quarter of the sixteenth century has the same plain shape and two small wings grow at its base.[197] The top half of the back of the weapon is sharpened and straight. Finally, an example of a glaive dated either to the end of the fifteenth or the early sixteenth century has a convex head and a plain socket.[198] The back of the weapon is formed by two larger concaves and a smaller in the middle. The points where the concaves meet form two small projections.

Examples of surviving glaives that feature an angled spike on the back side are dated to the first quarter of the fifteenth century. A glaive of that form has a straight front side that gets angled backwards on the top, forming a sharp edge.[199] The back of the weapon is completely straight with an angled spike protruding upwards from the lower part. The same form of a glaive can be found in an Italian painting which is also dated to the first quarter of the fifteenth century.[200] The

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[195] *The Caesar Tapestry*, *c.* 1470, tapestry, Historisches Museum, Bern. **Figure 67.**
[196] Jean Fouquet, *Heures d'Etienne Chevalier: L'Adoration des Mages*, *c.* 1460, illumination on parchment, Musée Condé, Chantilly. **Figure 68.**
[197] Leeds, Royal Armouries, VII.952, Standard glaive. **Figure 69.**
[198] Leeds, Royal Armouries, VII.955, Standard glaive. **Figure 70.**
[199] Private Collection, Composite glaive. **Figure 71.**
[200] Cosmè Tura, *The Martyrdom of St Maurelius*, *c.* 1470, oil on wood, Pinacoteca, Ferrara. **Figure 72.**

glaive featured in the centre of the painting is illustrated with great detail and is nearly identical to the weapon mentioned before. A similar glaive with longer blade of French origin dated to 1480 can be found in Civici Musei d'Arte e Storia di Brescia.[201] The head of the weapon is longer and the front is smoothly angled backwards towards the top, nearly forming a curve. An angled spike protrudes from the back, and two horizontal spikes grow on the top of the socket. A glaive which is nearly identical exists in the Metropolitan Museum of Art.[202] The weapon is of Italian origin and is dated to the second half of the fifteenth century. Paolo Ucello's painting of the Battle of San Romano from 1456 depicts several glaives with a horizontal spike protruding from the middle of the opposite side.[203] The front/blade of the weapon is either straight and then angled backwards towards the top as in examples already discussed from the fourteenth century, or convex. A later example of a glaive featuring an upwards spike on its back is dated to the first quarter of the sixteenth century.[204] The blade was convex but now is heavily corroded. There are two small basal wings. The spike on the back is angled upwards and backwards.

Besides the previous examples, which have explored certain patterns in the forms and characteristics of glaives, there exist others which can be described as unusual, if not unique. Such a unique weapon exists in the Danish National Museum in Copenhagen.[205] The blade is long and rectangular. The top creates a small protruding spike on the front and a vertical spike on the axis of the shaft. Two asymmetrical metal pieces grow horizontally at the bottom of the blade. The

[201] Brescia, Civici Musei d'Arte e Storia, J 121, Composite glaive. **Figure 73.**
[202] New York, The Metropolitan Museum of Art, 14.25.259, Composite glaive. **Figure 74.**
[203] The original dating of this painting has been debated by art historians, and sometimes placed in the second quarter of the fifteenth century. Paolo Ucello, *The Battle of San Romano*, C15th, tempera on panel, Galleria degli Uffizi, Florence.
[204] Leeds, Royal Armouries, VII.943, Composite glaive. **Figure 75.**
[205] Copenhagen, Danish National Museum, 212, Standard glaive. **Figure 76.**

weapon is dated to the fifteenth century. An illustration of an identical weapon can be found in a painting from 1450.[206] According to Waldman, the weapon is a unique version of a bill or a sub-type of a halberd.[207] However he contradicts his own statement by comparing this weapon with the surviving glaive from the fourteenth century which was already mentioned.[208] This last comparison seems to be accurate though, as the two weapons have indeed many similarities. Furthermore, this unique weapon from the fifteenth century has another feature already mentioned as one of the optional characteristics of a glaive, the two horizontal metal pieces or wings. The examination of such weapons and their depiction is a fortunate coincidence, because if only the painting had survived the weapon depicted would be categorized as an abstract artistic depiction, with the artist playing with the form of the object, and vice versa if only the weapon survived it could be considered a completely individual example. Their existence and identification provides the stimulation to revisit and rethink cases of staff weapons that might appear to be unique and absurd.

The glaive is one of the staff-weapon groups that has been used extensively for ceremonial and display purposes. The flat surface of the weapon and the extra feature on the back (swell or spike), have been used from the early sixteenth century as a canvas for weapon-smiths to demonstrate their skill. Initially, the spike and the swell, and later the wings, became ornate, and shaped in complicated forms such as flowers and stars. Engraving and etching followed that in the late sixteenth century and progressively started covering the whole blade. A glaive from the first quarter of the sixteenth century is decorated with carved designs and two sets of

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[206] Dieric Bouts, *The Capture of Christ*, second half of C15th, oil on wood, Alte Pinakothek, Munich. **Figure 77.**
[207] Waldman, p. 174.
[208] Private Collection, Standard glaive. **Figure. 61.**

circular patterns created by cut-out holes.[209] In the middle of the back of the weapon a swell grows, which is made of three smaller swells. At the base of the weapon's blade two wells grow instead of wings. Examples from the second quarter of the sixteenth century become more and more complicated demonstrating techniques of the blade or by having their blades forged or cut into intricate shapes. Such a weapon has a long convex blade with two basal wings. In the middle of the top third of the blade there is a small swell which is decorated with a small indent and a projection.[210] The truly masterful element of this weapon is the spike that protrudes from the lower half of the back. Not only has a lower projection that forms a crescent but also the outer part of its middle is decorated with a small indented pattern. Towards the end of the second half of the sixteenth century, glaive designs vary from complicated versions of previous designs to absolutely extravagant examples. A weapon that demonstrates the first has a simple convex head and basal wings but the swell on the back in a masterful symmetrical projection that resembles a floral design.[211] There is no better way to show where the glaive group was heading after this period than with an example dated to the middle of the sixteenth century with heavy decorations.[212] There are two circular patterns made of cut out ovals on the blade. The lower half of the weapon was gilded and between the two circular patters there is a golden design of a lion rampant. The wings of the weapon are made in the shape of simple floral patterns. The spike on the back is straight but far from simple. With the exception of the tip the rest of the spike is decorated with patterns made of indents and projections and the base of it has the same circular cut-out pattern that appears on the blade.

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[209] Leeds, Royal Armouries, VII.949, Composite glaive. **Figure 78.**
[210] New York, The Metropolitan Museum of Art, 14.25.26, Composite glaive. **Figure 79.**
[211] Philadelphia, Philadelphia Museum of Art, 1977-167-448, Composite glaive. **Figure 80.**
[212] New York, The Metropolitan Museum of Art, 14.25.356, Composite glaive. **Figure 81.**

It is clear that there is a variety of weapon that falls in the category of glaives depending on their shape. Furthermore, there are no definitive distinctions based on the dating of these weapons. Generally, it seems fairly accurate to suggest that the glaive can be defined as a weapon that has all of its features above the socket and the top of the staff, whereas the halberd for example has features above the top as well as on two opposite sides of it. In addition to this, regardless of its unique additional features and with the exception of the occasional horizontal spikes on the socket, the glaive does not have any technical parts developing on the front side. The distinction suggested by Mario Troso of two categories depending on the existence of the angled spike or other feature on the back of the weapon's head, seems to be the only simple and accurate division that can be effectively used within this weapon group. Therefore the terminology proposed for this group of weapons, that will be also be used from now on in this research, will be standard glaive for the weapons that have no spike on the back of their head, and composite glaive for the weapons that have that extra feature. An additional subdivision for a different form should be used for the standard glaive category, with the addition of 'with swell' for the appropriate weapons. This division and use of descriptive terms will help in the reference of specific weapon according to their unique features. Most importantly the division of the glaive category into two different groups has two do with the function of the two weapons. They were both used mainly for cutting and thrusting, therefore they were hybrids in terms of use, but the composite glaive was also used for either striking in the case of weapons with the horizontal projected spike on the back of the blade, or trapping an enemy's weapon in combat in the case of the angled spike also on the back. Because of its wide surface and the design possibilities the elements on the back presented, the

glaive became one of the earliest weapons to decline in combat use and be extensively decorated.

Chapter V: The Partizan

5.1. Nomenclature and Origin

Partizans are long bladed staff weapons with a relatively simple structure. The head of the weapon has a large symmetrical blade attached to the top of the shaft by a socket. The shape of the blade is always an isosceles triangle. The opposite, always symmetrical sides vary in length but are always longer than the base of the triangle. The increased width and length of the blade are the main characteristic of this type of staff weapon and are what distinguishes it from the spear of war. The top of the blade is pointed and sharpened, and it is used for thrusting. The blade is sharpened on each side for cutting. Some variants of the weapon are widened at their base to form small wings, or a crescent moon. Other variants have the lower part form an arrow-shaped bottom instead of a triangle. In this case the lower end of the sides of the blade were sharpened and used for pulling. Some partizans have short langets either attached or elongated from the socket to further secure the head on the shaft. The partizan was used on the battlefield to break ranks, to cut the limbs of soldiers holding other staff weapons, and even injure the legs of horses by turning the shaft with both hands thus creating and cutting or pulling motion.

In contrast to other staff weapons the partizan as a weapon group is easily identifiable and modern research generally agrees on the nomenclature of the weapon. The few variations on the name of the weapon depend on local spelling. Seitz pointed to the etymological origin of the word partizan which derives from the Italian *partigiano* which means a member of a wider group with common cause.[213] This can be an indication to the initial identification and recognition of the

[213] Heribert Seitz, *Blankwaffen: Ein waffenhistorisches Handbuch* (Braunschweig: Klinkhardt und Biermann, 1965), p.231.

object as a weapon of organized troops or guards. Buttin used the term *pertuisane* but he only referred to the winged partizan.[214] Troso mentions the weapons as *partigiana* is Italian, *partisane* in French and German and partizan in English.[215] Aroldi mentions that the Italian term for the weapon is *partigiana*, adding however, that based on their size a small partizan is aso called *partigianetta* and a larger one *partigianone*.[216] An alternative French spelling which is considered to be older and still used by museums such as the Musée de l'Armée in Paris is *pertuisane*.[217] In his glossary Gay also refers to the partizan using the traditional term *pertuisane*.[218] Holmes simply used the term partizan for all the variations of the weapon.[219] According to Waldman the current form of the word in English occurred by replacing the 's' in *partisan* for 'z' to avoid confusion with the use of the term for a member of a group, or irregular groups that use guerrilla tactics in a military context.[220] However, some English authors, such as Oakeshott preferred the common spelling of the word with an 's'.[221]

The partizan, and especially its earlier incarnations have many similar characteristics to a spear. It cannot be proved if it was directly developed from the war spear or the winged spear, but just as in the case of other staff weapons the comparison with other categories and speculation on whether it evolved from another weapon and which one it was it is inevitable and certain authors have been caught in this discussion. According to Bashford Dean the weapon evolved from

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214 Buttin, *Catalogue*, p. 91.
215 Troso, pp. 108-9.
216 Aldo Mario Aroldi, *Armi e armature Italiane fino al XVIII secolo* (Milano: Bramante Editrice, 1961), p. 531.
217 Karen Watts and Iason-Eleftherios Tzouriadis, 'Les Armes D'Hast Médiévales: Maniement et Typologie', in *D'Azincourt à Marignan : Chevaliers & bombardes, 1415-1515*, ed. by Nathalie Bailleux, Jean-François Colau, Coraline Grandguillot and Astrid Bargeton (Paris: Gallimard, 2015), pp. 84-89 (p. 88).
218 Victor Gay, *Glossaire archéologique du Moyen Âge et de la Rennaisance*, vol.2, 2 vols (Paris: Librairie de la Société Bibliographique, 1887), pp.229-30.
219 Holmes, pp. 7-9.
220 Waldman, p. 125.
221 Ewart Oakeshott, *European Weapons and Armour*, p. 56.

the simple leaf-shaped spear in the fifteenth century.[222] Dean's chart of evolution also shows that the partizan later branched out and evolved to the partizan-spontoon and the spontoon in the early seventeenth century. As with most of Dean's weapon evolution's transition conveniently happened always on the turn of a century, which is easier to demonstrate graphically. Oakeshott stated that partizans developed during the fifteenth century from the winged spear.[223] It is easy to observe how the wings of the winged spear resemble the later examples of the partizans that also have the small wings at their base. Perhaps Oakeshott was also driven to this conclusion by the form of the blade above the wings of certain fifteenth century winged spears that also have the shape of an elongated isosceles triangle. Troso demonstrated certain forms of the latter and pointed out the similarities but never established a certain evolutionary connection between winged spears and partizans.[224] Waldman traces the origin of the partizan to the early fifteenth century short spear.[225] The development of the weapon according to his theory started with the elongation of the blade of the spear. Additionally, the partizan should not, according to Waldman, be confused with war spears of northern European origin that have the bottom of the sides of the blade pulled inwards towards the socket, and generally have a narrower bottom on the blade. It is clear that the partizan derived from some of the speculated spear types but the precise type cannot be explicitly proven. War spears with long blades such as the one Waldman used as an example of origin are close to the point of being considered a partizan. The examined war spear has a symmetrical blade with a

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[222] The evolution of the partizan can be found in Bashford Dean's print of the evolution chart of staff weapons illustrated by Stanley J. Pollard for the Metropolitan Museum of Art in the early twentieth century. Bashford Dean, *Pole Arms: The Development of their Commoner Forms During the Centuries*, print, Metropolitan Museum of Art, New York.
[223] Oakeshott, *European Weapons and Armour*, p. 56.
[224] Troso, pp. 105-10.
[225] Waldman, pp. 125-29.

reinforced spine but the bottom of the sides turn inwards to create a multi-angled base.[226] Earlier examples of winged spears also clearly have similarities to the fifteenth century partizans, especially once the viewer starts making visual associations and comparisons with partizans with basal wings. However, it must be taken under consideration that the same association can be made with all winged staff weapons. It is indeed possible that the partizan has roots to the winged spear but if simple examples of that type of weapon it is easily seen why there is no direct connection between them. An example of a thirteenth-fourteenth century winged spear from Bern has a long leaf-shaped head, and the wings grow several centimetres below the end of the blade from the socket.[227] Later examples of winged spears have triangular shaped blades but the wings always grow from the socket and they are not extensions of the bottom of the blade.[228] The extension of the base of the blade bottom of the blade is a requirement for partizans that have the wings feature. Of course as already mentioned not all variations of the weapon have them. Therefore, a closer examination of the partizan weapon group reveals that caution is required with specific objects that one might consider a spear, as well as the existence and necessity for creating specific subgroups depending on specific features that alternate the form of the weapon sometimes subtly or in other cases significantly.

The design of the blade resembles the Italian *cinquedea*, a type of short sword with particularly wide hilt and often with a fluted pattern or decoration on the blade.[229] The *cinquedea* originated in Northern Italy roughly after the second half

[226] Vienna, Heeresgeschichtliches Museum, 686, Spear. **Figure 82.**
[227] Bern, Historisches Museum, 25174, Winged spear. **Figure 83.**
[228] An example of such a winged spear from the last quarter of the fifteenth century has a perfectly symmetrical blade and two triangular wings growing from the lower part of the socket. If the wings were not in place the weapon could easily be categorized as a partizan. New York, The Metropolitan Museum of Art, 14.25.12, Winged spear. **Figure 84.**
[229] Stone, p. 181.

of the fifteenth century and was popular in the first half of the sixteenth century, which coincides with the geographic and chronological origin of the partizan. It is possible that this type of sword affected the design of the partizan as a weapon group to an extent or vice versa. Their similarities become stronger when examining partizans from the first quarter of the sixteenth century. Viollet-le-Duc claimed that the *cinquedea* was a result of disassembling a partizan and turning its blade into a sword, which was progressively refined in the sixteenth century.[230]

5.2. The Arrowhead Partizan

The earliest form of the partizan has a thick symmetrical head that resembles the head of an arrow, which is why it will be referred to as 'the arrowhead partizan'.[231] The two opposing sides of the blade are usually long and forming an isosceles triangle. The triangle is open on the bottom and the lower ends of the two sides of the blade end are pointed and sharp. The inside of the ends of the blade is not sharpened. In spite of this, they are pointed and able to deal damage if they are used for pulling. The head of the weapon is attached to the shaft with a socket. The arrowhead-partizan's use based on its features includes thrusting, cutting and pulling. The weapon's form resembles iconographic examples of spears from previous centuries. The main difference is the size of the blade of the arrowhead partizan, which is always depicted as larger, compared to spear heads. The origin of the weapon is possibly Italian, as the biggest concentration of surviving partizans and their depictions are from Northern Italy. Of course just as with most staff

[230] Viollet-le-Duc, VI, p. 173.
[231] The term used for this sub-group is artificial and based on the shape of the weapon to distinctly divide it from other partizan types. As most research on staff weapons ignores this type of partizan, or at least approach it as a partizan, a memorable name appears to be the better choice.

weapon groups the constant interchange of military knowledge in Western Europe made the partizan a popular weapon in countries such as Germany and France.

An important difference in the approach of the arrowhead partizan, not only within the wider partizan group but as a whole within this research, is that there are no surviving weapons from this sub-category. Before anyone dismisses the existence of this group certain factors need to be examined. Most importantly the arrowhead partizan has a consistent form and occurrence in fifteenth century art. Iconographic examples of this type survive from the first half of the fifteenth century and especially from the second quarter. Considering that the surviving partizans from the other subgroups and their illustrations are roughly dated in the second half of the fifteenth century, it is possible that the arrowhead partizan is an early form or a forerunner of later partizan forms. It is important to mention that this type of weapon is always depicted in iconography that includes other staff weapons that can be identified as parts of weapon groups with surviving examples.

The earliest depiction of a weapon that can be interpreted as an arrowhead partizan is dated back to the early fourteenth century in a painting of the *Crucifixion*.[232] Duccio's painting has strong Byzantine influences but the weapons are depicted in a clear western style. There is a spear and an arrowhead partizan. The blade of the latter is depicted much larger and in detail, so it is impossible to falsely assume it is just another spear. Perhaps the earliest example from the examined period of an arrowhead partizan can be found in the fresco of *Christ Carrying the Cross* from 1430.[233] The fresco includes a plethora of different staff weapons all in scale to each other. The arrowhead partizan is depicted prominently

[232] Duccio di Buoninsegna, *Crucifixion*, 1308-11, tempera on wood, Manchester Art Gallery, Manchester. **Figure 85.**
[233] Giacomo Jaquerio, *Christ Carrying the Cross*, 1491, tempera on panel, Abbazia di Sant'Antonio di Ranverso, Turin. **Figure 86.**

among the other objects. The blade is large and the symmetrical sides are longer than the base of the blade. The edges at the sides of the blade are long and protruding downwards. The head of the weapon appears to be attached to the shaft with a long socket. The socket appears to develop upwards forming a spine in the centre of the blade. A different fresco of the *Crucifixion* from 1432, which also depicts several detailed staff weapons, shows a slightly different arrowhead partizan.[234] In this case the blade of the partizan is smaller compared to the weapon around it but it maintains the same characteristics. The sides are not as elongated as in the previous example and there is no visible spine. An arrowhead partizan can also be found in a scene of the *Resurrection of Christ* from 1450.[235] The blade is long and its base appears to be quite wide. The socket is long compared to the illustration from 1432. A spine can be seen in the middle of the blade. Illustrations of the arrowhead partizan in the second half of the fifteenth century become scarce if not non-existent, as different partizan types most likely became more popular. A rare illustration can be found in a Sienese painting from the last quarter of the fifteenth century showing a soldier amongst his comrades ready to swing a long-headed arrowhead partizan.[236] Interestingly this type of weapon reappears in iconography towards the end of the first quarter of the sixteenth century. Ulrich Apt's *Crucifixion* from around 1520 is perhaps the most noteworthy example of partizan illustrations in general as it displays all different types of partizans in a single image in the form of weapons held by Romans using equipment

[234] *Crucifixion*, Baptistery of the Duomo, Turin. **Figure 87.**
[235] *The Resurrection of Christ*, late C15th, tempera on wall, Chapel of St Sebastian, Lanslevillard.. It is worth mentioning that this fresco belongs to a series of images from the life of Christ that includes several highly detailed staff weapons. The fresco also includes a pollaxe and bill. It is clear that the artist or artists had a realistic view of other weapons of the time such as axes, bills and halberds, because staff weapons are included consistently in the different episodes revolving around the life of Christ. This contextualization of the arrowhead partizan within this imagery allows to an extent the belief that the artist designed the discussed weapon with the same knowledge and detail as with weapons that we have surviving examples to compare. **Figure 88.**
[236] *Battle Scene*, Academia, Florence.

contemporary to the painting.[237] The arrowhead partizan depicted has the narrowest head compared to all previous iconographic examples and the lower protruding ends on the sides of the blade are less prominent. The middle of the blade appears to be reinforced, and tassels hang around the base of the socket for decoration. Scarce iconographic examples of the weapon also survived from the third quarter of the sixteenth century. Finally, a painting worth mentioning is a *Cruxifixion* from 1563 which depicts several arrowhead partizans.[238] What is particularly interesting is not only that the weapon is still depicted this late but also that the objects depicted vary in size. The length of the weapon, just like in previously discussed paintings is in scale with other staff weapons depicted and roughly the same as a bill, while at the same time spears and pikes are depicted longer.[239] The blades of the partizans appear to be reinforced in the centre or to have diamond shaped cross-cuts. At least three different blade sizes are visible with the longest being at least twice the size of the shortest. Several examples of each size can be seen next to each other which make the comparison easier.

Considering that several of the depictions of this subgroup originated from the same region and are roughly from the same period, it is possible that this weapon was originated in the wider area of Turin. This becomes particularly interesting because most surviving examples of later partizans are also of north-Italian origin. Therefore it is possible that the design of the partizan of the weapon started as the arrowhead partizan in Torino and spread out geographically and in

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[237] Ulrich Apt the Younger, *Crucifixion*, 1517, tempera on panel, Staatsgalerie im Schaezler, Augsburg. Further discussion of this painting will follow after the mention of the rest of the partizan categories. **Figure 89.**

[238] *Crucifixion*, Oratorium of St Rocco, Lucca. **Figure 90.**

[239] The length of each weapon is a problematic subject which will be addressed more later on. The important thing here is that different staff weapons are proportionate to each other and a comparison of size is possible. This becomes more understandable with in-person examination of spear heads and partizan heads so that the examiner can see how the latter compares to other weapons.

popularity. The later depiction by the German artist Ulrich Apt is a demonstration of the widespread use of partizans as an object and in art in the rest of Europe by the second quarter of the sixteenth century. This is also reinforced as an idea of the other forms of partizans that appear in art and the weapons that survive from Germany and France. Perhaps the form of the arrowhead partizan also travelled but remained in the shadow of the more popular and widely spread forms of the weapon. Unfortunately, in the lack of evidence of surviving weapons of this type the existence of this weapon can only be speculated. Even if it is unlikely its appearance in art might have been an artistic flourish that appeared regionally in northern Italy and repeatedly copied by local artists. Later on, the artistic knowledge might have traveled and been used in the sixteenth century.

The arrowhead partizan has been completely disregarded by authors besides Troso who simply groups it under the label of Partizan (B), in contrast to all other partizans which he groups under the label of Partizan (A).[240] Not only the rest of partizans can be split into different sub-groups, without disregarding the similarities that Troso considers to put them together, but the arrowhead partizan certainly deserves more attention. The chronological and typological examination of the weapon places it between earlier examples of war spears and the types of partizans that developed in the second half of the sixteenth century but morphologically separates them from the first and places the arrowhead partizan closer to the latter.

[240] Troso, p.33.

5.3. The Ox-Tongue Partizan

Some surviving examples of partizans from the middle of the fifteenth century and onwards have a close similarity to war spears from the same period. Weapons of this type are referred to as ox-tongue partizans.[241] The blade of the weapon is an isosceles triangle with long sides. The head of the weapon is attached to the shaft with a socket. The identifying feature of the blade compared to other partizans is the bottom of the blade. The ends of the sides usually come inwards and downwards smoothly towards the socket in a nearly flat fashion. Sometimes the transition from the bottom of the sides of the blade to the socket has a sharper angle downwards, but never to the point where the blade becomes a trapezoid. The middle of the blade is reinforced. This weapon was used for thrusting and cutting. The lack of sharp edges or other features at the bottom of the blade means that it did not have the extra third use other partizan types would have.

It is unusual but this type of partizan and its name has been acknowledged in secondary literature by the specialized works on staff weapons as a separate category. Waldman even attempted to track the origin of the term to the second quarter of the fifteenth century but the lack of imagery makes it impossible to be certain if it refers to the same weapon that modern literature does.[242] Troso acknowledges and mentions the term for this weapon throughout his book, but never compares it to other partizans or puts it into context. Perhaps the most straightforward comparison and contextualization of the ox-tongue partizan was presented in Dean's Pole Arms diagram where he placed it precisely at the start of the third quarter of the fifteenth century between the war spear and the winged

[241] Depending on the language of the publication the weapon can also be mentioned as *langue de boeuf* in French, *lingua di bue* in Italian and *Ochsenzunge* in German. English publications usually utilize ox-tongue but some older publications sometimes alternate between this and the French term.
[242] Waldman, p. 129.

partizan.[243] The greatest surprise is that other writers that mentioned staff weapons in their works often disregard the ox-tongue partizan. Viollet-le-Duc uses the term *langue-de-boeuf* but he attributes it to the winged partizan, which is a distinct sub-type that will be discussed later.[244] Buttin however uses langue-de-boeuf to describe the weapon discussed here.[245] He did not make any connections to the partizan. Oakeshott acknowledges the difference between a partizan and the ox-tongue partizan which he calls *langdebeve*, but he categorizes it as a partizan-like spear and not as a different type of partizan.[246] This perhaps happens because it is too specialized to separate this weapon from the wider partizan group and it ends up being grouped with the winged partizan. This partizan sub-category is important to be highlighted and separated from other partizans, not because it was a military innovation or it had a different use than other partizans, but because it is the hardest to define and separate from its contemporary war spears.

In order to understand the identifying differences between the ox-tongue partizans and the war spear it is essential to compare surviving objects and artistic depictions from both weapon groups. This will help not only in the visualization of the definition of this partizan group but also in the examination of its chronological frame and to how its form compares to other partizans. Perhaps the earliest example of an ox-tongue partizan is from a depiction of *The Kiss of Judas* from the late second quarter of the fifteenth century (1445).[247] The painting shows several staff weapons, mainly spears. Two ox-tongue partizans can be seen, one in the background amongst the other weapons and one held by the Roman next to

[243] Dean, *Charts*.
[244] Viollet-le-Duc, VI, p. 172.
[245] Buttin, Catalogue, p. 91.
[246] The term used is clearly a shortening of the French *langue de beve*. Oakeshott, *European Weapons and Armour*, p. 55.
[247] Lorenzo di Pietro (Vecchietta), *The Kiss of Judas*, Pinacoteca Nazionale di Siena, Siena. **Figure 91.**

Jesus in the foreground. The partizan on the background is less detailed and its blade is less defined but the shape is immediately discernible. The blade is wide and its bottom is flat. The one on the front layer of the painting is highly detailed. The blade is long and the ends of the sides of the blade slightly downwards towards the socket. The centre of the blade is defined to show that it is reinforced or that the blade has a diamond-shaped cross-cut. A drawing that is dated in the first half of the fifteenth century and perhaps in the first quarter, which would make this the earliest examples, shows several soldiers with their weapons of the ground.[248] One of them is an ox-tongue partizan as the bottom of its blade is considerably wider than those of the spears around. A painting from 1450 showing the *Humiliation of Christ* depicts an ox-tongue partizan in the same level of detail next to a war spear.[249] This allows a side-by-side comparison of the two weapons earlier than their respective surviving examples. The blades of both weapons are isosceles triangles and long of roughly the same length. Furthermore, the blades of both weapons merge towards the socket slightly downwards. The socket of the ox-tongue partizan has a decorative folded ring but this should be seen as an individual decoration rather than an identifying feature. Both blades appear to be darker vertically in the middle which most likely implies a reinforced centre. The blade of the partizan is clearly wider. This observation might seem obvious or artificial but it can only be made when the two weapons are compared side by side. Ox-tongue partizan illustrations were popular in Italy in the third quarter of the fifteenth century and they are usually depicted with a completely flat bottom of the

[248] *Soldiers*, Frits Lugt Collection, Paris. **Figure 92.**
[249] Beato Angelico, *The Humiliation of Christ*, *c.* 1440, fresco, Museo di San Marco, Florence. **Figure 93.**

blade, but wide enough to avoid confusion with war spears.[250] The previous comparison with the war spear becomes easier as the artistic medium progresses and painting become more detailed. In a decorative maternity table from the third quarter of the fifteenth century an ox-tongue partizan and a war spear are depicted next to each other.[251] They are both tall with long sockets and the bottoms of their blades are completely flat. Their blades appear to have a diamond-shaped cross-cut. The partizan's blade is significantly wider all the way through. This amount of detail and consistency in differentiation of form between the two weapons shows the intent of different artists to depict weapons that have similarities but at the same time are different. This becomes clearer in the last quarter of the fifteenth century because of the surviving weapons that can also be compared. Iconographic examples such as Dürer's *Soldiers* from 1489 include weapons that can be confusing at first glance.[252] A more careful study at the proportions of the weapon depicted reveals that the wider lower part of the weapon is a key identifying feature for the aforementioned type of partizan and not war spear.

The examination of a war spear from the Metropolitan Museum of Art from the last quarter of the fifteenth century shows that the weapon matches the form of the weapon from the third quarter.[253] The blade is long and with a diamond-shaped cross-cut which appears to reinforce its centre. The bottom of the blade is completely flat as it comes towards the socket. A slightly different spear also from the same period is thinner and the bottom of the blade curves

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[250] A typical example of this is the partizan held by a soldier during the martyrdom of St Margaret. The blade is wide and once more darkened in the middle. *The Martyrdom of St Margaret*, Santuario di Crea, Alessandria. **Figure 94.**

[251] The decorative table comes from the tradition of maternity tables from Tuscany. Such tables with spectacular illustrations on them were used as gifts to rich families for pregnant women to have their food served on next to the bed while pregnant. *Decorative Table With Scenes From the Life of Judith*, Museo di San Matteo, Pisa. **Figure 95.**

[252] Albrecht Dürer, *Soldiers*, 1489, drawing, Staatliche Museen Preussischer Kulturbesitz: Kupferstichkabinett, Berlin.

[253] New York, The Metropolitan Museum of Art, 04.3.76, War spear. **Figure 96.**

downwards towards the socket.[254] The centre of the blade is reinforced all the way down to the middle of the socket. This is similar to a war spear briefly mentioned earlier from the last quarter of the fifteenth century from Vienna.[255] The main difference to the other two war spears is the reinforcing spine on the centre of the blade, a feature that became more popular in sixteenth century winged partizans. An ox-tongue partizan from the same period has a wider blade all the way through which immediately creates the correct impression of a larger surface.[256] The weapon has a reinforced centre and the bottom of both sides of the blade come smoothly inwards towards the long socket. The blade is decorated with what is perhaps a large elaborate maker's mark. A nearly identical weapon to this can be found in a painting of the life of St Benedict from 1497.[257] The partizan in the painting appears to have nearly identical proportions and shape. The main difference is that the illustrated weapon has a prominent reinforced external spine running through the centre of the blade. Apart from that feature, the bottom of the blade has the same flow and curve towards the socket. Regardless the similarities in shape between the two weapons, the war spear and the ox-tongue partizan have significant differences in the proportions and the width of the blade. The size of the partizan's blade can most likely be interpreted as a feature meant to be used more for cutting with or glancing strikes compared to the blade and shape of the spear which, based on shape, was predominantly used for thrusting.

The increase in the width of the blade of the partizan in the third quarter of the fifteenth century compared to the arrowhead partizan increased the available space for decoration on the weapon, a practice that progressively became more

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[254] New York, The Metropolitan Museum of Art, 14.25.209, War spear. **Figure 97.**
[255] Vienna, Heeresgeschichtliches Museum, 686, War spear.
[256] Leeds, Royal Armouries, VII.1506, Ox-tongue partizan. **Figure 98.**
[257] Luca Signorelli, *Episodes From the Life of St Benedict*, 1497-98, fresco, Abbazia di Monte Oliveto Maggiore, Sienna. **Figure 99.**

popular after the first quarter of the sixteenth century. Decorative patterns became more popular for several types of staff weapons such as the halberd and the glaive, but the partizan appeared to be a prime example to that as the surface decorated allowed a clear display of newly perfected decorative techniques without that being at the expense of the possible effectiveness of the weapon. Two similar examples of ox-tongue partizans from the first quarter of the sixteenth century have the same shape of blade as before but the centre is not reinforced. The bottom of the blade of the first makes a less smooth transition to the socket as it becomes slightly concave downwards.[258] The second resembles even more the iconographic examples of the second half of the fifteenth century and it even has the decorative metal ring mentioned before at the top of the socket.[259] Both weapons have detailed symmetrical decorative marks in the centre of the blade. This design of the ox-tongue sub-group persisted through the second quarter of the sixteenth century. The main change was perhaps the increase in the craftsmanship of the decoration. A partizan from 1530 has the same symmetrical design and the smooth transition from the bottom of the sides of the blade as earlier partizans.[260] The blade is decorated with a large *fleur-de-lis* and there is a small maker's mark. Although having the same form as weapons from the previous quarter the difference is detail is remarkable, especially in its decoration, to the smooth transition from the blade to the socket both on the centre and on the sides of the blade, as well as in the decorative ring at the top of the socket. This type of partizan can be seen in the hands of Lilliputian soldiers in a Dossi painting from

[258] Leeds, Royal Armouries, VII.188, Ox-tongue partizan. **Figure 100.**
[259] Leeds, Royal Armouries, VII.183, Ox-tongue partizan.
[260] New York, The Metropolitan Museum of Art, 14.25.389, Ox-tongue partizan. **Figure 101.**

1535.[261] There is not much detail on the blade but the shape of the weapon is the same.

From the beginning of the sixteenth century a different form of ox-tongue partizan appeared. The feature that separated it from other already discussed examples is that the top of the blade is marginally convex as it comes down to the sides in contrast to the previous straight-line designs. A surviving example from the early sixteenth century has that type of blade shape, which is also shorter compared to other ox-tongue partizans.[262] The same shape of blade can be found in the already mentioned *Crucifixion* by Ulrich Apt from 1517. All weapons are depicted in incredible detail and in scale to one another.[263] The ox-tongue partizan in this appears to be the same size as the arrowhead partizan but shorter than the winged partizan. The examined surviving weapon and the illustration present remarkable similarities, and they both have the same short socket and even the same decorative tassels at the base of it. An Austrian ox-tongue partizan of the same irregular form is much simpler as it does not bear any decorations other than a maker's mark, and unlike any other partizans it has an open socket to attach the head to the shaft.[264] This design makes the weapon's head look less elegant and stocky, but it is still impressive and bears maker marks and decorations on the blade.

It is necessary to further mention some more examples that fall into the ox-tongue partizan group but present small deviations from the standard form. A partizan from the first quarter of the sixteenth century has the standard shape of

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[261] Battista Dossi, *Hercules and the Pygmies*, Alte Museum, Graz. **Figure 102.**
[262] New York, The Metropolitan Museum of Art, 14.25.119, Ox-tongue partizan. **Figure 103.**
[263] Ulrich Apt, *Crucifixion*. **Figure 89**.
[264] Unlike early examples of bills the socket is plain but well crafted. It is created by folded steel in a tube and the removed shaft would have stayed in place with a nail on the top and a rivet on the bottom of the socket. Vienna, Kunsthistorisches Museum: Hofjagd- und Rüstkammer A117, Ox-tongue partizan. **Figure 104.**

blade of an ox-tongue partizan, but also has some marginal differences on and at the bottom of the blade.[265] There is a reinforcing spine along the centre of the blade and on the sides of that spine there are respectively two flutes. This gives the impression that the blade is fluted, while at the same time hiding the spine. The bottom of the sides of the blade is also remarkably different to previously examined designs. As the bottom goes inwards and downwards from the external side to the socket it first becomes concave and then convex. This creates a symmetrical wave-like decorative design. Another design that deviates from the most common form of the ox-tongue partizan and that developed in the first quarter of the sixteenth century has a concave bottom on each side of the blade. The concave indent goes upwards creating a half-moon. In some cases the indent is more prominent and in other cases smaller. It could be argued that this design looks like an arrowhead, so that it might be a throwback or direct evolution of the arrowhead partizan. However, the manner in which the sides of the blade smoothly form the half-moons does not create a sharp pointed edge that could be used for pulling as with the latter. This type of partizan appears in a 1540 woodcut as the weapon of choice of a landsknecht quartermaster.[266]An impressive example of this weapon has the already mentioned subtle half-moons on the bottom of the blade.[267] The lower one tenth of the weapon's head is horizontally gilded, as well as the socket. The blade is fluted. These forms appeared revolving around the generic design of this sub-group but developed these small feature changes as a design choice rather than having any functional value.

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[265] Leeds, Royal Armouries, VII.186, Ox-tongue partizan. **Figure 105.**
[266] Hans Sebald Beham, *Quartermaster of a Landsknecht Company*, 1540, woodcut, Albertina, Vienna. **Figure 106.**
[267] New York, The Metropolitan Museum of Art, 14.25.293, Ox-tongue partizan. **Figure 107.**

5.4. The Winged Partizan

The third type of partizan discussed here is the most recognizable, and as the chronologically latest it has the most surviving examples in material culture. Just as with the two previous partizan types the weapon head is basically an isosceles triangle. The main difference from the ox-tongue partizan is that in the case of the winged partizan there are two small basal wings growing horizontally from the bottom of the sides of the blade. The wings vary in size, length, thickness and in angle. Additionally, in most cases the wings were protruding like spikes. This weapon was also used for thrusting and cutting with glancing hit, but with the addition of the wings it could also cause a glancing hit with the horizontal surface of the spiky wings. In some cases that the wings were prominent enough and angled upwards it could cause damage by pushing. It is possible that the wings were also used in a defensive manner for blocking or tangling other weapons, following the principle of winged hunting spears, spiked glaives, and other winged staff weapons. According to Troso the basal wings of the winged partizan were only used defensively because their side facing up was never sharpened.[268] However, there is no way to prove that a spiked end on a weapon would have for certain not been used offensively.

One of the earliest depictions of the winged partizans comes from the beginning of the first quarter of the sixteenth century. The illumination of the manuscript depicts the Genoese, recognizable by their standards with the figure of St George, defeating the French at Castellacio.[269] Several of the Genoese soldiers are holding and using staff weapons. Amongst them numerous winged partizans can be seen depicted with great detail. They have long heads with small flat basal

[268] Troso, p. 29.
[269] Paris, Bibliothèque nationale de France, MS Français 5091, fol. 10v. **Figure 108.**

wings curved upwards on their bottom. The centre of some of them has what appears to be a reinforcing spine running along the centre of the blade. The sockets of the partizans as well as of some of the other weapons are not visible as they are covered with colourful tassels. A partizan from the second quarter of the sixteenth century has the same shape and most importantly basal wings as the one depicted in Marot's manuscript.[270] The top side of the wings is nearly flat and curved upwards on their bottom. The bottom of the wings has a decorative concave indent right before it meets the socket. The wings are short and their edges are pointed. The blade is long and lean and a prominent spine runs through the centre of the blade. Similar to this weapon another partizan from the same period has the same shape and features with the exception that the wings are even shorter and blunt at their ends.[271] The bottom of the wings has several concave indents creating a wave pattern. Both partizans are an example of the same generic design but demonstrate how the wings can be used to add variety to the form of the weapon.

In contrast to the two partizans just mentioned, winged partizans from the first quarter of the sixteenth century have longer, more prominent sharp basal wings. A partizan from this period has two long, slightly upwards, protruding wings.[272] The spine in the centre of the blade is smooth and more like a vertical bump. The lower part of the blade is decorated with carved scales. Most importantly the weapon's socket has two opposing short langets securing the head to the shaft. Another example from the first quarter of the sixteenth century also has a long and lean head, but its spine is hidden in the fluted pattern of the

[270] New York, The Metropolitan Museum of Art, 14.25.351, Winged partizan. **Figure 109.**
[271] New York, The Metropolitan Museum of Art, 14.25.192, Winged partizan. **Figure 110.**
[272] Leeds, Royal Armouries, VII.161, Winged partizan. **Figure 111.**

blade.[273] The basal wings are long and slightly pointed upwards. The points of the blade and wings are blunt as a result of repeated use and conservation. The most interesting feature of the weapon is that the upper part of the wings is sharpened as a continuation of the sides of the blade. This is noteworthy considering that Troso discarded the idea of the offensive use of the wings. In the case of this weapon each wing is roughly six centimetres long, which is often the size of the back-spike of a standard halberd, and long enough to cause damage. The socket has two five-centimetre langets extending and securing it to the shaft with a nail and a screw respectively on each side of the blade. This weapon example is not a unique design as another partizan from the same period appears to have the same features.[274] There is a subtle spine, the upper part of the wings is sharpened and there are langets extending from the socket to the shaft securing it. The langets in this case are longer at about fifteen centimetres. The tip of the blade appears to be reinforced and diamond-shaped. The wings of another partizan are significantly curved upwards compared to other objects and their inside is also sharpened.[275] The upwards angle is not sharp enough to make the use of the inside of the wing unusable. A severely corroded weapon dated in the same period has the upper part of the wings sharpened but does not have langets.[276] The smooth spine of the weapon allowed the decoration of most of the blade with the carved design of a standing child. Unfortunately, because of the damage and corrosion of the upper part of the blade only the lower half of the design is clearly visible.

[273] Leeds, Royal Armouries, VII.173, Winged partizan. **Figure 112.**
[274] Leeds, Royal Armouries, VII.175, Winged partizan. **Figure 113.**
[275] Leeds, Royal Armouries, VII.168, Winged partizan. **Figure 114.**
[276] The inventory entry of the weapon mentions it as an ox-tongue partisan but it is obvious that this is not the case because of the long basal wings. Leeds, Royal Armouries, VII.2838, Winged partizan. **Figure 115.**

Other partizans from the first quarter of the sixteenth century have a significantly wider blade compared to the objects already examined, especially at the lower part. The bottom of the blade in previous winged partizans, without the wings, is less than ten centimetres. In the examples about to be presented the same measurement is between ten and fifteen. One such partizan has a long socket and a prominent spine.[277] The wings are short but with sharp ends pointed upwards. There are marks of strikes of other blades against the socket. The spine runs all the way from the middle of the socket to the tip of the blade. The same design can also be observed in a partizan with what appears to be the thinnest spine examined.[278] The blade is equally thick but the wings are significantly smaller. A similar observation can be made for a different partizan that also has the same design, but the wings are not only shorter but thicker as well, creating this way the impression of an even longer blade.[279] A depiction of a weapon like this from 1517 can be seen held by a soldier in the scene of the beheading of St Paul.[280] Finally, another weapon of similar thickness and shape has longer nearly horizontal thin wings.[281] All these examples of partizans have short langets of between ten and fifteen centimetres. Even though it is uncommon to comment on the shafts of weapon as the focus of this chapter is on weapon heads, it is important to mention that the shafts of the last four partizans mentioned are most likely originals and they are all covered in either leather or fabric. The material is secured on the wood with studs that also act as a decoration.

[277] Leeds, Royal Armouries, VII.1712, Winged partizan. **Figure 116.**
[278] Leeds, Royal Armouries, VII.170, Winged partizan. **Figure 117.**
[279] Leeds, Royal Armouries, VII.171, Winged partizan. **Figure 118.**
[280] Giovanni Antonio Pordenone, *Beheading of St Paul*, 1517-1525, fresco, Parrochiale, Travesio. **Figure 119.**
[281] Leeds, Royal Armouries, VII.167, Winged partizan.

Similarities with this group of partizans from the first quarter of the sixteenth century can be observed in examples from the second quarter. Such a partizan has a slightly narrower frame, very prominent spine and two thick and short basal wings with pointed ends facing slightly upwards.[282] Something uncommon about this weapon is the sudden move of the flow of the blade inwards towards the top of the blade creating a triangular tip. The form might appear the same as of earlier partizans but the width of the base of the blade is right over ten centimetres. Of course as already discussed that was not uncommon for some winged partizans of the first quarter of the sixteenth century. Besides demonstrating previously used forms the design of winged partizans appears to change in the second half of the sixteenth century. The shape of the weapon basically remains the same but the blade becomes narrower. A partizan from the late second quarter of the sixteenth century has a significantly raised spine all the way to the tip of the blade and basal wings that smoothly point upwards.[283] The bottom of the wings is decorated with small symmetrical protruding features and convex bumps. The lower part of the blade is etched horizontally with flowers and birds. It is interesting that the same pattern of decorating the lower part of the blade in what resembles a decorative band can also be found in ox-tongue partizans of the same period.[284] A slightly different shaped partizan from the same period has an even narrower blade.[285] The basal wings are longer proportionally to the blade that other examples, thin and with a sharp end. If they were to be any more angled upwards the weapon's type could be argued as a hybrid with a corseke or a ranseur. The unique feature of this weapon is the two decorative small hollow

[282] New York, The Metropolitan Museum of Art, 14.25.94, Winged partizan. **Figure 120.**
[283] London, The Wallace Collection, A992, Winged partizan. **Figure 121.**
[284] The ox-tongue partizan was gilded and had a simpler design. In both cases the decoration continues onto the socket. New York, The Metropolitan Museum of Art, 14.25.293, Ox-tongue partizan.
[285] New York, The Metropolitan Museum of Art, 14.25.97, Winged partisan. **Figure 122.**

convex bumps at the point where the blade meats the wings. The fashion of the partizan's blade being narrower in the second quarter of the sixteenth century and the wings to often be facing upwards can already be observed in the end of the first quarter in the previously mentioned Apt's *Crucifixion*. Besides the narrower blade, a rigid, prominent spine is also one of the characteristics of the winged partizan that becomes more and more common towards the second quarter of the sixteenth century.

Besides the examples of peculiar ox-tongue partizans there are also a few interesting unique examples of winged partizans with features that generally do not fit in any of the forms already discussed. A weapon from the first quarter of the sixteenth century is significantly shorter than any other winged partizan examined.[286] The blade is also proportionally much wider than any other partizan from this period. The tips of the wings are broken but it is easy to make up the projection which brings them to an average size and angled upwards. The tip of the blade disrupts the usual isosceles design because in the last five centimetres of the blade the two sides converge to the top forming a projected equilateral triangle. The spine of the weapon runs through the blade as a projection of the socket all the way to the tip. Perhaps the most unusual example of a winged partizan is dated in the second quarter of the sixteenth century and it has a second pair of wings.[287] The blade is narrow and a prominently raised spine runs from the socket to the tip of the blade. The basal wings are thin and curved upwards, and their top side is sharpened. About two centimetres above them there is a second set of shorter wings. The upper part of those wings is also sharpened. The space between the two sets of wings is decorated with a non-symmetrical pattern that resembles the

[286] Leeds, Royal Armouries, VII.2885, Winged partizan. **Figure 123.**
[287] New York, The Metropolitan Museum of Art, 08.261.2, Winged partizan. **Figure 124.**

teeth of a saw. The weapon's head also resembles certain German two-handed swords from the first quarter of the sixteenth century that had a set of wings above the hilt to allow a grip between the two. It is not suggested that this was the use of the two sets of wings on this partizan, which were most likely decorative, but the shape most certainly is similar.

5.5. Conclusions

The wings on the base of the blade are according to Aroldi the identifying feature of the partizan.[288] However, this definition cannot stand unless one considers arrowhead partizans and ox-tongue partizans as spears. This is unlikely not only morphologically, as their structure is closer to the winged partizan because of the width of blade, but as interpreted by their use of thrusting cutting and pulling based on their technical features is different than the spear which is used for thrusting and throwing. Aroldi also claimed that the partizan was a variation of the halberd. This claim is easily dismissed, as soon as anyone compares the technical characteristics of any type of halberd with any type of partizan. Perhaps the only area of overlap is the multiple types of use of both weapons and the potential for a variety of strikes.

One of the most important features to consider when it comes to the use of partizans that is generally overlooked is the existence or not of langets. Most surviving or depicted examples of arrowhead or ox-tongue partizans do not have them. There are several examples of winged partizans from the first half of the sixteenth century that have short langets on the sides of the blade going down

[288] Aroldi, p. 531.

from the socket to the shaft, either welded to the socket or created as an elongation. Waldman suggested that partizans are primarily a thrusting weapon, which seems to be a valid statement.[289] What is problematic is that he based this statement on the diameter of the smaller diameter of the shaft of the weapon compared to other staff weapons with cutting components such as bills and halberds, and to the small socket. The comparison of the shafts is by itself something artificial and of not much use as it is nearly impossible to be sure if the shaft of a weapon was the original or not, and how many times was replaced and when. The fact that there is surviving material culture evidence of partizans with langets proves that their cutting function was something considered during their production as it will be later discussed in the relevant chapter on mechanics. The short langet was also used on other staff weapons with cutting function such as the halberd on the side of the weapon's cutting edge to support the upper part of the shaft, which would receive most of the stress during a cutting blow. Later examples of partizans from the second half of the sixteenth century show that the weapon loses the spine and becomes flat often bearing intricate decorations as the weapon is progressively used more ceremonial and decorative context. This is an indication of the practical reinforcing function of the spine. Examples of this period with flat blade also have their langets placed on the shaft on the side of the flat of the blade and not its sides.[290] Some weapons with this type of langets did not even have their blade sharpened.[291] This strengthens the view that the misplacement of langets on the side of the flat of the blade is evidence of weapons that would not have been use in combat but would rather display the langets on the side of the blade which would be visible if the weapon was used as an ornament.

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[289] Waldman, p. 132.
[290] Leeds, Royal Armouries, VII.178, Winged partizan. **Figure 125.**
[291] Leeds, Royal Armouries, VII.180, Winged partizan.

It is possible to assume that the partizan as a weapon group can be considered regionally Italian in the same way that the vouge is sometimes recognized as French or the proto-halberd Swiss. All three partizan sub-groups are represented consistently in Italian art as well as in surviving examples. Just like in the case of most staff weapons partizans as a weapon group were adopted and developed in several countries, but it appears that it mainly received wide focus in Northern Italy.

Chapter VI: The Vouge and the Couteau de Brèche

6.1. The Form of the Weapon

The shape of the *vouge* can be easily described as a straight long knife mounted on a wooden shaft and secured on its top with a socket. The head of the weapon is placed on the axis of the shaft.[292] The top of the weapon forms a sharp tip. The blade of the weapon is asymmetrical. One side, which will be from now on considered to be the front, is sharpened throughout the length of the head from the tip to the top of the socket. The other side, the back, is only partially sharpened on the top half or two thirds. As a result of this a cross-section of the blade would be an uneven diamond. The blade is thicker compared to other single-bladed weapons such as the glaive. The blade is either completely straight as already mentioned but in some cases the lower part of the front side is wider and convex, that way the asymmetrical shape of the weapon is highlighted even more. The variations in the shape of the blade are what make the vouge distinctive and not considered to simply be a variation of a spear with a long bladed head. The socket is nailed in place with two or four nails. Sometimes the socket has one or two pairs of langets connected to it that secure the head on the shaft. The weapon is relatively simple and that would also be reflected on its use. The top of the weapon was used for thrusting and the two sides were used for cutting. The weapon was most likely used primarily for thrusting and its cutting capabilities were limited to glancing hits. Some variations of the weapon exist with the addition of a small horizontal spike on the back of the weapon, which could be used for striking or pulling.

[292] Waldman argues that the identifying feature of the vouge and the *couteau de brèche* in contrast to other bladed weapons is that the head is not coaxial to the shaft. The examination of surviving examples reveals that this is faulty, and that the statement only stands in the case of the *couteau*. Waldman, p. 185.

6.2. Problems of Terminology

As mentioned in the second chapter, the vouge is one of the most problematic terms in the study of staff weapons. In fact it could be a synonym for all the problems caused by previous weapon scholars in their attempt to fit this term into their research. It has already been demonstrated that the Swiss vouge or simply vouge was often a term used for the proto-halberd. At this point the examination of the nomenclature produced and used by scholars has to be done on two levels. The first on how they refer to the weapon discussed here and referred to in this sub-chapter as the vouge, and the second what do they refer to when they use the term in a different context. If anything this will provide a better overview of the truly remarkable problem and will help in future reference. Viollet-le-Duc referred to this weapon as a vouge. However, he used the term as a label for a variety of weapons that according to him developed from each other or had significant morphological similarities, including the proto-halberd, the standard halberd and the spiked-scythe bill.[293] This classification was based on the premise all these weapons according to him were used primarily for cutting. Buttin also used the term vouge.[294] Ellehauge was more specific with the terminology he used and classified the version of the weapon discussed here with a completely straight blade as a primitive vouge.[295] The rest of the weapons that are included in this weapon group he labelled them as the typical vouges.[296] Troso uses the term *vouge francese* for the weapon discussed here in order to separate it from the *couteau-de-brèche*,

[293] Viollet-le-Duc, VI, pp. 357-62.
[294] Buttin, *Catalogue*, p. 95.
[295] Ellehauge, p. 20.
[296] Ellehauge, p. 30.

which he considers a member of the same group as well.[297] Throughout his work Troso avoided the plain use of the term for any weapon and only used it with the appropriate Italian version of the French vouge or the Swiss vouge, to refer respectively to the vouge and proto-halberd. Waldman calls the weapon described here a vouge. He also provides the terms *vouge française*, *couteau de brèche* and couse as synonyms for the same category.[298] Interesting enough this perplexes Waldman's study when it becomes self-contradictory as later on he mentions that the *couteau* or couse is only similar to the vouge. The nomenclature of the vouge is one of the few cases that Oakeshott questioned and highlighted the problems revolving around the term used to describe this weapon.[299] Having mentioned that, his brief investigation is incredibly confusing as he first stated that the vouge is what modern writers describe as a bill and then he also adds that the term is a component of other terms used in modern research such as the vouge *français* and the Swiss vouge. At the same time he does not mention at all the technical features of these two weapons, therefore not addressing what modern research refers to as a vouge. Perhaps this explains his vague and self-contradicting statement that the vouge derived from the axe just like the halberd and other bladed weapons.[300] When it comes to the weapon described here, Oakeshott categorized it as an early form of the glaive.[301] This is also contradictory as he is aware of the alternative term *vouge français* but he does not specify how they are connected. His iconographic example is also inconsistent because it is of an early sixteenth century vouge whilst the glaives he also includes in his work predate it. It is spectacular to see that regardless the acknowledgement of the problematic term vouge, and even

[297] Troso, p. 30-31.
[298] Waldman, p. 183.
[299] Oakeshott, *European Weapons and Armour*, p. 56.
[300] Oakeshott, *European Weapons and Armour*, p. 52.
[301] Oaskshott, *European Weapons and Armour*, p. 53.

in the case that it is attached to the weapon discussed here, scholars still manage to get tangled in their own terminology and categorization. Besides the inconsistent terminology used in scholarship, and perhaps as a result of this, the use of the term vouge also varies in the catalogues of museums and collections, reflecting the lack of a consistent nomenclature. A browse in nearly any collection, even within the same country, for a vouge will produce a variety of results, from halberds, to bills and glaives. This is a problem that occurs with many of the staff weapon terms but it is magnified in the case of the vouge.

After consulting the aforementioned general research and views on the term vouge and the weapon discussed here, a final decision had to be made about the term that would be used to describe the latter. Arguably there were two possible options to follow. The first would be to follow Troso's sensible approach and refer to this weapon as a French vouge. The second option would be to utilize the term vouge on its own to define this weapon. The second option was chosen. The original possible use of the term as a generic word for staff weapons must not be forgotten, but just like the classification of weapons in modern research is something artificial, older terms must sometimes be reused in a renewed context. Additionally, the national epithet before the weapon works for the Swiss vouge as a term of the proto-halberd because of the large numbers of illustrations surviving that specifically show the Swiss using this weapon, as well as because that the majority of material examples surviving are from Switzerland. The same process cannot be followed for the vouge. Surely, certain examples survive from France, but the dating and geographical origin has a larger spread than the Swiss vouge.

6.3. Examining the Weapon Known as Vouge

Identifying vouges in art presents the same difficulties as other weapons with simpler forms and plain design lines such as the ox-tongue partizan or the standard glaive. Before the sixteenth century because of the lack of detail in iconography or the small depictions of weapons it is nearly impossible to identify the small technical features that could narrow down a staff weapon only as a vouge. It is hard to label a straight bladed weapon without being able to see either the partially sharpened back side or to be sure that the curved protruding lower part of a blade is illustrated on purpose and that a weapon is not simply a spear with a long head. One of the earliest examples that can be identified as a vouge is dated to the last quarter of the fifteenth century.[302] The front side of the weapon has the characteristic small curve and the back is straight. The popularity of artistic mediums such as the woodcut from the early sixteenth century allows the identification of the weapon but even with a detailed depiction the clear depiction of the vouge is a challenge. A perfect example of this can be observed in a woodcut from the first quarter of the sixteenth century that shows the guard of Emperor Charles V carrying vouges.[303] The weapons depicted clearly have the partial sharpened back side of the blade and the curve at the lower front of the weapon but they are wider than most of the surviving examples. In this case this happens to accommodate some small visual decoration on the lower flat part of the blade. In fact it can be argued that these weapons are a depiction between a vouge and its later variation the *couteau de brèche*. Whatever the case might be the vouge was certainly not a popular weapon in art or it cannot be identified for the

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[302] *The Beauchamp Pageant*, ed. by Alexandra Sinclair (Donington: Paul Watkins, 2003), p. 70. **Figure 126.**

[303] Hans Schäufelein, *Triumpal Procession of Emperor Charles V*, 1537, woodcut, Herzog-August Bibliothek, Wolfenbüttel. **Figure 127.**

reasons discussed. This makes the cross-referencing between art and surviving examples nearly impossible, adding yet another problem to this weapon category. Examples of weapons that can be interpreted as vouges with a spike are easier to detect because of the extra feature, but they are also rare. Such an illustration from the second quarter of the sixteenth century shows as soldier holding a sword and a vouge.[304]

Examining and chronologically assessing surviving examples of vouges reveals that the general form of the weapon did not change a lot, at least from the period these weapons come from, but a lot of them present a certain level of variation, which is impressive considering the simple shape of the object. One of the earliest surviving examples is dated to the early third quarter of the fifteenth century.[305] The lower part of the front of the blade is slightly convex towards the socket. The top three quarters of the back of the blade are also sharpened and the lower sharpened part moved inwards creating a small level difference towards the socket which is flattened. The shape of the socket is peculiar because it has flat sides that for a rectangular cross-section but its corners are reinforced, rounded and projected outwards. A langet is nailed to each side of the socket and then nailed to the shaft. Most importantly the weapon has its original rondel which not only is thicker than other surviving rondels of any type of staff weapon, but it is also created by two different types of metal. The inner part of the rondel is an iron disc which is fitted between the nails that hold the langets into place and around it a steel band welded creates the effect of a finish. Examples of vouges with rondels are scarce but this early example is an indication that if the weapon was used before this period or even at the same time, it is likely that more of them had that

[304] Dürer School, *Forest Scene*, Hederlein Kunsthistorisches Museum, Berlin. **Figure 128.**
[305] Berlin, Deutsches Historisches Museum, W 2, Vouge. **Figure 129.**

extra feature for protection. Another vouge from the same period has a nearly straight blade with the lower part of the front creating a smooth bigger curve towards the top of the socket.[306] Below the sharpened part of the back of the blade the unsharpened part goes further in and becomes aligned to the socket, creating something that resembles the standard halberd's flange. This weapon also has four langets. The third and last weapon that will be mentioned from the third quarter of the fifteenth century only has a surviving head.[307] The front part of the blade is slightly projected in front of the shaft, but in contrast to the previous two examples its lower part does not simply curve inwards, instead it makes a small concave indent that meets the top of the socket. As will later be discussed, that type of indent in a much larger scale is the identifying feature of the *couteau de brèche*, a variation of the vouge. The back part of the blade is partially sharpened but whereas in other examples the lower part is blunt and pushed inwards, this weapon has a small triangular protruding beak. The top of the beak is flat and perpendicular to the blade and its hypotenuse on the bottom is sharpened. This opens a new function to the weapon because this beak could be used for striking or pulling, although most likely not effectively because of its small size. Besides the beak, the socket of the weapon is also worth discussing. One of its sides has been cut out in a fashion that would expose a side of the top of the shaft. A small decorative projection at the lower part of the hole shows that this hollow part was a result of design and not damage. The lack of the shaft and the unusual form of the socket allows some close observations about this weapon. Two small holes on the side opposite to the cut out hole show where the nails would be put through.

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[306] This weapon's last entry is from before 1989 when the Museum für Deutsche Geschichte closed down and its collection merged with the Deutsches Historisches Museum. Most of the staff weapons were transferred but this one is not a part of the collection any more and I was not able to track down its current whereabouts. Berlin, Museum für Deutsche Geschichte, W 32.150, Vouge. **Figure 130.**

[307] Leeds, Royal Armouries, VII.4123, Vouge. **Figure 131.**

Additionally, the lack of any relevant damage on the inside and the lack of other holes created for nails suggest that this weapon did not have langets. A much simpler example from the early first quarter of the sixteenth century has a straight blade.[308] The back of the blade is also straight. The top three quarters are sharpened and the unsharpened part is simply aligned to the upper part not creating an indent. The front part of the blade is marginally extended outside the axis of the shaft. The socket is nailed to the shaft, and two short langets on the sides of the edges of the blade are extended from the lower part of the socket. Finally, an example dated around the end of the second quarter of the sixteenth century has significant differences to previously mentioned vouges that go unnoticed at a quick glance.[309] The blade is so wide, that even though the length of the blade is very close to the previous example, the blade looks shorter. The blade appears to be straight but its widest part is roughly on the middle which creates a small curve or angle upwards and downwards from that point that defines the shape of the blade. The front part of the blade is also slightly extended outwards from the socket. The top half of the blade is sharpened and the rest goes inwards by three millimetres, which is still enough to create that flange-like effect. The socket is hexagonal and at its bottom has a band of still wended to it with a twisted pattern. The langets found under the socket are cut short and look like a much later addition. The weight of staff weapon is generally not examined or mentioned in this thesis because in the same group or subgroup they all vary within reason. This vouge however is incredibly heavy weighing roughly four times as much as any of the previous examples. Its head is one of the sturdiest in this weapon group and compared to other weapons from categories as the halberd or the bill it looks the most combat functional. This is not only because of its weight, it is also due to

[308] New York, The Metropolitan Museum of Art, 14.25.272, Vouge. **Figure 132.**
[309] Leeds, Royal Armouries, VII.1527, Vouge. **Figure 133.**

the width of the blade and stability of the socket, which compared to the thin weaker examples mentioned earlier, looks safer.

Based mainly on the examples discussed the period of use of the vouge is dated between the beginning of the third quarter and the second quarter of the sixteenth century. Throughout this period its form did not go under groundbreaking changes, perhaps with the exception of vouges with a back-spike. Earlier versions of the vouge might exist before this period but they might get technically merged within other weapon groups or coexist on the boundaries between the two. Such an example from the end of the first of beginning or the second quarter of the fifteenth century can be considered to be either a vouge or a composite glaive.[310] The lower part of the blade and the way it curves resembles later examples of vouges but the width of the blade and the angle on the front is closer to the design of early fifteenth century glaives. It is possible that it is a predecessor or form from which both weapons developed. The decline in popularity of the use of the vouge coincided with the increasing use of the *couteau de brèche*, which is its major variation. The progressive marginalization of the vouge and the lack of later examples are directly connected to its form. Without judging the effectiveness or not of the weapon, the narrow blade could not provide the space for the impressive decorations that other staff weapons featured on them after the middle of the sixteenth century, and the shape of the weapon itself did not allow much variation without drastically changing its nature.

[310] Paris, Musée de l'Armée, K 825, Vouge or composite glaive. **Figure 134.**

6.4. The Couteau de Brèche

The *couteau de brèche*, also often seen as *couse*, is a variation of the vouge, and also resembles a large knife. There are three significant technical differences that separate it from the simpler weapon discussed earlier. The blade of the couteau is much wider and convex on the one side towards the top. In contrast to the vouge only the whole front side is sharpened. Finally, the blade of the weapon is projected outside the axis of the shaft, towards the front side. This also usually affects the tip of the blade which also ends up being off the axis of the shaft. The head of the weapon is fitted with a socket, which sometimes has two or four long langets. The wide flat blade of the weapon often had decorations either in the middle or lower part. Just like the vouge, the couteau was designed for thrusting and cutting. However, the displaced blade affects the thrusting potential as the force behind the tip is not on the same axis, therefore this combined with the sizeable convex blade leads to the assumption that the couteau was primarily used for cutting.

In contrast to the the vouge, scholarship generally agrees to the term for this weapon and the term itself was only used for other weapons early on in hoplological studies. Stone described it as the simple form of a sword fastened to the end of as staff.[311] He also attached the terms *couse* and glaive to this weapon, the first as a synonym and the second because of the similarity of form because of the slightly curved blade. However, Stone's definition refers to the wider vouge group as discussed here and not just a smaller subgroup. Therefore his definition is actually closer to the vouge and not the *couteau de brèche* because he disregards the fact that the sharp part of the blade of the couteau is projected in front of the

[311] Stone, p. 193

shaft, which makes it distinctive enough from the vouge. The same principle applies to his merge of the definition of this group and the glaive. Of course both weapon categories look like they developed from large sword like blades mounted on a shaft but they do have differences both in form as well in use. As already mentioned Ellehauge saw this weapon as the typical vouge and the previously discussed straighter version as its primitive predecessor.[312] Dean used the term *couteau de brèche* and saw this weapon as an evolution of the vouge.[313] Troso uses the term *coltello da breccia* which is merely a translation of the *couteau*.[314] He also used the terms *Kuse* in German and couse in English. For Troso this weapon is a variation of the vouge, and in fact he mentioned the need for them to have distinctive terms because of the variety in form regardless of the close similarities in their structure and especially use. Waldman calls this weapon a *couteau de brèche* and couse as well, but only considers it a weapon similar to the vouge.[315] Viollet-le-Duc used the *couteau-de-brèche* to describe the simple glaive.[316] Even though this connection is not common as it seems in more recent scholarship, it is somewhat justified because of the common convex shape of the front part of the blade in some examples of both weapons. As it appears, the couteau and the couse and its various spellings are both used for this weapon but the first was chose as the label of this group because it is unique and descriptive, literally meaning knife.

The identification of the weapon is simple and the earliest surviving examples can be dated towards the end of the fifteenth century. One of the earliest examples has all the technical features of this subgroup, a concave indent below

[312] Ellehauge, p. 30.
[313] Dean, *Pole Arms*.
[314] Troso, p. 30.
[315] Waldman, p. 185.
[316] Viollet-le-Duc, V, p.422.

the blade, a small socket and two langets on the sides of the flat of the blade.[317] The lower part of the blade goes inwards flat and then becomes concave. The lower part of the blade has a circular decoration created by cut-out holes. Another weapon dated to the end of the fifteenth or the first quarter of the sixteenth century has a blade with a straight lower part, but the top half of both the front and the back is angled upwards and inwards forming a the tip.[318] The lower part of the front of the blade is completely horizontal inwards towards the top of the socket, which is quite thin. If the dating is correct a slightly more refined version of this object is dated to the end of the same quarter.[319] Its main difference is that the front is convex whilst the back maintains the same angle towards the top. A weapon from the end of the second quarter of the sixteenth century has a slightly convex front part of the blade and a straight back.[320] The bottom of the front of the blade is flat and horizontal towards the socket. The socket extends to four long langets that are nailed on the shaft and secured at their top with a square band that wraps around them. A horizontal band in the middle of the blade is decorated with carved patterns. Another couteau de brèche from the same period has a convex front of the blade and the concave indent on the bottom.[321] The structure of its socket, langets and securing band are exactly the same as in the previous example. Finally, an example from the last quarter of the same century with incredibly detailed carved designs shows the direction the weapon went down to, and the craftsmanship that was put in it once its role deviated from a functional weapon and transformed to an object of display.[322]

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[317] New York, The Metropolitan Museum of Art, 14.25.260, Couteau de brèche. **Figure 135.**
[318] Berlin, Deutsches Historisches Museum, W 2522, Couteau de brèche. **Figure 136.**
[319] Berlin, Deutsches Historisches Museum, W 2521, Couteau de brèche. **Figure 137.**
[320] London, The Wallace Collection, A938, Couteau de brèche. **Figure 138.**
[321] Leeds, Royal Armouries, VII.957, Couteau de brèche. **Figure 139.**
[322] New York, The Metropolitan Museum of Art, 29.156.8, Couteau de brèche. **Figure 140.**

In contrast to the vouge the couteau is much easier to detect in art. The lower concave below the blade is unique compared to other staff weapons. The vouge is certainly a simple weapon and like certain other weapon forms not interesting enough to illustrate. The couteau on the other hand and its asymmetrical head was most certainly more iconic and some artists even chose to show some extra detail by depicting its blade decorations. This however, does not mean that it was popular in art in the examined period. It became progressively more represented in art after 1550 when the weapon itself started being heavily decorated. Depictions of the couteau from the first quarter of the sixteenth century from the *Weisskunig* show variations of the weapon with straight or concave bottom part of the blade.[323] One of the few examples clearly demonstrating the technical features of the couteau from the second quarter of the sixteenth century includes a variety of different illustrated versions of this object, which include weapons with both flat and concave lower part of the blade.[324] This fresco is incredibly useful to research because besides that little variation it also shows nearly all relevant weapons having langets, even short in this case, and the little square securing band at the lower part of the socket.

6.5. Conclusions

As already mentioned in this research, the vouge is a problematic term. One of the goals at the beginning of the research was to solve this problem and seek which author was right in the identification of the term. The most likely explanation as to

[323] *Der Weisskunig*, ed. by Alwin Schultz (Vienna: Kunsthistorische Sammlungen des Allerhöchsten Kaiserhauses, 1888), p. 359.
[324] Ermanno and Jacopo Ligozzi, *Gran Cavalcata*, *c.* 1580, fresco, Palazzo Ridolfi, Verona. **Figure 141.**

what the vouge originally meant is that it was a generic term to describe several staff weapons as the categorization by Viollet-le-Duc suggests. Later the term was attached to different objects by different scholars who sought to narrow down this term to a smaller staff weapon category. In my opinion seeking further truth about the origin of the term and mainly its use in scholarship cannot produce definite results. The vouge is the best example of how certain terminology developed completely artificially within hoplological studies to the extent that it overtook the original meaning, whatever that was, and was interpreted differently by several authors.

As briefly demonstrated in this chapter the weapon labelled as the vouge in the context of this thesis is also problematic. Its simple form, the increasing popularity only of the *couteau de brèche* variation and only after the examined period, and the general lack of extended artistic identification makes the examination of this object hard. The dating that can be provided for the vouge is only provisional and should be approached with caution. Its earliest forms appeared somewhere around the middle of the fifteenth century, and if forms that are fluid other weapons towards weapons such as the glaive are taken under consideration then the chronological boundaries can even be pushed towards the beginning of the same century. The vouge remained in use possibly to the second quarter of the sixteenth century. The *couteau de brèche* on the other hand stemmed from the later forms of the vouge around the end of the fifteenth and was in use throughout the sixteenth century. Of course the function and practicality of both weapons can be questioned as it is possible they were both limited to non-combat use before other weapons followed the same route. This is based on the weak structure of both weapons, that even though they generally maintain the langets in the sixteenth

century, they have small sockets and thin blades. The small connecting point above the socket makes the weapon weak to use for cutting, and in the case of the couteau the lack of tip-shaft alignment makes it less effective for thrusting and perhaps even prone to breaking. Of course this is only a hypothesis that cannot be proven because of the lack of severely damaged surviving examples.

Chapter VII: Winged Staff Weapons: Corseke, Ranseur and Chauve-Souris

7.1. Form and Similarities

The weapons of this group are only widely related by the fact they all have wings on the base of a central longer spike or blade. Therefore they were all primarily used for thrusting used all or some of their components. The different parallel elements can also be interpreted as something that could potentially be used for trapping the opponent's weapon in combat. Most importantly these weapons appear to be connected in scholarship by the fact that the terms used to describe them vary from author to author and act sometimes as interchangeable terms. This problem is best highlighted by Waldman who in his own research found that the recent literature he examined did not have two matching texts or terms used to describe images of the weapons of this group.[325] The corseke and the ranseur also resemble some forms of the winged partizan but their wings are different enough in size and shape that with a careful examination it is easy to avoid a mistake in categorization. Because of this lengthy mix-up by recent authors, the discussion and demonstration of the problem will be made separately in each subsection. The terms corseke, ranseur and chauve-souris chosen to describe the three sub-groups are not descriptive, with the exception of the latter, but at least they are easily distinguishable and once attached to a subgroup the discussion can be built on that simple basis.

[325] Waldman, p. 177.

7.2. The Corseke

The head of the corseke is easily identified because of its three main features. In the centre a triangular symmetrical blade rises on the axis of the shaft. The lower sharpened ends of the blade go inwards towards the top of a socket forming the lower side of the triangle. Right below the end of the blade two large wings grow laterally. The wings are convex upwards and look like two small scythe blades. The upper part of the wings is sharpened. The central blade has a similar shape to the ox-tongue partizan. It was mainly used for thrusting. The great length of the wings combined with the fact they were sharpened on their top leads to the safe assumption that this weapon was also used for pushing. The main blade could potentially be used for cutting, but it is not very likely because the hits could actually be impaired by the existence of the long wings on the same lateral axis of the strike. It is also possible this weapon was used for pulling. A smaller subgroup within the corseke group has a different wing design. In this variation the wings are slightly shorter and thicker. Towards their ends they get cut off and only on the upper part of the butted end small spikes grow, continuing the curves of the overall wings. Most importantly this variation usually has a spike instead of a blade on the vertical axis of the shaft.

The terminology used for the corseke in scholarship is a perfect example of the difficulties and pathogenies of this type of research because different authors use different terms sometimes for the same item or the same term for different items, much like the problem that was discussed with the halberd group and the vouge. Oakeshott uses the term *couseque* instead of corseke for this weapon, which according to him derived from the winged spear.[326] Stone simply uses the term

[326] Oakeshott, *European Weapons and Armour*, p. 53.

korseke for the wider group to describe any weapon included.[327] Troso describes this weapon as Type A corseke or a *spiedo friulano*.[328] However, what he mentions as a Type B corseke has more structural similarities to the chauve-souris than to his Type-A. Waldman provides perhaps the most comprehensive terminology as he mentions this weapon as the corseke and then adds the alternative terminology he has gathered which includes *corseca*, *Korseke* in German, *corseque* in French, and *corseone*, *spiedo friulano* and *Furloni* in Italian. He also highlighted that an alternative term to describe the corseke was *spetum*.[329] This appears to be case with the cataloguing of the object in certain collections. The *spiedo friulano* mentioned by Troso and Waldman specifically refers to the variation mentioned earlier with the smaller spikes on the wings. Buttin simply used the term corsèque.[330] Viollet-le-Duc referred to both the *korseke* the *spiedo friulano* as Type A *roncones*.[331] The interesting thing is that he used the term Italian *roncone* that in more recent scholarship as well as this very research is used to define and as a synonym to the standard bill. Additionally, it needs to be mentioned that the weapon that he defined as Type B *roncone* is in fact the standard bill, and he used the protruding spikes as point of relation.[332] However, the use and development of the two weapon groups up to this point appears to be quite different.

For reference purposes the terms standard corseke and Friuli type corseke will be used to maintain elements of scholarship that generally agree as well as to make a distinction between the main two variations of the weapon, based on the shape of their wings. Corsekes with the thicker wings and the spike ending will

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[327] Stone, p. 374.
[328] Troso, p. 35. The spelling that Troso uses is *corsesche*.
[329] Waldman, p. 179. Waldman mentions that *spetum* and *furloni* were interchangeable terms for the corseke in the North, but he did not further specify what this geographic limitation means.
[330] Buttin, *Cataloque*, 91.
[331] Viollet-le-Duc, VI, pp. 24-55.
[332] Viollet-le-Duc, VI, p. 26.

henceforth be referred to as Friuli type corsekes and the rest will be standard corsekes. The examination of surviving standard corsekes leads to the observation of the existence of several variations within this weapon group that do primarily affect the weapon aesthetically and sometimes functionally. A standard corseke from the first quarter of the sixteenth century has a long triangular blade with a flat bottom.[333] The blade is lightly uneven on one side as a result of constant polishing during conservation. Its wings grow directly from the top of the socket. Only their upper part is sharpened. This can potentially be characterized as the most common form amongst corsekes. The head of a corseke that has been broken from its shaft from the second quarter of the sixteenth century has a symmetrical blade that has a projected lower flat bottom outside the main axis as well and looks like a long arrowhead.[334] Its wings are long and sharpened only on their upper part. The weapon had langets but they have been broken with the shaft. A similar corseke from the same period has a short spine on the lower part of the blade and engraved decorations above it.[335] It is possible that the decoration between the lower parts of the blade has been created by cutting out a part of the body of the blade to create the illusion that the wings grow from the top of the socket and not from the blade. The same effect was used for certain weapons of the *chauve-souris* group during this period. In contrast to the form of these corsekes, a weapon from the beginning of the second quarter of the sixteenth century has a central blade that is extremely thin and nearly three times larger.[336] The top ten centimetres that form the tip of the blade are reinforced and reshaped into a quadrangular spike. Even the wings of this weapon are worth mentioning not only because they are more slender and sharpened on both the upper and the lower part, but mainly

[333] New York, The Metropolitan Museum of Art, 14.25.233, Standard corseke. **Figure 142.**
[334] Leeds, Royal Armouries, VII.1662, Standard corseke. **Figure 143.**
[335] London, The Wallace Collection, A1024, Standard corseke. **Figure 144.**
[336] London, Royal Armouries-Tower of London, VII.838, Standard corseke. **Figure 145.**

because the lower part has a concave decorative design that most certainly creates an association with the similar design of the *chauve-souris* which will be discussed later. This weapon also has long langets on the sides. With the exception of the wings, the length of the blade, the spike-like tip and the langets also resemble an ahlspiess. The length of the blade makes it clear that this corseke was certainly created mainly for thrusting. A very similar weapon from the end of the second quarter of the sixteenth century also has small concave designs on the bottom of the wings, which are even smaller than on the weapon before.[337] The socket and the base of the central spike are heavily decorated. The progressive shrinking of the wings verifies this transition to thrusting and the marginalization of pushing and pulling as a secondary function.

There is less variation and change in surviving Friuli type corsekes. Such a weapon from the beginning of the first quarter of the sixteenth century has a quadrangular spike that blends with the socket on its lower part.[338] The wings simply grow from the upper part of the socket and both their upper and lower parts are sharpened. It has short langets that have been cut shorter in what is clearly a later modification when a new shaft was refitted. The same form appears to persist in a weapon from the late second quarter of the sixteenth century.[339] The main difference is that the little spikes at the end of the wings have been clearly sharpened and are more prominent. An example from the same period has a sharper upwards angle on the wings that significantly reduces their spread in width.[340] Perhaps the most notable of examples of this type of corseke has a blade

[337] New York, The Metropolitan Museum of Art, 14.25.362, Standard corseke. **Figure 146.**
[338] Leeds, Royal Armouries, VII.845, Friuli type corseke. **Figure 147.**
[339] New York, The Metropolitan Museum of Art, 29.156.38, Friuli type corseke. **Figure 148.**
[340] New York, The Metropolitan Museum of Art, 14.25.38, Friuli type corseke. **Figure 149.**

instead of a quadrangular spike.[341] This weapon is also from the first quarter of the sixteenth century. It has long langets on its sides. The central blade is wide and the wings grow directly from its lower part. There is no spine. The tips of the little spikes at the end of the wings have been broken off and are asymmetrical and blunt. Friuli type corsekes from the second quarter of the sixteenth century retain the same form as those from the first quarter but are often decorated on the upper part of the socket before it becomes quadrangular and shaped to the spike and on the wings. Such a weapon from the end of the second quarter of the sixteenth century has fine engraved designs on those positions.[342] The spikes at the end of the wings are prominent and sharpened and the socket has ten sides. Besides the transition of standard corsekes to shapes that focus on thrusting after the first quarter of the sixteenth century, it is also clear that corsekes in general became more elaborate, slender and decorated with different techniques.

Illustrations of winged staff weapons are not as common as of other staff weapons and are an added problem in their dating. Additionally, the depiction of the wings, which are the identifying element especially for weapons such as the corseke, is hard because of the size of the feature in a small overall image. A rare depiction of a weapon that can be interpreted as a standard corseke with slightly shorter wings can be found in the *Beauchamp Pageant*, from the last decade of the fifteenth century.[343] The wings are more curled that usually and the central spike is replaced with what would probably be interpreted as a blade. One could argue that it is a winged spear but the *Pageant* has plenty of examples that demonstrate that the artist had a very precise method of depicting them and it does not look like

[341] Leeds, Royal Armouries, VII.849, Friuli type corseke. **Figure 150.**
[342] New York, The Metropolitan Museum of Art, 14.25.3, Friuli type corseke. **Figure 151.**
[343] Sinclair, p. 82.

that.[344] Of course the corseke here does not precisely have any of the conventional surviving forms, but might be a variation with no surviving examples or even a forerunner of later more refined forms. The same weapon can also be traced on a woodcut from the *Weisskunig* dated to the first quarter of the sixteenth century.[345] Again the design of the wings is thicker and the form of the weapon looks peculiar compared to rest and more refined depictions of weapons in the same image. The *Weisskunig* also includes two detailed depictions of standard corsekes that are much closer to the conventional from of the weapon. The first shows a standard corseke amongst other staff weapons.[346] It has the long central well defined blade and wide wings. The lower ends of the sides of the blade are angled downwards and inwards towards the upper part of the socket. The second is a simplistic depiction of the weapon that is barely an outline.[347] However, the shape is clear and shows the central blade as a spike and long curved wings that correspond to those of the surviving weapons discussed before. A much earlier depiction of a weapon from a fresco dated to the second quarter of the fifteenth century has the same wings a standard corseke but the central blade is short and not longer than the respective wings.[348] The weapon should not be considered as a standard corseke but as a depiction of a potential forerunner. Out of the three winged weapons types discussed here, the corseke and particularly the standard corseke has the simplest form of all and is the only one that most likely was already in use from the late fifteenth century. The earlier depictions suggest that it developed from a simpler weapon that also had wings but was less focused on the thrusting element.

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344 Sinclair, p. 85.
345 *Der Weisskunig*, p. 179. **Figure 152.**
346 *Der Weisskunig*, p. 164. **Figure 153.**
347 *Der Weisskunig*, p.334. **Figure 154.**
348 Giacomo Jaquerio, *The passion of Christ*, early C15th, fresco, Church of St Anthony of Ranverso, Turin. **Figure 155.**

7.3. The Ranseur

This ranseur has a long straight blade that grows on the vertical axis of the shaft. Two symmetrical wings grow from the base of the blade curved upwards. The head of the weapon is attached on the shaft with a socket and usually has short langets on the sides of the wings that secure it in place. The shape and form of the blade varies. The wings also vary but in width and length. The structure of the weapon could be described as a trident with uneven tines, with the central being at least five times the length of the others. Because of the positioning of its features the ranseur was primarily used for thrusting. The blade could also be used for cutting. The size of the wings is most definitely limiting and it is very unlikely that they were used for thrusting. The distance between the tip of the blade and the tip of the two wings is such that even hits in passing with the wings were unlikely. This is interesting considering that usually the inside part of the wings is sharpened. The most probable explanation for their use is that they were used as parrying feature to block or trap an enemy's weapon in combat. That way the inside part of the wing could potentially damage any weapon trapped there.

For a weapon that only saw a brief period of use according to the examples that will be discussed later, the ranseur had many terms attached to it. Oakeshott preferred the term *rawcon* for this weapon but he also provided the terms ranseur, *rancoon* and *ronka* as synonyms.[349] Perhaps his most interesting observation is the linguistic proximity of these terms with the Italian *roncone*, the term used to describe the standard bill. It is interesting that Stone primarily preferred the tern runka as well to describe the ranseur.[350] The additional terms that he mentioned are *ranson*, ranseur, *rhonca* and *roncie*, and spectacularly the only overlapping term. Stone also

[349] Oakeshott, *European Weapons and Armour*, p. 56.
[350] Stone, p. 529.

speculated that it is related to the corseke and the *chauve-souris* but it is not actually a variety of either. Troso used the Italian term *brandisticco* for this weapon.[351] He also made an observation on the distinction between the ranseur and the trident.[352] The latter does not have a sharpened blade but just a spike in the middle, and the side tines are not sharpened either. The term *brandistocco* was also used by Waldman, who appears to only be making this choice by adopting Troso's terminology. He mentioned that the term runka is used in German and ranseur in French, but does not justify his choice. It is clear that there is a linguistic proximity and definitely common origin in the terms each author displays for this weapon. The choice of the ranseur as the definite choice to describe this weapon category is due to the overlap and common appearance of the term in scholarship. It is not the first choice for most authors to describe this weapon, but at least all acknowledge that it is definitely associated with this weapon.

The earliest surviving examples of ranseurs are dated to the first quarter of the sixteenth century. A simple examination of some examples from this period reveals some interesting variation on the design of the blades. The first ranseur has the standard shape that was described for all the features of the weapon.[353] The blade is simple but well defined and has a wide diamond shape cross-section. A variation of the exact same design has an added rigid spine from the top of the socket to the tip of the blade.[354] Both weapons have langets on the sides of the shaft. In the second half of the sixteenth century the form of the weapon starts to change. The variations have sometimes small and other times more significant

[351] Troso, p. 34. The equivalent terminology Troso used in other languages was ranseur for German and English, and *Brindestoc* for French. This is interesting because the term ranseur itself is of French origin.
[352] Troso, p. 41.
[353] New York, The Metropolitan Museum of Art, 14.25.72, Ranseur. **Figure 156.**
[354] New York, The Metropolitan Museum of Art, 14.25.99, Ranseur. **Figure 157.**

changes, both in the form of decorations. A ranseur from the early second quarter of the sixteenth century has the same shape and blade as the first weapon discussed earlier with the diamond shaped cross-section but the lower part of the blade and part of the wings are covered with engravel floral patterns.[355] Similar designs can be observed on a ranseur from the last decade of the same quarter on the same part of the weapon.[356] The patterns on the blade and wings are framed by linear engravings and follow the lines of the shape of the weapon. These two weapons also have langets on the sides of about ten centimetres long that are shorter than those in the weapons of the first quarter of the sixteenth century. Generally, ranseurs can be associated with winged partizans when the wings of the first are smaller and less angled upwards, but they never reach the point that they are as small as the partizan wings, and the blade of the ranseur is much narrower throughout its lifespan.

Two more weapons worth examining because of their unique shape and potential position in the development of the ranseur have significant changes in their shape. The first is dated to the early fifteenth century and has the long blade found in this weapon group.[357] However the wings are not curved. Instead, they are straight and on a fourty-five degree angle from the blade. Their tips are barely pointed but they are sharpened both on their upper and lower sides. It can be argued that it is a hybrid between a ranseur and a Friuli type corseke but there is no evidence for spikes at the end of the wings. It is very likely that this weapon is a connecting link in the design of these two weapons and perhaps the way they were viewed, similar in shape as well as in use. Viollet-le-Duc used the term *corsèque* to describe this specific type of weapon with the straight wings and catalogued it in

[355] New York, The Metropolitan Museum of Art, 14.25.123, Ranseur. **Figure 158.**
[356] New York, The Metropolitan Museum of Art, 14.25.15, Ranseur. **Figure 159.**
[357] New York, The Metropolitan Museum of Art, 14.25.89, Ranseur. **Figure 160.**

weapons that belong in the wider halberd group.[358] The second weapon is from the end of the second quarter of the sixteenth century and has complicated decorative patterns that cover the lower part of the blade and the wings.[359] Its identifying feature is the existence of a second pair of wings curved downwards that grow below the original wings of the weapon. They are not sharpened and it is unlikely they had a functional purpose. This type of design shows once more the slow decline of a staff weapon group and their re-imagination as decorative or demonstrative objects, even within a period that this weapon was still in use.

Just like the corseke, depictions of the ranseur are scarce and usually represented in such a simplistic manner that it can be identified as a general weapon of that specific group, but it can hardly be compared to a specific weapon. A woodcut from the Weisskunig from the first quarter of the sixteenth century includes a simple depiction of a ranseur.[360] The weapon is only shown by its outline but the proportions are those of the weapons of the same period. A highly detailed woodcut from the first quarter of the sixteenth century shows a ranseur that has a lightly unconventional central feature.[361] The wings have the usual curve that is common in this weapon group but the central blade is not simply straight. Instead the blade is similar to the one of a standard corseke slightly resembling a spear or arrow head. Another woodcut from the same quarter has a ranseur that corresponds better to the form of the weapon as seen from surviving examples from the same period.[362] The only comments that should be made are about the slightly shorter wings and the blade that is depicted thicker than expected, but the

[358] Viollet-le-Duc, VI, p. 23.
[359] New York, The Metropolitan Museum of Art, 14.25.286, Ranseur. **Figure 161.**
[360] *Der Weisskunig*, p. 359. **Figure 162.**
[361] Dürer School, *Christ Bearing the Cross*, Albertina, Vienna. **Figure 163.**
[362] Hans Schäufelein, *Pilate Washing His Hands*, 1507, engraving, The British Museum, London. **Figure 164.**

latter might be due to a matter of iconographic depth perspective. Finally, the ranseur depicted on a woodcut from the second quarter of the sixteenth century has the same form as the weapons of this group from the same period, but it does not have the decorations that were also common during this time.[363] Of course this would be extremely hard to include in an illustration so small.

7.4. The Chauve-Souris

Weapons of this group have a long triangular symmetrical blade and two smaller also symmetrical wing-like blades growing upwards from its base. Even though they are technically wings these features will be mentioned here as secondary features to highlight their size and significant thickness compared to the wings of other weapons. The head of the weapon is attached to the shaft with a socket. The central blade usually has a reinforcing spine running down the middle from the top and all the way down to the socket. Sometimes even the secondary blades have spines. Towards the lower bottom part of the secondary blades concave designs decorate them that do not have any functional value. These designs are responsible for the name of the weapon because they look like bat wings. This weapon was primarily used for thrusting, easily deducted by the prominent central blade, and also for pushing and potentially cutting because of the sides of the central blade and the upper sharpened part of the secondary blades. The reason behind insisting on the use of blades instead of wings for this weapon is that because of their width and thickness, they were perhaps the only wings on any staff weapon that could have been used for lateral cutting strikes.

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[363] Hans Sebald Beham, *Christ Taken Captive*, 1535, woodcut, Staatliche Kunstsammlungen, Dresden. **Figure 165.**

Of the three weapons of this weapon group, the chauve-souris is the only one whose name has not been interchanged as much. Perhaps the main identification matter that is worth discussing is its grouping sometimes as a corseke-derivative or a subtype. Buttin referred to this weapon as a *corsèque* of the *chauve-souris* type.[364] Stone used the term *chauve-souris* for this weapon and he categorized it in what he called the corseke family.[365] Oakeshott also identified it as a form of corseke.[366] Troso called it *pipistrello* and also provided terms for the weapon in German and French both meaning a bat and the term bat's wing in English.[367] This more or less agrees with the general identification of the weapon but Troso also included in his book a variation of the weapon he examined that sometimes has a central spike and not a blade and the secondary blades of the chauve-souris but he categorized as a type B *corseke*.[368] Buttin did not separate this type of weapon from the general group and used the term *corsèque*.[369] His argument on this separation is based on the fact that the secondary blades are slightly more angled upwards, but it is a typical example of over-analysing data. The function of this weapon appears to be exactly the same as the chauve-souris. It is possible that Troso's categorization was based on an example previously examined by Stone, which belongs to the aforementioned Type B *corseke*, which the author simply mentions as *corseke*. Waldman relates the corseke and the chauve-souris but maintains a clear distinction between them, with the latter being identified because of its signature secondary blades that resemble bat wings.[370]

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364 Buttin, *Catalogue*, p. 91.
365 Stone, p. 177.
366 Oakeshott, *European Weapons and Armour*, p. 52.
367 Troso, p. 37. For the correspondence of the terms pipistrello, *Fledermaus*, bat's wing and *chauve-souris* also see Troso, p. 99.
368 Troso, p. 36.
369 Buttin, *Catalogue*, p. 90.
370 Waldman, p. 179.

Examining surviving examples of this weapon group can shed some light on the details and variations that affected its form and possibly its use. A weapon from the first quarter of the sixteenth century has spines along the central and the secondary blades.[371] The central spine runs from the tip of the blade down to the socket but those of the secondary blades only go from the respective tips to the middle. On both sides of the lower end of the central blade the bottom forms a concave towards the socket. Between the bottom of the central blade and the point where the secondary blades start two small decorative strips grow horizontally and on their end have a reversed triangular indent. The lower parts of the secondary blades have two concave indentations each, with the upper indent ending with a protruding spike. A similar weapon, also from the first quarter of the sixteenth century has the same form with some small yet notable differences.[372] The spine of the central starts from the socket and grows upwards only half way through the length of the blade. The decoration at the bottom of the central blade is intricate, with several concaves creating a club-like shape that separates the blades. This last detail might appear to be insignificant but when examining other weapons of the same group, the decorations at the bottom of the central blade appear to be an identifying feature for whoever was making this type of weapon, so even in examples in which the secondary blades grow right at the bottom of the central blade some precaution is taken in decorating the weapon accordingly. In an example from the same period, the lower end of the sides of the central blade merge onto the upper part of the secondary blades, or at least this is the illusion created by the decoration.[373] The secondary blades grow directly from the lower part of the central blade and not from a socket. However, two holes are punched

[371] New York, The Metropolitan Museum of Art, 14.25.197, Chauve-souris. **Figure 166.**
[372] New York, The Metropolitan Museum of Art, 04.3.83, Chauve-souris. **Figure 167.**
[373] Leeds, Royal Armouries, VII.834, Chauve-souris. **Figure 168.**

through the metal roughly at the height of the upper part of the secondary blades. This creates the illusion of a concave design at the top of the blade and the socket. The same illusion can be observed in a weapon from the second half of the sixteenth century that takes advantage of the flat surface provided by the flat blade and the joint secondary blades and is decorated with carved designs.[374] It also has a spine on the whole central blade and smaller spines from the tip to the middle of the secondary blades. These two designs appear to be very close to each other especially when examining weapons that blur the lines between them. Such is a weapon from the second quarter of the sixteenth century with gorgeous etched decoration on the bottom of the blade.[375] The main point of interest of this weapon is the lower end of the sides of the central blade, which is barely separated from the upper part of the secondary blades. Under the bottom of the central blade there is a concave design that also includes the same protruding small horizontal decorative elements mentioned earlier. This design also creates an illusion, and the main reason is the thick spine which creates the impression of a long socket from which the secondary blades grow. A closer look reveals that the side blades were created growing directly from the central blade and that the decoration was cut out to create the look of three different parts. This illusion was finalized with the cutting and separation of the lower part of the main blade from the upper part of the secondary blades. This separation is underlined with the addition of linear decorative elements close to the design lines of the weapon so that they help the viewer perceive the separated design.

[374] Leeds, Royal Armouries, VII.1564, Chauve-souris.
[375] Leeds, Royal Armouries, VII.1340, Chauve-souris. **Figure 169.**

One of the rare depictions of the chauve-souris that corresponds to the weapons discussed above can be found in Achille Marozzo's fight-book.[376] The illustration of what could be described as a standard example of this weapon was produced in 1536, which falls roughly in the middle of what could be described as the lifespan of the chauve-souris. The weapon depicted has two concaves at the lower part of the secondary blades and the round concave design at the lower end of the central blade.

The artificial separation of parts usually persists in the variation of the chauve-souris that Troso described as a Type B *corseke*. This variation is identified by the lack of the concave decorative pattern on the bottom of the secondary blades, while the rest of features remain the same. Two similar weapons from the first quarter of the sixteenth century were created using the same technique that creates this illusion but at the same time demonstrate different features. The first chauve-souris of this type has the secondary blade grow straight out of the central blade and two holes punched through where the base of the central blade would have its bottom.[377] Additionally, small incisions have been made to separate the upper part of the secondary blades and the lower end of the central blade. However, they are crudely made and it is easy to detect the effect that the maker tried to create. The weapon has subtle spines on the whole central blade and the top half of the others. It is important to mention that the socket is secured on the shaft with fifteen centimetre langets located on the sides of the secondary blades. The second weapon has very similar features to the first but has more rigid spines.[378] It also has langets. The visual separation of the blades happens not just

[376] Achille Marozzo, *Opera Nova dell'Arte delle Armi* (Bologna, D. Antonio Bergolae, 1536) p. 83. **Figure 171.**
[377] Leeds, Royal Armouries, VII.1743 Chauve-souris.
[378] Leeds, Royal Armouries, VII.2027, Chauve-souri.

with a punched through hole in this case, but with a more complicated cut out design that even retains the horizontal decorative patters discussed earlier in other weapons of this group. This weapon also has some simple dotted engraved designs over the blades. The last weapon of this variation examined is from the second quarter of the sixteenth century.[379] It is heavily decorated with engraved designs all over the blades and it was originally gilded. The gilding has been destroyed on most parts of the weapon and left the blade blackened because of the adhesive medium underneath. In contrast to the previously discussed examples the secondary blades were actually originally separated from the central blade and grew from the extended socket. Even though this variation of the chauve-souris is generally simpler and less elegant in form than the one with the concave blade designs, this specific weapon has decorations of exquisite craftsmanship. Besides the decorative elements on the blade, the shape of the central blade itself is very different and more complicated than of all the weapons discussed before. First, the lower end of the sides of the central blade create two small and symmetrical half-moons with the concave part being the bottom of the sides of the blade and the outside edge projecting into a small spike. This design blends with a second concave below to create a small hollow eight-shaped pattern.

A unique chauve-souris worth mentioning has a truly peculiar positioning of the concave decorative designs distorting the secondary blades to the point that they lose their cutting function on the outer sides.[380] The weapon is dated to the first quarter of the sixteenth century. It only has a spine on the lower half of the central blade. Unlike other weapons of this group it does not have all concave decorations on the bottom of the secondary blades. In fact the whole lower part of

[379] New York, The Metropolitan Museum of Art, 29.156.18, Chauve-souris. **Figure 172.**
[380] Leeds, Royal Armouries, VII.1404, Chauve-souris. **Figure 173.**

them is respectively concave and then a second concave parallel to the central blade forms the side of the secondary blade on a vertical axis. This disrupts the flow of the weapon design, and leads to the assumption that a lateral blow would hit with the edge created between the two concaves and not with the blade.

Octagonal and circular sockets were equally common for this weapon group. The choice for each seems to be purely an aesthetic choice. The head was usually secured into place with four nails on opposing sides. The shape of the chauve-souris is one of the most unique amongst staff weapons and certain details in its design persist regardless the small variations. The decoration between the bottom of the central blade and the upper part of the secondary blades is something that is evident in all types of this weapon. The ways this was created, as previously discussed, varied but it appears to be an important part of the design. The fact that cutting was used as a technique to create this decoration by removing a part of the blade is something that only became popular extensively after the third quarter of the sixteenth century in weapons that were not used in combat. This was the case where the central part of a halberd, glaive or other staff weapons was nearly cut out completely in a variety of decorative shapes. The chauve-souris appears to be the earliest type of weapon that this method is used but in contrast to later weapons this did not happen on the expense of functionality.

7.5. Conclusions

Several examples from all three weapon groups presented here survive in modern collections. Unfortunately this popularity in production is not represented in art which makes their dating extremely hard before the second half of the sixteenth

century. Their dating is based heavily on the dating provided by museum curators and archives, and their comparison with similar types of weapons from the same period with similar technical morphology, such as the partizans discussed in the appropriate sub-chapter, mainly the end of the fifteenth and the first half of the sixteenth century. A broad dating of this weapon group would be to place all weapon included in it in a timeframe from the last decades of the fifteenth century to the third quarter of the sixteenth century, with the peak of use and production being the second quarter. Scarce iconographical evidence suggests that at least the corseke and some form of the chauve-souris were still popular enough by the end of the third quarter of the sixteenth century.[381]

The use of these weapons should be investigated further as well. The variety of threatening features they have is at least interesting. Especially in the case of the corseke the potential for pushing because of its wings which is the widest offensive feature in any staff weapon group is intriguing. Of course simply pushing would not be that effective against armoured targets especially considering how thin the wings are, but it was perhaps used as a weapon of civic enforcement. It has also been suggested that particularly the *Friuli* type corseke was used in naval combat as a boarding weapon.[382] This does not seem to be too exaggerated as it does have the length and width with its wings, especially the standard corseke, to be used in the same manner as a naval grappling hook with the addition of the blades as an offensive weapon.

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[381] Jacopo Robusti Tintoretto, *Crucifixion*, 1568, oil on canvas, Chapel of St Casian, Venice. This is one of the few examples that feature a few different winged staff weapon including two corsekes and a chauve-souris. **Figure 174.**

[382] Claude Blair and Leonid Tarassuk, *The Complete Encyclopedia of Arms & Weapons: The Most Comprehensive Reference Work Ever Published on Arms and Armor* (New York: Simon and Schuster, 1982), p. 141. The remark on the naval use of the corseke has also been made by Waldman who also tried to detect the geographical spread of its use. See Waldman, p. 179.

Just like other staff weapons their form and use declined to a simply decorative role by the end of the sixteenth century. Another variation of the weapon was developed around the same time that had close similarities with the winged weapons of this group, which is better known in scholarship as the feather staff.[383] The top of the shaft had a flat topped socket. From the centre of the socket a long vertical circular or quadrangular spike grew to about the same size as the shaft. The two wings were smaller spikes at a forty-five degree angle to the central spike. Therefore, the main use of the weapon was thrusting, with a secondary option for trapping the enemy's weapon. The most interesting thing about this weapon is that the blades were normally concealed inside the hollow shaft that would spring into position with a sudden jerk by the user.[384] It is uncertain how useful this weapon was in combat but it does not appear to be a rare experimental weapon because several of them survive. It can be assumed that this weapon was produced because of the popularity and effectiveness of the rest of winged weapon in the beginning of the same century, but in its case as a personal defence weapon and not an object of war.

It is unclear if all three winged weapons were directly related as some scholars have suggested. Details will be there for anyone who wants to see a connection, but their similarity in use or form does not mean different weapons developed and then at some point they just started overlapping in some aspects of their design. Examples of this are the previously discussed slender corsekes with the concave design on their wings compared to the most robust of chauve-souris. Perhaps the common use and trifecta of offensive technical features led the makers

[383] Stone, p. 227.
[384] New York, The Metropolitan Museum of Art, 14.25.184, Feather staff. The central spike and the wings stay projected in place by stopping each other falling back to the shaft. A small pin secures the spike into place. The collapse of the parts back into the shaft happens by pulling the pin then lifting the wings and pushing all three elements down. **Figure 175.**

of such weapons, especially towards the end of the second quarter of the sixteenth century, to merge some of the forms.

Chapter VIII: Thrusting Staff Weapon: The Ahlspiess, the Candeliere and the Breschspiess

8.1. Nomenclature and form

The *Ahlspiess* is a long weapon with a quadrangular head that was used for thrusting.[385] The head of the weapon is usually over half a meter long and mounted on the shaft with a socket. The quadrangular structure of the head becomes narrower towards the top forming a pyramid-shaped spike. Pins, nails or rivets are used to secure the head in place. Sometimes there are two langets on opposing sides of the shaft reinforcing it and further securing the socket in place. Sometimes they appear to be necessary considering the relatively small size of the socket compared to the overall length of the weapon and particularly the long head. A small socket with a long head decreases the sturdiness of the weapon because the head would be broken off or detached easier if the head of the weapon was struck perpendicularly to its length. This is a mechanical indication of the use of the weapon for thrusting strikes. Besides the overall shape of the weapon that resembles a giant spike the other identifying feature of the ahlspiess is the rondel, a round metal guard present on most surviving examples of ahlspiesses placed on the bottom of the head and right above the socket. The diameter of this guard is usually between ten and fifteen centimetres and was most likely used to protect the hand of the user closer to the top. The middle of the rondel has a square hole in the middle. On one side of the hole there are square flanges that converge together to create a hollow pyramid. The rondel is attached to the quadrangular spike by pressing it through the hole with the flanges usually facing upwards until it is stuck

[385] The term is German but because of its general identification with the object it will be used as the standard term from now on and will not be italicized except for when referring to someone's terminology in German. The same applies for the terms used to describe its subgroups.

in place because of friction. The single offensive feature of the weapon makes the interpretation of the basic use of the weapon simple because the spike could only have been used for piercing through thrusting motion.

The term used for the weapon is German as it appears it was the most generally recognized in modern research to describe this weapon category, but always supplemented with alternative regional equivalents. Oakeshott simply refers to it as ahlspiess and he mentions that the French term is *lance à pousser* but without providing any additional information.[386] Stone also uses the German term but primarily refers to the weapon as awl-pike, which appears to be the English equivalent.[387] The term is fitting considering the use of an awl as a tool, a spike used to punch holes through wood and leather. Stone associated the English and German terms as the first being a phonetic rendering of the latter. Quite literally the term can be translated as awl-spear. He also mentioned that the German term might be interpreted as eel-spear, which does not seem very likely. Waldman discussed and dismissed Stone's suggestion simply connecting the term to the awl.[388] He also mentioned that the Italian term is *puntone a piatello*. The descriptive 'metal stick with a plate' seems fitting for this object. Troso appear to be the source that Waldman followed closely for the nomenclature of this weapon.[389] They both strongly imply that the origin of the weapon is German or Austrian. The alleged origin of the surviving examples that will be discussed later certainly reinforces this theory. Aroldi refers to this weapon in Italian as *quadrello*.[390] His description and brief analysis of the weapon appears to be matching the form of the weapon but the term used seems to be closer to *quadrellone*, also known as *Breschspiess* which is a

[386] Oakeshott, *European Weapons and Armour*, p. 52.
[387] Stone, p. 79.
[388] Waldman, p. 151.
[389] Troso, p. 132.
[390] Aroldi, p. 532.

different but similar weapon that will be mentioned later. In his 1890 study on arms and armour Boeheim describes and refers to the weapon as the *Ahlspiess*.[391] Additionally, he considers it to be a derivative of the spear and to belong in the same family as the war spear and the javelin because of its singular function for piercing. According to Boeheim the origin of the weapon is Swiss or Burgundian but it progressively became more popular in Germany. Generally the ahlspiess does not appear to be a popular weapon in scholarship, perhaps because it is one of the rare cases where the unique form of an object cannot be a subject of debate and inconsistency.

A close examination of the form of surviving ahlspiesses produces valuable information about the structure of this unusual weapon. One of the earliest surviving weapons of this group from the beginning of the third quarter of the fifteenth century, possibly German, has all the characteristics mentioned before.[392] The rondel is not welded just pushed and stuck into place. In contrast to most other weapons examined, this ahlspiess has its maker's mark struck under and not over the rondel. The base of a weapon from the third quarter of the fifteenth century has small curved indents around the base of the spike.[393] The flanges of the rondel are struck inwards towards the indents and use them as a securing point. This way the rondel was most likely to stay in place if it received any hits. The same indents are used in in examples from the fourth quarter of the fifteenth century.[394] Examples from this period also bear some characteristic indent-like marks on the corners of the spike above the functional indents. The additional

[391] Boeheim mentions a few weapons that according to him have developed from the spear besides the *ahlspiess*, such as the *Breschpiess*, *Knebelspiess* and the *Reispiess*. With the exception of the first he does not go into depth in specifying what the technical characteristics of the rest are. Wendelin Boeheim, *Handbuch der Waffenkunde: Das Waffenwesen in seiner historischen Entwicklung vom Beginn des Mittelalters bis zum Ende des 18. Jahrhunderts* (Leipzig: Seemann, 1890), p. 316.
[392] Paris, Musée de l'Armée, PO 425, Ahlspiess. **Figure 176.**
[393] New York, The Metropolitan Museum of Art, 14.25.396, Ahlspiess. **Figure 177.**
[394] New York, The Metropolitan Museum of Art, 08.261.1, Ahlspiess. **Figure 178.**

indents are most likely decorative but it is possible that they acted as an extra safety mechanism to prevent the rondel from moving. Another ahlspiess from the same period has a plain form with no indents but long langets elongated from the socket on two sides of the shaft.[395] Generally, ahlspiess langets from the second half of the fifteenth century appear to come in pairs and to only reach twenty centimetres in length. There are exceptions to that where the langets go over thirty centimetres but they are scarce. This length is considerably shorter compared to the langets of other staff weapons from the same period. This form of the weapon persists slightly altered in the first quarter of the sixteenth century. The spike of an ahlspiess from this period has the same shape as before but its base is elongated on all four sides creating four langets that in the absence of a socket attach it on the shaft.[396] The rondel, not only on this weapon but in other examples from the early sixteenth century, appears to have a smaller diameter compared to previous decades. This might have happened for a variety of reasons, from making the production of the weapon cheaper to make it more nimble by reducing its weight. Considering that the rondel was there to protect the upper hand of the user the main reason behind the decrease in size was probably the use of heavier armour by the weapon's user that made the use of a bigger rondel obsolete. Finally, an example from the second quarter of the sixteenth century does not have a rondel but in its place an intricate horizontal metal star-shaped design which most likely served the same purpose.[397] The shape of this guard is created by the elongation of thick metal studs on the corners of the base of the spike. This weapon also has two langets.

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[395] New York, The Metropolitan Museum of Art, 14.25.324, Ahlspiess. **Figure 179.**
[396] Berlin, Deutsches Historisches Museum, W 1, Ahlspiess. **Figure 180.**
[397] New York, The Metropolitan Museum of Art, 14.25.247, Ahlspiess. **Figure 181.**

The iconography of the weapon is an issue that is worth being addressed separately as it is not enough to provide a definite chronological frame for its use. Thankfully most surviving ahlspiess examples have clear makers marks struck on them, easily recognizable and that way dated by their respective collections and museums. The weapon's form and the existing iconography does not allow a similar approach to other weapons in this research because the ahlspiess is rarely depicted in detail and sometimes similar weapons are depicted that might be considered to be comparable but different rarer weapons altogether. A woodcut from 1493 shows an ahlspiess with a long spike and an oddly large rondel.[398] . The socket is short and there are no langets. One of the rare well-defined depictions of the weapon can be found in a painting from 1515.[399] A soldier holds an ahlspiess with the hand close under the rondel. The quadrangular shape is visible as well as a short socket. The slightly raised angle does not allow examining for indents or flanges. A highly detailed depiction of an ahlspiess, also from the first quarter of the sixteenth century, can be found in the *Weisskunig*.[400] The weapon illustrated has a long head that is nearly half of the overall length of the object. The hole of the rondel appears to be closely cut and fitted below the spike. The most interesting part of this depiction is the shape of the spike. About a hand's length above the rondel the spike becomes slightly wider and then becomes narrower towards the top. This creates a long narrow space that becomes problematic when considering how the rondel was placed. Its slit appears to be smaller than the base of the spike, so the most sensible hypothesis is that it was fitted from the bottom. Of course it

[398] The woodcut depicts the army of the Pharaoh being drowned in the Red Sea. The weapons of the soldiers are presented in great detail and in scale to each other. The late fifteenth-century woodcut as a medium allows the perfect presentation of the thin quadrangular spike and the rondel in perspective. Cambridge, Cambridge University Library, MS Inc.0.A.7.2[888], fol. 30^{v}. **Figure 182.**
[399] *The Martyrdom of St Leodegar*, 1515, painting on spruce, Germanisches National Museum, Nuremberg. **Figure 183.**
[400] *Der Weisskunig*, p.114. **Figure 184.**

is a piece of iconography and even though the weapon looks detailed the artist might have not been able to depict precisely the required object. Depictions of the weapon from the third quarter of the fifteenth century that match the precise form of the surviving objects have not been identified. Depictions of the ahlspiess from the second quarter of the sixteenth century focus on details of the weapon regardless whether the weapon has a prominent part in the composition or it is in the background. The first depiction of two that are worth mentioning shows a soldier carrying his ahlspiess over his shoulder.[401] The proportions of the spike and the body match surviving examples. Additionally, there is a rondel and the quadrangular shape of the spike is depicted clearly. It is really interesting that the short shaft is decorated with a pattern that looks wrapped around it. The second depiction features an ahlspiess among other staff weapon.[402] This weapon clearly has a longer shaft but a lot of detail has been given on making distinct rivets on the weapon's langets and to emphasize on its length. The lack of extensive depictions focusing on the ahlspiess compared to other staff weapon groups allows limited results. It is clear that this weapon was generally not very popular but it is easy to date it with certainty at least in the first half of the sixteenth century.

8.2. The Candeliere and the Breschspiess

There are two weapons sometimes rightfully associated with the ahlspiess. The *candeliere* has roughly the same structure but the head of the weapon is much shorter, named aptly because of its resemblance to a candlestick. The spike is conical and not quadrangular. There are no langets attaching the socket to the

[401] Erhard Schoen, *Bohemian Captain*, Kunsthistorisches Museum, Vienna. **Figure 185.**
[402] Master MS, *Calvary*, Alte Pinakothek, Munich. **Figure 186.**

shaft. The socket itself is different than in most staff weapons as it is thicker and shorter creating a metal mass below the spike like a tube. The rondel is wider and thicker. The shape of this weapon can be seen in detail in Holbein's *Passion* from 1523.[403] Troso suggested that the different shape and especially the thickness of the rondel must have affected its use because it could be used as an offensive feature, in contrast to the rondel of the ahlspiess which is thin and impossible to deliver hits without damaging it.[404] There are no whole surviving weapons of this subgroup but it can be found in iconography throughout the fifteenth century. Just like other weapons discussed earlier the lack of material examples is no reason for not considering the existence of a weapon, especially in this case where iconography is lengthy and consistent. The single piece of material evidence is dated to the first quarter of the fifteenth century and is broken at the base of the socket.[405] The whole head is heavily corroded and the spike is bent and partially broken. The round guard appears to be fitted from the top of the spike and sitting on the widened top of the socket. The spike is thicker and shorter compared to any other later ahlspiess *examples*. It is justified to approach this weapon subgroup with caution because of the lack of material culture because it is possible to have been a rough attempt to depict the ahlspiess but its slender shape made it harder to imprint on a visual medium while at the same time differentiating it adequately from a long spear. An illustration of the confusion of that problem even when the artistic medium is detailed can be observed in an etching from 1470.[406] The weapon in question on the left of the cross has a shorter head than that of the surviving examples of ahlspiesses and the rondel looks wider or perhaps disproportionate.

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[403] Hans Holbein the Younger, *The Passion*, *c.* 1524, oil on panel, Kunstmuseum, Basel. **Figure 187.**
[404] Troso, p. 40.
[405] Paris, Musée de l'Armée, K 113, Ahlspiess. **Figure 188.**
[406] Daniel Hopfer, *Crucifixion*, C16th, etching printed in ink, Swann Galleries, New York. **Figure 189.**

This would have been considered a candeliere but the spike of the weapon is quadrangular just like an ahlspiess. The most confusing illustrations concerning this weapon and also the ahlspiess are from the *Weisskunig*, and dated to the first quarter of the sixteenth century.[407] The weapons featured in these illustrations have a thin spike like ahlspiesses, but they are much shorter. The shaft appears to be much longer. The weapons depicted are consistent with each other as to their shape and size. They are definitely not depictions of ahlspiesses because there are depictions of them in the same work and they are illustrated longer, more detailed and morphologically closer to the surviving objects. At the same time the spikes of the weapons in question seem to be thinner than earlier illustrations of the candeliere. It appears that these weapons illustrate a later redesign of the weapon, and most importantly they are seen used in large numbers in battle to sometimes form thickets such as was the case with spears or pikes.[408] These illustrations also reveal the fundamental difference between the ahlspiess and the candeliere, which is no other than the use of the weapon based on its grip, and the role of their respective rondels. In the case of the ahlspiess the upper hand holds the weapon right below the rondel which acts as a direct hand guard as a result of a longer spike and a shorter shaft. In the case of the candeliere the shaft is much longer and the hands are placed lower on it, therefore the rondel acts as a projected guard away from the user. The effectiveness of such device would be better when used in large numbers to have multiple little guards that could impair the use of enemy thrusting staff weapons.

The second weapon that needs to be mentioned is what Boeheim referred to as the *Breschspiess*. Authors that briefly wrote on the ahlspiess such as Stone and

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[407] *Der Weisskunig*, p. 167. Also see pages 244, 326 and 354. **Figure 190.**
[408] *Der Weisskunig*, p. 326. **Figure 191.**

Oakeshott did not separate this weapon as something different. In Troso's work the breschspiess is treated as similar to the ahlspiess but not as a subgroup.[409] The reasoning behind this is that the form of the weapon is in all other matters identical to the ahlspiess but it lacks the rondel. Therefore it has the same offensive use but lacks the second main identifying feature of this weapon group and its signature defensive capabilities. Waldman on the other hand simply considers this weapon an ahlspiess without a rondel.[410] Breschspiesses from the last quarter of the fifteenth century appear to have straight spikes that simply merge with the socket and often have langets. Those from the first and second quarter of the sixteenth century have a small decorative swell or band at the bottom of the spike above the socket. Perhaps this feature verifies Waldman's claim and Troso's categorization because it is possible it was created imitating the indent at the base of the spike that would often fit and secure the rondel of the ahlspiess. It is hard to try and interpret the intention of the weapon's maker and many of these weapons might have been designed to have a rondel fitted in them but they never had, therefore they do not have marks left from rondels pushed in and out.

8.3. Conclusions

Two important illustrations of the weapon that need to be mentioned are from Maximilian I's *Freydal*. In one plate of his semi-biographic work Maximilian is seen

[409] The term of this weapon translates to 'breach-pike' which vividly explains its function. The French term used is *pique de brèche* with the same meaning. Interestingly, the rest of terms seem to match in German, English, and French in this weapon group and the two adjacent weapon groups discussed but the Italian terms for the ahlspiess and breschspiess are respectively *puntone a piattello* and *quadrellone* which refer to the shape rather than function. Troso, p. 26.
[410] Waldman, p. 150.

fighting against Wolfgang von Polhaim using an ahlspiess.[411] In the second plate using the same weapons Maximilian fights against Hanns Traunpicz.[412] The first comment on this image is about the much shorter shaft of the weapon compared to other staff weapons from the same book. Second, the spike of the weapon is quadrangular and the overall form looks like a hybrid between an ahlspiess and a candeliere. Considering the detail and dating of the illustration that was made between 1512 and 1515, this might be the iconographic example that best demonstrates a possible hybrid of the two weapons at least in iconography. It is also important to mention that the Holy Roman Emperor and his opponent fight with these weapons in competition, and that the two plates give some additional information on the actual use of the weapon. The upper hand on the shaft is placed right under the rondel, which is used to parry or displace the opponent spike. The offensive use of the weapon is particularly clear in the first plate; here a thrust aimed towards the opponent's abdomen strikes successfully, piercing the armour.

The concentration of iconographic evidence of weapons that closely resemble the *ahlspiess* in a short period of time is a problem for the precise dating of the lifespan of the object. The period that both iconography and surviving examples survive from and match is limited to the fourth quarter of the fifteenth and the first quarter of the sixteenth century. If additional material culture can be considered and if their dating by the collections they are drawn from is correct then the period of use of the weapon can be extended to the late third quarter of the fifteenth century and to the second quarter of the sixteenth century. Because the breschspiess is considered to be in the same weapon family, which based on

411 *Freydal: Des Kaisers Maximilian I. Turniere und Mummereien*, ed. by Franz Folliot von Crenneville-Poutet and Quirin von Leitner (Vienna: Holzhausen, 1882), p. 23. **Figure 192.**
412 *Freydal*, p. 147. **Figure 193.**

offensive function appears to be reasonable, their use is definitely extended to 1500 and beyond. Finally, the candeliere can be considered with caution a predecessor of the ahlspiess because of its similar form and function, and it appears in iconography throughout the fifteenth and in the first quarter of the sixteenth century. If the previously mentioned theory of the candeliere merging with the depiction of the ahlspiess from the second half of the fifteenth century based on the iconography, then the lifespan of the weapon was at least three quarters of a century. One of the unique aspects of the weapon is the rondel. The importance of surviving examples of ahlspiesses becomes greater considering that many staff weapon were illustrated with rondels towards the end of the fifteenth century such as glaives, vouges, pollaxes and military forks, but with a few exceptions especially amongst pollaxes, the rondels do not usually survive, most likely because of the replacement of the shaft. However, the rondel is an integral part of the ahlspiess and the examples discussed offer great insight on the manufacture and attachment methods used for this additional feature.

Chapter IX: Striking Staff Weapons

9.1. General Information

This category includes staff weapons that primarily feature an element used to inflict impact damage through weight, sometimes with the addition of protruding elements such as spikes.[413] Striking in this context is a synonym to bludgeoning, and relates to weapons that the force behind the blow is more important that other weapons mainly used for cutting or thrusting. The weapons included in this group vary in form and craftsmanship. As their use is focused on causing bludgeoning damage by crushing the target and perhaps penetrating its protection with spikes, their forms are usually primitive, sometimes having similarities to clubs and agricultural tools, or using them as a basis. Others have complicated forms regardless of their brute use, and they are examples of more advanced weapon manufacturing. However, weapons in this wider group rarely reach the refined craftsmanship level that can be found in other weapons such as halberds or axe-hammers, and they are never decorated.

9.2. The Morgenstern

9.2.1. Nomenclature

The choice of the term for this weapon group is much easier than in the case of other staff weapons. Most secondary sources on weapons agree more or less on this term but a brief assessment and clarification must be made. Additionally, it is

[413] Axe-hammers are excluded from this group because the hammer element is equally important as the blade, the spike and the beak, therefore not primarily a percussive weapon.

important to mention why the German term *Morgenstern* was chosen over the English translation to morningstar as the overall term of this group of weapons.[414] This occurred first because the term is already used in scholarship with relative consistency and second to avoid confusion with the short hand weapon that has a spherical head with protruding spikes that is often referred to as a morningstar. Bosson's article on the morgenstern is perhaps the most complete and thorough investigation of the form of the weapon.[415] The division of the striking staff weapons group, in this chapter, in different categories partially follows the terminology and division suggested by Bosson. Unlike his division in three groups based on craftsmanship, the division used here incorporates elements of the 'deluxe' category by Bosson in what is mentioned later as the military morgenstern as well as in the holy-water sprinkler sub-category.[416] Buttin uses the term *Morgenstern* to refer to the simple and the military morgenstern subgroups as presented here later.[417] Waldman dedicates one of his most detailed chapters to striking staff weapons placing them all under the wider *Morgenstern* label.[418] The main problem with Waldman's terminology is that he suggests a continuity of the morgenstern weapons, deriving from the *Goedendag*.[419] Additionally, his wide categorization includes other weapons such as the kettenmorgestern, the flail and the holy-water sprinkler in this weapon group, but in a convoluted argument and description he acknowledges that the *Morgensterns* are effectively the same weapons

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[414] Morgenstern will be used henceforth as the technical term to describe the weapon group. It will only be italicized to indicate when someone used the original German term. The same principle is followed later for the term kettenmorgenstern and its subgroup.
[415] In his article Bosson also includes a discussion on the nomenclature presented in previous scholarship concerning this weapon group. Claude Bosson, 'Le Morgenstern', *Armi e Antiche*, 9 (1963), 107-41 (107-32).
[416] Bosson, 'Le Morgenstern', pp. 109-32.
[417] Buttin, Catalogue, p. 87.
[418] Waldman, pp. 137-54.
[419] As previously discussed, the very form, origin and use of the *goedendag* in the fourteenth century is a subject of debate in scholarship. It was a weapon or implement used for striking but Waldman's assertion cannot be taken for granted because it is vague.

described by Bosson.[420] The actual morgenstern weapons are the only types in Waldman's chapter that are not described with an additional term.[421] Earlier Oakeshott had followed a similar approach, by simplifying and grouping different percussive weapons under the term holy-water sprinkler.[422] He then describes morgenstern simply as a translation of the sprinkler.[423] Even when considering that most of the terms that staff weapons are known by today are modern inventions and attachments, Oakeshott's simple description is at least negative, considering that when he wrote about swords his descriptions and especially his sword categorization can be characterized from meticulous to unnecessarily extravagant.[424] Perhaps this simplified explanation not only demonstrates the writer's weakness on the subject but also the general lack of information and focus in the study of staff weapons. Stone shares Oakeshott's approach in his *Glossary*, and groups all striking staff weapons under the term holy-water sprinkler, without any explanation of why he has jettisoned the name morning star or morgenstern (as used by Stone instead of morgenstern).[425] Stone's generic approach appears to be even more flawed than Oakeshott's, as he suggests that the same name is adopted for similar western and oriental weapons alike. DeVries and Smith use both Waldman and Oakeshott in their monograph on military technology, and they share Waldman's position that the other terms for weapon sub- categories in the

[420] Waldman, pp. 137-43
[421] Despite the flaws in Waldman's approach his work on this weapon group is incredibly useful. His work and primarily Bosson's were the two main influences for this chapter and the terminology chosen or produced.
[422] Oakeshott, *European Weapons and Armour*, p. 53.
[423] Oakeshott, *European Weapons and Armour*, p. 56.
[424] Oakeshott, *Medieval Sword.*
[425] Stone, pp. 296-7.

morgenstern group were local inventions; however, they stand more critical on the matter of the evolution from the *Goedenag* to the morgenstern.[426]

9.2.2. The Simple Morgenstern

The morgenstern is defined as a staff weapon by the multiple protruding spikes on its head, generally four or more. Several variations of the weapon are known from iconographic sources as well as surviving examples. This weapon group most likely developed from the simplest form of clubs, and became a two-handed staff weapon capable of bashing and mangling even armoured targets. The simplest form of the morgenstern could just be described as a long spiked club. The weapon's head is usually made of wood and sometimes metal. It is wider than the shaft and can be oval-shaped, cylindrical or round. Metal spikes are protruding horizontally and/or angled from all sides.[427] The spikes are punched through the head, inserted, or in most cases the head of the weapon is split in two, and the spikes are punched outwards from the separated pieces which are then nailed back together. In most surviving examples regardless of structure because of the crudely pushed spikes on the wooden head the grain of the wood is disrupted something that results in splits on the wood or creates the effect of the head being bloated. Sometimes, in more refined examples, a metal band is added to hold the pieces together and a sharp longer spike is added above the vertical axis.[428] The form of the weapon is generally simple and crude, and in iconography is usually found next to other percussive weapons and held by militia and non-tactical armed forces, but

[426] Kelly DeVries and Robert Douglas Smith, *Medieval Military Technology* (Ontario: University of Toronto Press, 2012), p. 30.
[427] The length of the spikes in surviving examples roughly varies between 3cm- 10cm, so the smaller ones are generally much shorter than the beaks of weapons such as the standard halberd and therefore it is unlikely that they could be used for pulling.
[428] For an example of this from a private collection see Waldman, p. 144.

there are exceptions. This weapon was used primarily for striking but those with a long vertical spike could also be used for thrusting.

The depiction of this weapon is not common but it does appear for nearly half a century in the examined period. One of the earliest examples that can certainly be identified as a simple morgenstern is from the last quarter of the fifteenth century[429] It is also perhaps the most detailed illustration of a morgenstern, displaying the protruding spikes from the head, the vertical spike, as well as the small band at the top of the head that holds the top together or is used to mount the extra spike. What is particularly interesting is that diagonal lines can be seen on the weapon's head which can either represent cracks created because of the spikes or small metal bands that would reinforce the area. An illustration of the weapon from the first quarter of the sixteenth century shows the head having short spikes aligned on vertical lines along the head.[430] On the top of the head there is a short spike but by no means something that could be used for thrusting.

The material culture examples of simple morgensterns discussed here are all generally dated to the late fifteenth or first half of the sixteenth century. Their problematic dating will be addressed further later, but it is important to mention certain examples to highlight some of the technical characteristics of this weapon group. The first example to examine has most of the technical characteristics of the group, including the vertical long spike on the top of the head and a metal band around it that reinforces the wood around it and prevents it from further splitting.[431] A similar weapon has the same characteristics except the metal band,

[429] *The Beauchamp Pageant*, p. 73. **Figure 194.**
[430] Hans Holbein the Younger, *The Capture of Christ*, Kunstmuseum, Basel. **Figure 195.**
[431] Leeds, Royal Armouries, VII.1366, Simple morgenstern. **Figure 196.**

which has been removed but its marks on the wood remain.[432] The cracks caused by the grain disruption caused by the spikes are visible all around the head. The head of a different weapon also with the same technical features was developed around a part of the wood that is bent.[433] This shows that the design of this weapon did not strive at all towards an aesthetically pleasing result, and it was simply a crude design for brutal use. Some rare examples from this subgroup had an extra longer spike angled downwards attached to the metal band on the top of the head, possibly used for pulling and striking.[434] A unique example of a weapon that has been dated to the second quarter of the sixteenth century had long protruding spikes from the head but its top is enclosed with a short and wide socket from which a small spear tip rises vertically.[435] Besides the remarkable form of the weapon it is worth noting that this is a perfect example of the simple morgenstern sometimes being oriented towards thrusting. Of course the width of the shaft and the multitude of spikes still made striking the primarily function. Finally, a weapon that resembles the morgenstern in the second illustration has short spikes in unarranged order all over the head and a small metal cap with protruding small spikes which covers completely the top of the head.[436]

Earlier or later examples of morgensterns might also exist because the form of the object is not something new and periodically can be considered to even predate the examined period. The idea of what essentially is a club with spikes is certainly something that had been used for centuries, but with the morgenstern it becomes slightly more structured and usually has the easily identifiable spike on the top. The simple morgenstern has a simpler form than the military morgenstern but

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[432] Leeds, Royal Armouries, VII.1733, Simple morgenstern. **Figure 197**
[433] Leeds, Royal Armouries, VII.1734, Simple morgenstern. **Figure 198.**
[434] Berlin, Deutsches Historisches Museum, W 72/79, Simple morgenstern.
[435] Berlin, Deutsches Historisches Museum, W 28, Simple morgenstern. **Figure 199.**
[436] Berlin, Deutsches Historisches Museum, W 72/89, Simple morgenstern. **Figure 200.**

that does not necessarily mean that it predates it. The dating of surviving examples is difficult because of the constant use of similar objects even after the examined period. It is not a surprise that the range of dating provided by museum curators for most objects spans from the early sixteenth to the seventeenth century. The weapon was in use since the late fifteenth century and even if the material examples are approached with caution the lifespan of the weapon certainly lasted for the first half of the sixteenth century as well.

9.2.3. The Military Morgenstern

A second type of morgenstern is defined by the positioning of the spikes, which protrude from a single or multiple parallel horizontal lines on the head of the weapon, or protrude from the weapon's head in non-organized order, sometimes with the addition of an extra longer spike, rising on the vertical axis of the weapon. Certain forms of this weapon can be interpreted as a more defined and structured version of the simple morgenstern. Whereas the latter looks like a cheap makeshift weapon, this is a better manufactured object designed for combat. The first and most popular variation of this form has a wooden or metal ball mounted on the top of the shaft, and secured to its place with metal tapes, nails, and rarely langets. In some cases the protruding spikes are screwed through the head and secure it in place. The length of the spikes of this type of weapon is usually between three and five centimetres. An example of this type of weapon has all of the above technical features and a vertical spike whose height is equal to the height of the ball it is mounted on.[437] Spikes from a nearly identical weapon have been removed from their place, which reveals that they have the shape of an elongated diamond

[437] Leeds, Royal Armouries, VII.1584, Military morgenstern. **Figure 201.**

hammered inside the ball.[438] This also reveals that they were easy to be replaced in case they fell off or if they got blunt. The missing spikes from another weapon reveal holes into which spikes can be screwed.[439] The second variation differs in the way the spikes are added on the weapon's head, which in this case are screwed on, or grown out of a metal band, which is wrapped around the ball or cylinder.[440] Surviving examples of this variation usually have langets. A long quadrangular spike rises above the vertical axis, which makes this weapon a hybrid used for causing percussive and thrusting damage. An example of this weapon has a vertical spike so long that it is possibly detrimental to the use of the horizontal spikes, therefore making thrusting its primary use.[441] It is worth mentioning that this type of military morgenstern is the only one amongst the wider morgenstern group that in the second half of the sixteenth century became ornate. This usually happened with decorative patterns of the small spikes and mainly along the vertical and longer spike.[442] A vertical spike but significantly shorter can be found in some surviving examples of the third and final variation of the horizontal morgenstern, which has a solid round or cylindrical metal head attached to the shaft with a metal socket, additional features develop from it. This sub-type is similar to the first one mentioned with the exception of having the features developing around a cylinder and not a ball. Metal spikes either emerge horizontally from the head or are screwed on it. In a display of rare craftsmanship some weapons of this variation have heads made of elongated pieces of metal welded together to give the impression of a single piece. The spikes are the projections of the welded pieces of metal. The quadrangular spike on the top has its base split and stretched out in

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[438] Leeds, Royal Armouries, VII.901, Military morgenstern. **Figure 202.**
[439] Leeds, Royal Armouries, VII.2937, Military morgenstern. **Figure 203.**
[440] Waldman provides an excellent description of the composition of this type of morgenstern, as well as examples and measurements for their spikes. Waldman, p. 139.
[441] Vienna, Heeresgeschichtliches Museum, 126.207, Military morgenstern. **Figure 204.**
[442] Leeds, Royal Armouries, VII.1343, Military morgenstern. **Figure 205.**

three of four and parts to create a hollow triangle, enhancing the star-shaped concept of the weapon. The base of the triangles are then tucked inwards and secured on the top of the weapon with a socket. The hollow intersection under the vertical spike has a twisting (shaped purely for decorative purposes) piece of metal to support and fortify the weight-bearing centre, which would be significantly weaker if left empty. It is important to mention that the langets on the shafts of most of these weapons are placed under the head making the head get stuck easier but also reinforcing the top of the shaft. An alternative speculation is that in some cases langets were added after the replacement of the shaft and therefore the head was just fitted on top of them.

Considering that this type of morgenstern looks simple and crude compared to other complicated staff weapons such as common examples of the standard halberd or the partizan, the craftsmanship level is far greater than the simple morgenstern, and it would most likely be produced by specialized craftsmen rather than people equipping peasants with simpler arms and modified agricultural implements. The more complex examples of this weapon category have common elements with contemporary maces, but a direct influence cannot be established, other than by the fact that both weapons were designed mainly for striking. Both types of the morgenstern were popular in iconography, perhaps directly because of their violent and nearly primitive use and, sometimes, form. In a highly realistic depiction of the *Capture of Christ* from the middle of the fifteenth century a soldier is holding a military morgenstern.[443] A single line of horizontal spikes protrude around a band at the base of the weapons head. A long spike rises on the axis of the shaft above the part where the spiked band. A similar example from the third

[443] Dieric Bouts, *The Capture of Christ*, second half of C15th, oil on wood, Alte Pinakothek, Munich. **Figure 206.**

quarter of the fifteenth century has a shorter spike but a more prominent socket under the spiked band.[444] The spiked variation of the military morgenstern can be seen in a woodcut from the first quarter of the sixteenth century.[445] The visual impression of the ball with the spikes is certainly one of the highlights of the image as its peculiar form draws the eye to it.

The dating of military morgensterns as a group has the same problem as the simple morgenstern, because of the difficulty in dating specific surviving objects even within the proximity of the quarter of a century. However, the iconography of this subgroup is more consistent and generally better detailed. Certain variations within the subgroup of the military morgenstern are often better represented, but as a whole this group should be considered to have been in use in the first half of the sixteenth century. Certain forms of this subgroup appear in art even from the early third quarter of the fifteenth century, therefore their lifespan could be up to a whole century. It is not wrong to assume that the increasing production, use and depiction of the military morgenstern stemmed from the use and increasing popularity of the simple morgenstern, but that the same time this should not be seen as the only reason. The artistic explosion and the development of the medium in arts in the sixteenth century created a good ground for objects with interesting looks as those discussed here to be included in artistic depictions of various subjects. The same can also be said for the following groups within the morgenstern group and generally about the rest of the striking staff weapons discussed.

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[444] *The Caesar Tapestry*, *c.* 1470, tapestry, Historisches Museum, Bern. **Figure 207.**
[445] Albrecht Dürer, *Christ Bearing the Cross*, 1498, woodcut, Albertina,Vienna. **Figure 208.**

9.2.4. The Hammer Morgenstern

The term and subgroup of the hammer morgenstern have been created to fit a weapon that rarely appears in iconography and does not have surviving examples. The consistent and detailed depiction of this object leads to its consideration as a possible different subgroup because they demonstrate that this form was considered by artists. The weapon's head is a cylinder with the hole in the middle that is fitted perpendicularly on the top of a shaft. The ends of the cylinder are flat and in the middle they have a small protruding spike. The protruding end of the shaft through the middle of the cylinder has a vertical spike fitted on top of it. There is also a spike on each side of the cylinder, also directly perpendicular to the shaft. An early depiction of this weapon from the last quarter of the fifteenth century features two similar objects.[446] The first is a horizontal cylinder mounted on a staff with a longer spike protruding from the top and shorter spikes on each side. The second weapon is asymmetrical with one side of the cylinder having one spike and the second three, which can be interpreted as a coronel shaped head with no perspective. Detailed depictions of this weapon can be found in a series of twelve depictions by Hans Holbein the Elder that were produced progressively from the third quarter of the fifteenth to the first quarter of the sixteenth century. Different depictions provide a better perspective of the weapon's features. One of the paintings shows a guard holding such a weapon in a manner that the vertical spike, the spike on the end of the cylinder and the spike on the side are all shown at a ninety degrees angle from each other.[447] In this image the shaft of the weapon appears to be plain. However in the rest of the depictions it is shown having long

[446] Master of the Abbey of Affligem, *Jesus Carrying the Cross*, late C15th, tempera on panel, Musées Royaux des Beaux-Arts de Belgique, Brussels. **Figure 209.**
[447] Hans Holbein the Elder, *Resurrection*, *c.* 1498, tempera on wood Staatsgalerie, Stuttgart. **Figure 210.**

langets with visible studs.[448] Under normal conditions simply the illustrations of a weapon are not a cause to create a weapon subgroup because iconography shows peculiar objects that are artistic interpretations that deviated a lot from the original. In the case of the hammer Morgenstern Viollet-le-Duc claimed he examined and sketched it.[449] His description and sketch might be of that of a fake or a reproduction, but they are most definitely more detailed than a simple depiction such as these by Holbein. Viollet-le-Duc's description of the weapon is similar to that of the assembly of the pollaxe or the *bec-dec-corbin*, where the head is made of two or three pieces held together by a pin. In the case of this weapon according to him, this pin is the horizontal spike on the sides of the cylinder. Considering that this weapon existed, its form suggests that would be used for striking as the rest of the weapons of this weapon group because of all the protruding spikes and secondarily perhaps for thrusting because of the vertical spike.

9.3. The Holy-Water Sprinkler

This weapon has conceptual similarities with some military morgensterns such as the spikes growing out in parallel lines from the head, but it is an easily discernible weapon because of its unique form. The most characteristic example of this weapon can be found in the Leeds Royal Armouries Collection. This finely crafted weapon from the first quarter of the fifteenth century is mounted on its original shaft and its total height is 189 centimetres.[450] Conceptually the weapon resembles an oversized mace mounted on a staff. The head is made of solid metal and the

[448] Hans Holbein the Elder, *Christ Before Caiaphas*, *c.* 1498, tempera on wood Staatsgalerie, Stuttgart. **Figure 211.**
[449] Viollet-le-Duc, VI, pp. 183-5.
[450] Leeds, Royal Armouries, VII. 1642, Holy-water sprinkler. **Figure 212.**

spikes in this case are elongations of vertical metal plates that create jagged flanges pointing outwards. The metal plates are attached, or extended from a central metal cylindrical core. On the top of the head grows a round or quadrangular spike, which is however much shorter compared to spikes found in military morgenstern examples. The head is attached to the staff with a socket, which it then secured in place with langets. The form of the holy-water-sprinkler varies from intricate and looking to a massive mace, to simpler and less complicated with the spikes simply protruding from the cylindrical core and the spike being a conic vertical elongation.[451] It is interesting that the weapon has a small but wide metal ring on the base of its socket. This could potentially act as a hand guard and protect the user not from sliding blades after a parry, but most likely enabling him to push on that point while thrusting. A great example of a variation of this weapon that needs to be mentioned from the same period and manufactured for Henry VIII is a composite weapon.[452] Part of the head of this holy-water sprinkler is hollow and made of two gun barrels. Fuses were placed on the outside and langets covered the sides of the head and secured it on the shaft. Of course this weapon was designed as an experimental weapon amongst others designed during the same time and the extent of its use is questionable. The design of the spike on the top of the weapon's head is also notable because besides being quadrangular the surface of each side is concave as an added simple decoration. It is important to mention that the sprinkler in general is considered to be an English weapon dated in the period of reign of Henry VII.

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[451] A simpler example is the weapon that Goliath holds against David in a psalter from the ninth decade of the fifteenth century. Master of the Dresden Prayer Book, *Crohin-La Fontaine Hours*, 1480-1485, tempera and ink on parchment, MS 23, Jean Paul Getty Museum, Los Angeles, fol. 121^{v}. · **Figure 213.**

[452] Leeds, Royal Armouries, XIV.1, Composite weapon. **Figure 214.**

The term holy-water sprinkler is mentioned by Norman and Wilson to describe this weapon category, but it is unclear if it is a modern jest or contemporary to the weapon.[453] The name clearly derives from the similarity to the homonymous ecclesiastical instrument (*aspergillum*). In the same work, the same weapon is described as King Henry's walking stick, again as a jest, referring to the increased production of the weapon during Henry VIII's reign. As covered earlier in this chapter, Oakeshott paraphrased this and used the term King Henry's walking staff as a synonym for the sprinkler.[454] This weapon is dated to the first half of the sixteenth century. In contrast to the other weapons of this wider group the catalogue entries of the museums that have them are able to provide a precise origin and chronological frame. Compared to other striking staff weapons and even thoughthe holy-water sprinkler is the most well known of the striking staff weapons there are fewer surviving examples.

9.4. The Kettenmorgenstern[455]

This type of bludgeoning staff weapon can be briefly described as a spiked ball and chain at the end of a staff. The main feature of the weapon is a metal, or rarely wooden, sphere. Most surviving examples and depictions have the ball being enhanced with the addition of spikes, which visually resembles the heads of certain examples of the military morgenstern. The spikes are added on the ball by one or two metal strips that are nailed on two intersecting axes. Metal spikes can also be found protruding from two separate wooden hemispheres that are connected and

[453] A.V.B. Norman and G.M. Wilson, *Treasures in the Tower of London: An Exhibition of Arms and Armour* (Norwich: Sainsbury Centre for Visual Arts, University of East Anglia, 1982), p. 69.
[454] Oakeshott, *European Weapons and Armour*, pp. 53.
[455] The German term meaning chain-morningstar was chosen as a result of its use in secondary literature to avoid getting tied to a descriptive term such as ball-and-chain. Additionally, this term creates a direct association with the morningstar.

nailed to a sphere with the addition of a metal spiked tape between them.[456] Spikes can also be found placed straight into balls made of wood, or attached on balls made of metal. A link is always found attached on metal strips or nailed to the ball. A chain connects the link on the ball and a link or loop on the top of the staff. The link/loop on the staff is secured in its place with a metal tape around it. The same link can also be found attached to a socket on the top of the wooden shaft. Optional features found in some examples are the langets that secured the tape on the loop, or the socket, to the wooden shaft. In contrast to other staff weapons that only featured langets to increase the durability of the weapon and secure it better to the top, in the case of the Morgenstern these vertical metal strips could also protect the shaft from the spikes of the swinging or hanging ball. Rare iconographical examples of the weapon feature more than one ball hanging from the top of the head, but unfortunately most surviving objects are reproductions or fakes.[457] The *Kettenmorgenstern* has many similarities with the simple and the military morgenstern, and it is likely that it derived from the latter. One of the most clear iconographical examples of this weapon from the first quarter of the sixteenth century shows in detail the different parts of the weapon, as perceived at least by the artist.[458] The shaft of the weapon is definitely meant to be held with both hands but is shorter compared to the shaft of the halberd depicted. A short socket with a small ring on it is nailed on the top of the shaft. Connected to this ring is a chain made of metal rings which connects to a metal base on a spiked ball. The different shading between the ball and the shaft suggests that they are made of different

[456] Waldman, p. 145.

[457] One of the most popular examples of this multi-chained object is located in the Metropolitan Museum of Art of New York. The origin of the weapon is from continental Europe but it is dated certainly after the late sixteenth century. It is highly unlikely that it was ever used in combat but it is possible that it was designed as one of these objects that were created to demonstrate someone's craftsmanship. New York, The Metropolitan Museum of Art, 14.25.1366, Military flail. **Figure 215.**

[458] Lucas Cranach the Elder, *Christ Before Caiaphas*, 1509, woodcut, Staatliche Kunstsammlungen, Dresden. **Figure 216.**

material, but it might not necessarily be metal and wood but two different types of wood. In a Holbein painting that has been previously mentioned from the same period, a kettenmorgenstern is displayed next to military morgenstern and other striking staff weapons.[459] The top of the kettenmorgenstern's head is squared and has short studs or spikes on its sides. A rare material example looks as if it merges the head of the morgenstern and the shaft and chain of the kettenmorgenstern from that painting.[460] The spikes on the ball are really long and the rings of the chain big and asymmetrical. Another example of this weapon looks like a simple morgenstern with the addition of a chain with a ball on its end.[461] It is possible that this was indeed a simple morgenstern and the addition of the extra features was made way later, but it is difficult to know if and when that is the case. It is also possible that the addition of the socket and the ball were contemporary to the manufacturing of the weapon but the chain was replaced later. What separates this weapon from the flails, which will be discussed later, is that the head has roughly the shape of a ball and that spikes are usually a part of it, in contrast with the elongated prolate head of the different types of flails.

Dating the kettenmorgenstern and defining the period of its use is difficult because of the limited number of surviving examples and illustrations featuring this weird weapon. Most depictions are dated to the fifteenth and sixteenth centuries, usually showing the weapon being used by groups of foot-soldiers using other staff weapons such as spears, flails, morgensterns, and halberds. It is worth mentioning that in the majority of its depictions the kettenmorgenstern is depicted close to morgensterns, perhaps to demonstrate the relationship between the two weapons, or at least the contemporary perception that they were used by the same forces. In

[459] Hans Holbein the Younger, *The Capture of Christ*, Kunstmuseum, Basel. **Figure 217.**
[460] Berlin, Deutsches Historisches Museum, W 59/223, Kettenmorgenstern. **Figure 218.**
[461] Berlin, Deutsches Historisches Museum, W 72/81, Kettenmorgenstern. **Figure 219.**

most iconographical examples kettenmorgensterns are depicted being used by soldiers or groups that could be characterized as militia, especially because they are also using agricultural tools as staff weapons, such as the scythe, the fork, and the flail. So it is interesting that in a woodcut dated to the last quarter of the fifteenth century, the kettenmorgenstern and the morgenstern are used by a knight during judicial foot combat.[462] Perhaps the description of the knight as *debile*, meaning stupid, in the illustration is a criticism in his choice of weapons both for not being fitting for a knight, and even worse for being ineffective. A woodcut from the first quarter of the sixteenth century shows a well formed kettenmorgenstern being held by a soldier.[463] The shaft of the weapon is short but clearly meant to be held with two hands. The spiked ball at the end of the chain is shadowed darker than the shaft indicating a different material, either iron or a different type of wood.

This weapon category is often merged or included under the flail group in secondary literature.[464] However, the works using the term *morgenstern* always refer exclusively to the object discussed earlier, most likely because of the self-descriptive nature of the word.[465] The use of this weapon or its very existence has been a subject of dispute for scholars or weapon enthusiasts. DeVries mentions that the weapon was most likely used but only briefly and not to a great extent.[466] Sturtevant attempted to make a case that the kettenmorgenstern did not exist and was the result of fiction and confusion caused by the introduction of oriental influences to Western Europe in the early fifteenth century, as well as poor

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[462] Olivier de La Marche, *Illustrations de Le Chevalier Délibéré* (Schiedam: n. p., 1498), plate 10. **Figure 220.**

[463] Lucas Cranach the Elder, *Christ Before Caiaphas*, 1509, woodcut, Staatliche Kunstsammlungen, Dresden.

[464] For works mentioning the kettenmorgenstern as flail see Oakeshott, *European Weapons*, p.30, and Stone, p.230.

[465] Waldman specifically mentioned the kettenmorgenstern and investigated its form as a weapon only is association and comparison to other staff weapons such as the halberd and of course the morgenstern. See Waldman, pp. 146-50.

[466] DeVries and Smith, p. 30.

scholarship.[467] Sturtevant's article reveals a whole new problem in the study of staff weapons, which also exists generally in the study of arms and armour and caused by enthusiasts of the subject. The dismissal of the kettenmorgenstern, referred to as military flail in this article, is highly problematic. The author mainly focused on the single hand version of the weapon, which indeed might have been imaginary, but continues with a criticism of the flail and only acknowledges the agricultural weaponized flail as a weapon that truly existed. Even if Sturtevant's premise that the weapon had oriental influences, surviving iconography especially from the end of the fifteenth century, as scarce as it is, and surviving material culture, means that this type of weapon was considered and most likely used. So the kettenmorgenstern did exist, but the question is the extent of its practicality. Dürer's sketch from the first quarter of the sixteenth century shows a knight wearing spiked armour and holding what Sturtevant refers to as the one-handed flail, which also has prominent spikes.[468] This depiction of the weapon demonstrates once more that the weapon as at least considered by an artist that had extensive knowledge in the illustration of arms and armour, even if it was as a peculiarity. Therefore scholars should not be quick to dismiss the existence or limited use of weapons such as this. Many staff weapons discussed in this thesis did not see extensive use and they were either transitional or lateral steps in the development of other forms of weapons, or simply experimental forms that never became popular because of their impracticality.

[467] Paul B. Sturtevant, 'The Medieval Weapon that Never Existed: The Military Flail', *Medieval Warfare*, January 2017, pp. 50-53.
[468] Albrecht Dürer, *Knight on Horseback with Spike Armour*, sketch, The British Museum, London.

9.5. The Flail

9.5.1. The Agricultural Weaponized Flail[469]

A different sub-category of striking staff weapons developed from the agricultural flail, which was itself also used as a weapon, mainly by non-tactical armies such as partisan forces and rebels. This flail is made out of two parts: a main long wooden staff, which the user would hold, and a shorter wooden part hanging down from the main body, which was used for threshing.[470] The two parts are connected with a metal or wooden loop at the end of each of them. The loops are secured on each part with a horizontal strip, usually made of metal, which was nailed to the respective element of the weapon. In some cases a third loop, or ring, created of metal or rope, connected the other two. This element would allow the smaller, hanging part of the weapon, to hang loosely and swing easier. The length of the smaller part used for hitting varies between 40 cm to 1.5 meter. Its shape also varies, as the nature of the object did not require a standardized form. In contrast to other weaponized tools, the categorization and characterization of this object has to do more with its function in combat rather that its form which can be traced back as a certain version of its agricultural counterpart.[471] Because of the distinctive form of the weaponized flail and its direct origin from the agricultural implement there is no dispute concerning the terms used to describe it in modern scholarship.

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[469] The choice for this term is to describe an agricultural tool used as a weapon. This was chosen over the alternative of 'agricultural military flail' which compared to other tools turned to weapon such as the military fork and the military flail, imply some type of minor or major modification.
[470] Threshing, or hitting with the flail is the procedure of separating grains from their husks by impact, while swinging the hanging part in a circular motion. The origin of the agricultural flail is unknown, as it is a primitive tool used in agricultural activities even today, and its use spreads from Europe and America all the way to the Far East.
[471] For the different version of the flail through the centuries, the variety of connecting elements and materials used in their production see T. M. Allison, 'The Flail and its Varieties', *Archaeologia Aeliana*, 2 (1909), 94-125.

A good example of the military use of the agricultural flail can be found in Master NH's woodcut *Battle Between Peasants and Naked Men* from the first quarter of the sixteenth century.[472] The short part of the weapon is prolate-shaped and looks crude. Several depictions of this weapon can be found in the *Jenský Kodex* in the hands of the Hussites led by Jan Žižka from the last qurter of the fifteenth century.[473] Defining the timeframe of the use of the agricultural weaponized flail is hard if not impossible. The wide use of the tool would make it available from earlier, but the iconographic tradition and the changes in warfare suggests it became increasingly popular from the time of the Hussite Wars (first half of the fifteenth century) and onwards, therefore the early fifteenth century. Earlier examples exist in chronicles and psalters such as the *Morgan Bible*, the *Luttrell Psalter*, and the *Psalter of Bonne of Luxembourg*, but never as consistent as after the first decade of the fifteenth century, nor with the same sequence in a single depiction. Most manuscripts depicting events from the Hussite Wars from the second and third quarter of the fifteenth century feature agricultural weaponized flails as well as composite flail that will be discussed later. Even later iconographic examples suggest that the flail was in use throughout the sixteenth century, and as previously mentioned, usually illustrated in the hands of militia and non-tactical troops. However, in a woodcut from the *Triumph of Maximilian I* from the first quarter of the sixteenth century, landsknechts are carrying flails over their shoulders.[474] This is an indication of the use of the weapon by tactical troops or a reaction to its use by peasants during revolts during this period, which acts as an

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[472] Hans Lützelburger, *Battle Between Peasants and Naked Men*, 1522, woodcut, National Gallery of Denmark, Copenhagen. **Figure 221.**

[473] All the depictions are variations of the same theme: Jan Žižka on horseback leading the Hussite forces who are armed with a variety of staff weapons, mainly militarized agricultural tools, such as the scythe, the pitchfork and the flail, or weapons such as the halberd or the morgenstern. The manuscript is dated to the last decade of the fifteenth century. Prague, Národní Muzeum, *Jenský Kodex*, MS IV.B.24.

[474] *The Triumph of Maximilian I: 137 Woodcuts by Hans Burgmair and Others*, trans. by Stanley Appelbaum (New York: Dover Publications Inc., 1964), p. 33. **Figure 222.**

acknowledgement of the existence and importance (at some point) of the flail. At the same time it can also be a display of the increasing popularity of the weapon in courtly combat and specifically foot combat tournaments. This argument is supported by a detailed illustration from *Freydal*, where the Holy Roman Emperor Maximilian I engages in single combat with a flail.[475] This is the best proof that during this period the weapon was so popular that it was considered to be an equal of other staff weapons, and the fact that the Holy Roman Emperor was depicted fighting in tournaments with it in a book intended to glorify him shows that the use of the weapon was not shameful or simply considered to be a peasant weapon.

9.5.2. The Composite Flail

The increasing popularity and militarization of the agricultural flail in the fifteenth century brought changes that modified and altered the appearance of the tool and turned it into an object that was clearly a weapon, which will be called for research purposes here a composite flail. The first type of these modifications came in the form of metal bands that wrapped around the hitting part of the flail. Two to four metal strips would also intersect with the bands along the long side of the hitting part, that way reinforcing the hitting component and increasing the damaging factor of the weapon. The loops connecting the two components are in this case metal, to make the weapon more durable. In some cases small metal spikes are protruding from the metal strips and bands to increase the impact damage. The second composite-flail form has exactly the same features as the agricultural flail

[475] In *Freydal* Maximilian I fights with a variety of 'knightly' and infantry weapons, popular in his time. The use of a flail is recognition of the spread of its use in the late fifteenth century, but not necessarily effectiveness. This illustration is a good start for demonstrating how even peasant weapons turned to useful instruments of war, with a recognized military value even by one of the most militarily prolific monarchs of his time. von Leitner, p. 83. **Figure 223.**

with the addition of protruding spikes from all sides along the hitting component. The spikes that appear in the different variations of the composite-flail are the connecting element between the flail and the kettenmorgenstern. Usually the term used for this weapon is just flail. Early on Viollet-le-Duc made an observation of their different elements and used distinctive terms to describe the flail and the composite flail, which were respectively *fleau* or *flael* and *goupillon*.[476] A rare example of the weapon that can be placed between the aforementioned forms dated roughly to the first half of the sixteenth century has a long wooden shaft reinforced towards the top with langets.[477] The head is short and made of metal and does not have the usual shape found in weapons of this category and most certainly not the impressive spiked forms found in depictions that will be discussed. Its chain was probably replaced later.

Just like the agricultural weaponized flail, the composite flail is also featured in most depictions of the Hussite Wars from the end of the second quarter of the fifteenth century and onwards but usually lacking detail. More detailed depictions of modified versions of the flail can be found in art from the last quarter of the fifteenth century. A composite flail with a cylindrical head can be found among other staff weapons in a woodcut from the *Nuremberg Chronicle* from this period.[478] The head is connected to a chain with a loop just like the agricultural flail, and on the other end the chain is attached to the main shaft with a small socket. The cylinder has spikes protruding from it, which looks like the cylindrical head of a holy-water sprinkler without the flanges. Another woodcut from the same manuscript shows a more detailed chain of a composite flail with thick

[476] Viollet-le-Duc, V, pp. 427-9.
[477] Berlin, Deutsches Historisches Museum, W 1494, Composite flail. **Figure 224.**
[478] Cambridge, Cambridge University Library, MS Inc.0.A.7.2[888], fol. 30^{v}.

oblong links extending from a short socket at the top of the weapon.[479] A detailed coloured sketch of two composite flails from the last quarter of the fifteenth century shows both weapons having a solid metal spiked head.[480] In both weapons the socket ends in a metal loop. A short chain connected to it attaches a metal cylindrical head. Several short spikes protrude from all around the cylinder. The difference in the two weapons is simply the length of the heads. A woodcut from the first quarter of the sixteenth century shows a composite flail with a head shaped like the agricultural flail but with the addition of a multitude of spikes protruding from everywhere.[481] The shaft is depicted long and the socket is also particularly interesting because the socket is also covered in spikes. The top of the shaft and the top of the head as well as a well formed chain with oblong rings can be seen in Holbein's *Passion* from the end of the first quarter of the sixteenth century.[482] Finally, an illustration of the weapon worth mentioning is from Paulus Hector Mair's fight-book from the second quarter of the sixteenth century.[483] The two identical composite flails depicted have the same shape as an agricultural flail where the head and the shaft are connected with a metal loop at one of their ends. The difference is that the weapon heads are covered with short spikes. Mair included several staff weapons in his work and he included several drills of personal combat with the composite flail which he mentions as *Trüschel*. This popular perception and inclusion of what half a century earlier was considered to be a peasant weapon in a fight-book aimed for rich people with an interest in martial arts shows the popularity of the weapon or the intrigue that it caused to people that wanted to learn how to use it. This depiction and perception of the

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[479] Cambridge, Cambridge University Library, MS Inc.0.A.7.2[888], fol. 63^{r}.
[480] Heidelberg, Bibliotheca Palatina, MS Cod. Pal. germ. 130, 51^{v}. **Figure 225.**
[481] Lucas Cranach the Elder, *Ecce Homo*, 1509, woodcut, Staatliche Kunstammlungen, Dresden. **Figure 226.**
[482] Hans Holbein the Younger, *The Passion*, *c.* 1524, oil on panel, Kunstmuseum, Basel.
[483] Dresden, Sächsische Landesbibliothek, MS Dresd.C.93, fol. 219^{v}. **Figure 227.**

composite flail is a continuation of the pattern discussed earlier with the depictions of Maximilian I fighting with the agricultural weaponized flail.

The flail is one of the few staff weapon categories that is not problematic with regard to its terminology. As the object refers to a specific agricultural tool, used for a specific activity, the only question regarding its terminology is whether its more advanced form should be given a different name. In this chapter this separate sub-category was named composite flail. A different potential term could be military flail as suggested by Stone.[484] Indeed more complicated flail forms were produced for battlefield use, but perhaps the military implied its use by organized forces, something that there is not enough evidence to prove. Therefore, the original suggested term is used to avoid confusion.

The overall use of the composite flail within the examined period should be considered the same as the agricultural weaponized flail, from the second quarter of the fifteenth to the second quarter of the sixteenth century. Unlike its predecessor there is little indication that the composite flail was used before this period. However, surviving material culture suggests that the production of this weapon continued even past the first half of the sixteenth century. The depictions and surviving examples show a variety of forms in the enhancement of the agricultural implement but there was not attempt to decorate it.

9.6. Conclusions

There are very few examples of the weapons from this group with intricate decorations. The crude nature and form of most weapons discussed was not

[484] Stone, p. 230.

similar to any of the weapons that progressively became decorative objects with detailed golden inlays or carved designs. However, this does not mean that some of the weapons from this weapon group did not become decorative objects. One of the reasons there are plenty of surviving weapons from most of the subgroups mentioned is that the crude form of the weapon is at the same time intriguing because it recalls something barbaric and primitive. It should not be surprising to assume that some of these weapons were preserved precisely because they were not beautiful as other weapons from the examined period or later. Of course the numbers of surviving examples are much lower compared to those of more refined and clearly more popular weapons such as the standard halberd, the composite glaive or the standard bill, but are unsurprisingly higher that weapons that directly developed from agricultural tools such as the military fork and scythe, and the proto-bill. The variations of the flail discussed here are a direct development of the tool and even the kettenmorgenstern is a hybrid between a morgenstern and a flail. It is hard to trace the decline of these weapons because arguably their more primitive form remained in use even after the examined period. This was not reflected with extravagant beautiful objects that lost their features that would make them functional in combat. Instead, as already mentioned, simple examples were made, or variations that pushed technological boundaries without focusing on the aesthetic aspect. Examples of this are the holy-water sprinkler combined with a gun that was already discussed, or an experimental weapon inspired by a composite flail that was made in the late sixteenth or early seventeenth century that was designed to release blades perpendicular to the head when yanked or used to strike.[485]

[485] The design of this weapon is unique. There is a release mechanism that allows for the head to spring during a striking motion. As the head flails towards the target a metal band is pulled back

The extent of use of the weapons of this group is not certain, but their design appears to be well thought even in the case of objects that might have seen little use such as the kettenmorgenstern of the composite flail. Most sub-groups appear to have langets which theoretically would reinforce the top of the weapon, not only from opposing strikes and cuts but by its own use at all. Striking implies extra force and that would stress the weapon further. Additionally, in the case of weapons with a hanging element it is certain that during use the extra element would bounce and hit back on the shaft. Therefore, the langets added some extra protection that dealt with both of these problems. This is not an indication of extensive use but it is proof of weapon testing and mechanical consideration.

It is hard to assess the chronological and geographical boundaries of use of most striking weapons. Even in the worst case scenario of most surviving examples being later reproductions and re-imaginations of previous weapons, they were certainly based on something, either to illustrations from within the examined period or weapons that do not survive. Most weapons of this group were initially based on agricultural implements that were used in combat especially by irregular troop, partisans or militia, but their increasing popularity increased the quality of their production. It is a daunting and nearly impossible task to identify which of the surviving weapons are dated between the late fifteenth and first half of the sixteenth century but by examining them further we can get valuable information about the construction of a group of staff weapon unlike most others and an idea on how weapons of this group would have looked if the examples are indeed dated later. In the case of other staff weapons the examination of the solid metal head and the manufacturing can provide some insight on dating, which in this case

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towards the shaft with a metal strip attached there. This band acts in the same manner as the securing mechanism of a portable anchor, which when pulled back releases the beams, in this case the blades. Leeds, Royal Armouries, VII.1367, Experimental flail. **Figure 228.**

becomes hard just by examining spikes and smaller metal components. The wooden part of the weapons of this group and most surviving staff weapons in general have been either replaced or polished and altered during their lifetime, which makes it nearly impossible to date them without taking a destructive sample and even then it is not certain how precise the dating would be. Finally, it needs to be highlighted that the questions and suspicions in scholarship or in more popular media towards the use and form of the weapons discussed in this sub-chapter are a primarily a result exactly of those fundamental differences between this wider group and any other staff weapons. Striking staff weapons might look like the primitive relatives to them but there is still much to be done in scholarship on weapons of this group.

Chapter X: The Bill Group

10.1. Nomenclature and origin

The bill as a weapon derived from an agricultural tool used for pruning or splitting pieces of wood. It generally has a curved blade like a wide hook with a sharpened inner side. The head of the tool is fitted with a socket on a short handle, in which case is not much unlike a sickle, or a longer shaft to add extra reach for pruning, which is the version that looks like a staff weapon even before its militarization. This tool existed for hundreds of years and it is still used to an extent even in modern times. Its use in combat cannot be considered as something new that happened during the fifteenth century. Its shape and relative ease of access was definitely what led to its use in combat the same way that happened with other agricultural tools turned to weapons such as the fork, the scythe and the axe. The form of the tool did not need particular modifications because it could already be used for cutting or pulling. However, in contrast to other agricultural implements that in the same period were slightly modified to be used as weapon, the bill was the one that underwent the most radical changes with the addition of extra technical features in the form of spikes on the top, front and back of the head, which could be used for striking and thrusting. These changes took place progressively during the first three quarters of the fifteenth century, so that by the beginning of the fourth quarter the weapon that had developed from the tool was something different altogether. The different types of this new weapon were sometimes used simultaneously, and it is interesting to explore their variations and designs.

The English term bill and some of its variations traditionally used to describe the weapons of this whole category are too generic and often unclear. A comparison between the definitions of adjacent terms used for variations of this weapon as mentioned in the *Oxford English Dictionary* shows the problem caused by a limited and generic terminology. The term bill-hook is used to describe the original pruning implement with no mention of a long handle or two handed shaft.[486] The bill is used to describe a weapon used primarily by infantry, 'varying in form from a simple concave blade with a long wooden handle, to a kind of concave axe with a spike at the back and its shaft terminating in a spear-head'.[487] This encapsulates the whole bill group perfectly but makes a division impossible. The other two terms using bill found in English are the brown bill and the black bill.[488] The *Dictionary* entry suggests that these names were attributed to bills with coloured heads but this is not the case. It is likely that the brown bill was generally attached to the bill-hook, the tool, and its later weaponized version, the proto-bill.

These observations are interesting on a non-specialized level, but even scholarship that deals with the subject does not always agree. As it will be demonstrated later for each subgroup, authors often use overlapping terminology that has been used for other objects, which is one of the recurring problems in the study of staff weapons. The difference with the use of the term bill in English is that it generally always means the same but there is no specification as to which form. Stone made no clarification as to which weapon he refers to as a bill and to

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[486] "bill-hook, n.". OED Online. March 2017. Oxford University Press. http://0-www.oed.com.wam.leeds.ac.uk/view/Entry/19015?redirectedFrom=bill-hook [accessed May 08, 2017].
[487] "bill, n.1". OED Online. March 2017. Oxford University Press. http://0-www.oed.com.wam.leeds.ac.uk/view/Entry/18985?rskey=x4qV0a&result=1 [accessed May 08, 2017].
[488] "brown bill | brown-bill, n.". OED Online. March 2017. Oxford University Press. http://0-www.oed.com.wam.leeds.ac.uk/view/Entry/23852?redirectedFrom=brown+bill [accessed May 08, 2017].

which as a brown bill, but he appeared to use them simply as synonyms.[489] He acknowledged that they originated from agricultural implements, but he complicated his definition by mentioning the bill as the forerunner of the guisarme and the fauchard without specifying the reasons behind this statement.[490] Ellehauge mentioned the origin of the term bill being the German word *Beil*, which means axe, and discussed extensively how the different forms of the bill fit in the context of the development of staff weapons.[491] The specific terminological approach that different authors used for each subgroup will be presented within the study of each of them. Blair examined some of the variations of the bill and he uses the terms Welsh bill, glaive and hook in his homonymous article to divide them.[492] Waldman referred to the weapons of the whole weapon group as bills and mentioned the variations and different terms used within it.[493]

The definitive work on the development of the bill and the different small or great changes in the different variations of the weapon is Troso's monograph. This work has been heavily referenced and used for the production of this thesis and inspired many questions and corrections in the process. Troso discussed most staff weapons from the examined period but he dedicated whole chapters of meticulous examination to weapons of this group.[494] It would be foolish to ignore or try and surpass his work, and it would be dishonest to simply plagiarize it. Therefore, this chapter focuses on the same process followed for previous weapons while at the same time filling the few gaps that Troso left such as bridging

[489] Stone, p. 113.
[490] The guisarme and the fauchard as Stone identifies them are respectively grouped in this research as the spiked-scythe bill and the glaive. The first can indeed be grouped in the wider bill group because of its similarities in form and use but the latter can hardly be seen having common attributes.
[491] Ellehauge, p. 9.
[492] Claude Blair, 'Welsh Bills, Glaives and Hooks', *Journal of the Arms and Armour Society*, 16 (1999), 71-85.
[493] Waldman, pp. 115-23.
[494] Troso, pp. 137-56.

the modern terminology and dividing the wider weapon group into two more additional groups than he did. His work on the subject is admirable and ideally what should be done for most staff weapons by future scholars, even though a full examination of each category might be the work of a lifetime.

The terminology used to define the subgroups and variations of the bill are products of this research and they are as descriptive or clear as possible to make them discernible from one another. However, in the case of the proto-bill, the composite bill and the standard bill, the terms *roncola*, *ronca* and *roncone* are provided as supplementary terms for the respective subgroups, not because they are the Italian translations but because it is fundamental to acknowledge Troso's contribution to the subject and that his terminology and the one produced and presented here are interrelated.

10.2. The Proto-Bill (Roncola)

The simplest form of the weapon is a pruning tool mounted on a shaft. That type of tool was used for hundreds of years in countries of the Balkans and Italy, and they are still in use today in agriculture. So it should not come as a surprise that most surviving examples of the proto-bill as well as of the other subtypes mainly appear to be from Northern Italy. The shape of the proto-bill resembles that of a sickle but the blade does not curve inwards. Instead it is straight and then curves to one side towards the top creating a tip that is perpendicular to the blade or slightly angled downwards. The part of the head where the curve occurs is the front, and it is only this side that it is sharpened. The inside of the curved part is sharpened as well following the flow of the blade. The head is mounted on the shaft with a

socket. The length of the straight part of the head varies. This weapon was used mainly for cutting, but because of its curved part it could also be used for pulling and maybe striking using the tip as a beak. The hardest part of the examination of this weapon is how to exclude objects and depictions that are tools that might not have been used in combat because of their popularity as agricultural implements, which is a recurring problem with tool-like weapons. The general rule that is followed is that objects without a surviving shaft cannot be considered to be part of this weapon group because the pruning tool was usually hand held from a short grip that was also attached on the head with a socket. According to Troso the identifying element of the weaponized tool is that the length of the blade is longer than that of the simple tool.[495] He divided the two by calling the tool '*roncola: attrezzo contadino (prototipo)*', which translates as peasant tool prototype and the weapon discussed here '*roncola arma*', which is roncola-weapon.

Besides the brief and general discussion on scholarship and the terminology used for the wider weapon group it is useful to see how some authors refer to this specific sub-group in specialized works. Ellehauge used the term martial sickle to describe this weapon and to highlight the transition from the tool to an exclusive martial character.[496] Buttin calls this weapon a *guisarme* of primitive form.[497] Dean labelled this weapon bill and placed it at the root of the rest of the weapons in the wider group. It is unclear how Puricelli-Guerra separated the sub divisions of the bill group.[498] The term he uses for the proto-bill is *ronco* and *ronchette ferra*. As already mentioned, Troso used the term *roncola arma* for this type of weapon. He also mentioned the equivalent of the term in German English and

[495] Troso, p. 137.
[496] Ellehauge, p. 22.
[497] Buttin, *Catalogue*, p. 93.
[498] Puricelli-Guerra, pp. 8-9.

French which respectively are *Gertel*, forest bill and *serpe*.[499] The chosen term for this weapon is influenced by Troso's terminology as well as the fact that this is the form from which the later weapons of the wider bill group developed. Waldman generally refers to this weapon as an early bill or an early form and predecessor of later bills.[500]

Similar to other tools that were the basis for the development of staff weapons or tools used directly or with minor modifications as weapons the artistic representation of the proto-bill in art is neither consistent nor common. In fact the proto-bill, which appears to be popular in fourteenth century religious depictions, completely disappears from the iconography of the fifteenth century. This is peculiar especially considering that other tools turned weapons such as the flail and the fork have depictions, especially from the early sixteenth century. The explanation for this is not the unpopularity of the proto-bill but rather its replacement in use and subsequently artistic tradition by more interesting forms of the weapon that developed already from the first half of the fifteenth century. Therefore, the simpler form was overshadowed by the later composite and standard bills. A rare example of the proto-halberd is di Giovanni's *Capture of Christ* from the early first quarter of the sixteenth century showing several staff weapons and in their midst the outline of a proto-bill with a long blade can be found.[501] Surviving examples that can definitely be dated within the examined period are scarce as well, as is the case with most primitive looking staff weapons. Troso mentioned the limited examples of proto-bills available but displayed an example that he dated to the end of the fourteenth or the first quarter of the fifteenth

[499] Troso, p. 99.
[500] Waldman, pp. 115-19.
[501] Andrea di Giovanni, *Capture of Christ*, Oratory of the Saviour, Certona.

century.[502] The blade of the weapon is long and the beak is curved and short. A proto-bill dated to the last quarter of the fifteenth or the first quarter of the sixteenth century has a much shorter blade and a beak that is nearly as long as the blade itself which faces outwards at a ninety degree angle.[503] Despite the sporadic surviving weapons and depictions the use of the proto-bill should not be dismissed in the examined timeframe. The pruning tool that was its basis was in constant use and its successors were quite popular so it is more than possible that it was in use throughout this period.

10.3. The Composite Bill (Ronca)

The composite is a direct development of the proto-bill. The idea of weapon evolution has generally been avoided in this thesis because the changes from one form to another are not always linear. However, in the case of the bill group the composite bill signaled the progress of the previous form and the clear transformation of a tool into a weapon. The shape of the composite bill includes the asymmetrical structure of the proto-bill with the addition of more offensive elements that vary in design. So, the head of the weapon also has a straight blade that curves towards the top and forms a tip. The curved part varies in length and width. The inside of the curve and only that side of the head is sharpened. The additional technical features come in the form of a horizontal spike that varies in shape or of a spike that is angled upwards. In any case they grow from the middle part of the back of the weapon. The head is attached on the shaft with a socket and nailed. The composite bill was primarily used for cutting with the main part of

[502] Troso, p. 121.
[503] Berlin, Deutsches Historisches Museum, W 59/251, Proto-bill. **Figure 229.**

the blade. The curved part could be used for pulling, depending on its length, and striking. The additional spike on the back could be used for striking or trapping an opponent's weapon depending on its form. Oakeshott suggested that the protruding horizontal spikes of the weapon in combination with the hook were primarily used for parrying.[504]

Troso referred to the composite bill as *ronca*, and he mentioned that the spike on the back is a later development of what in the fourteenth century used to be a smaller protruding blade, which was a remnant of the agricultural pruning tool.[505] Buttin referred to this weapon as a *guisarme*, which is the term he uses for weapons of the bill group in general.[506] He particularly described this weapon as an earlier version of the *guisarme* that belongs between what he called the primitive form of the *guisarme*, which corresponds to the proto-bill, and the *guisarme*, which is the standard bill. Bleuler discussed the origin of this weapon from agricultural tools and simpler forms, but he also associated it with the form of the proto-halberd and specifically mentioned it as *Halbartengertel*, which translates as halberd-bill.[507] The association is not absurd considering the plain and primitive form of these two weapons as well as the bulk of their blades which is a rectangular shape with the addition of other features. Bleuler argued the extent to which the bill can be considered to be a weapon or a tool and through his discussion he categorized the proto-bill as a tool but the composite bill as an object developed enough to be considered a purely militarized object. Ellehauge preferred the term martial hook for this weapon which he saw as a development step towards the standard bill.[508]

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[504] Oakeshott, *European Weapons and Armour*, p. 52.
[505] Troso, pp. 137-38.
[506] Buttin, Catalogue, p. 93.
[507] G. Bleuler, 'Glefe oder Gertel: Waffe oder Werkzeug', *Zeitschrift für historische Waffenkunde*, 1 (1897), 282-85 (284-85).
[508] Ellehauge, pp. 8-9.

He characterized this object as a 'queer weapon' that he had also encountered under the terms guisarme and halberd-sickle. The latter makes the same effective association with Bleuler who saw similarities in the earlier versions of the bill and the halberd. Waldman referred to this weapon as *roncola armi*, brown bill and *Kriegsgertel*, and mentioned that this was a ready weaponized version of the proto-bill.[509] The last part makes sense but the rest of his assessment and categorization appear like a misunderstanding of Troso's categorization, which supposedly Waldman referenced for his own terminology of the bill group. It seems that Waldman misunderstood the division of the roncola according to Troso, and the same applies for his assumption that the ronca sometimes has a vertical spike, which is the identifying feature of the standard bill (roncone).

The initial intention for the name of this subgroup was to be the thrusting bill, because the main weapons considered were those that had the shape of the proto-bill with the addition of the vertical spike for thrusting. However, by examining more weapons and iconographic evidence the term preferred is composite bill to include all these weapons that changed from the proto-bill but with the addition of elements on the back of the blade, namely the horizontal and the angled spike. Additionally, following Troso's categorization and expertise on the subject, it is preferable to use the vertical spike as the identifying feature of the standard bill, because it is a main feature that fundamentally changed the function of the weapon.

The iconography of the composite bill is significantly more consistent than that of its predecessor, and several examples exist especially throughout the fifteenth and early sixteenth century. The examples discussed here demonstrate

[509] Waldman, pp. 116-19.

some of the minor variations that these weapons were represented to have in art. Frescos depicting the life of Christ dated between the first and second quarter of the fifteenth century show two similar composite bills with vertical spikes.[510] In the *Battle of San Romano* dated either in the late second or early third quarter of the fifteenth century a composite bill has a peculiar head that is thinner towards the top and elliptic on the back.[511] There is also a horizontal spike emerging in the middle of the back of the head. A different type that should also be considered a composite bill from the last quarter of the fifteenth century has a short head and a rondel right below the socket.[512] It can be argued that because the top of the weapon is not depicted this could as well be a standard bill. However, what is important is that the artist recognized that the identifying element of the weapon is the beak on the front. Additionally, it is a unique example of a bill with this type of guard. As with most weapons examples from the sixteenth century become more detailed and realistic and even in the case of weapons depicted small in a bigger image, even small outlines are illustrated with clarity. The composite bills from the *Weisskunig* from the first quarter of the sixteenth century have long heads with a thin beak that curves nearly downwards.[513] The front of the weapon is not straight and its lower part is convex, creating a small wave when the sharpened blade-line goes upwards and inwards to create the inside of the beak. The spike on the back of the head is angled downwards. Ellehauge commented specifically on the form of the refined composite bills depicted in the *Weisskunig* and described them as a variation of the *guisarme* under the name of martial sickles with a spike.[514]

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[510] Giacomo Jaquerio, *Scenes From the Life of Christ*, *c.* 1420, fresco, Castle of Manta, Cuneo.
[511] Paolo Ucello, *The Battle of San Romano*, C15th, tempera on panel, Galleria degli Uffizi, Florence. **Figure 230.**
[512] *The Beauchamp Pageant*, p. 82. **Figure 231.**
[513] *Der Weisskunig*, p. 198. **Figure 232.**
[514] Ellehauge, p. 22.

The number of material examples surviving is not great but it is enough to demonstrate a consistency in forms and variations. The examples that are discussed here demonstrate this variation and at the same time cover the chronological spread of the use of this weapon category. A composite bill from the third quarter of the fifteenth century has a wonderfully asymmetrical head.[515] The front sharpened part of the weapon is curved and its flow follows the beak. A horizontal spike grows from the middle of the back but its end is broken. Above that spike another one grows angled upwards, and its height reaches the level of the top of the beak. It is likely that even earlier than this weapon, the standard bill developed from similar forms of the composite bill. A weapon dated between towards the end of the fifteenth or the first quarter of the sixteenth century has a straight head and a small beak on the front.[516] The spike on the back of the weapon is curved upwards. Finally, a well-crafted composite bill from the end of the second quarter of the sixteenth century has a long head that ends in a beak that curves downwards.[517] A long triangular spike grows from the back of the weapon's head. The lower part of the spike is sharpened, which demonstrates that it was used for pulling. A small and smooth projection of the spike grows in the middle of the front of the weapon, but it is there purely for aesthetic purposes, perhaps imitating similar forms of the standard bill from the same period.

The timeframe of use of the composite bill appears to coincide with the examined period of this research. It most likely developed from the proto-bill somewhere in the late fourteenth or early fifteenth century and remained in use for at least a century. The extent of its use and its representation in art is overshadowed by the standard bill which subsequently developed from the

[515] Berlin, Deutsches Historisches Museum, W 32, Composite bill. **Figure 233.**
[516] Berlin, Deutsches Historisches Museum, W 31, Composite bill. **Figure 234.**
[517] Leeds, Royal Armouries, VII.937, Composite bill. **Figure 235.**

composite bill. This development happened shortly after the development of the composite bill with the addition of a thrusting element that slowly shifted the primary function of the weapon.

10.4. The Standard Bill (Roncone)

The form of the standard bill is one of the most complicated and widely recognizable amongst all staff weapons. This weapon subgroup displays an incredible variety of shapes and designs already from the early years of its use in the first quarter of the fifteenth century, and progressively as it becomes more elaborate different forms emerge, to the point that towards the end of the second quarter of the sixteenth century examples of it are often found with extremely elaborate decorations made with various techniques. The standard bill is first and foremost a progressive variation of the proto-bill and the composite bill. As previously mentioned it is one of the weapons that a direct evolution can be observed as the shapes of the previously mentioned categories can be found on this weapon. However, it is also the perfect example that the development of the weapon can lead to a similar result from two different starting points. The identifying feature of the standard bill is the vertical spike on the top of its head that is located nearly always on the vertical axis of the shaft. If it had developed in a linear manner from the composite bill then its form would be described as that of the composite bill with the simple addition of a vertical spike. This is only partially true because there are examples of the standard bill that do not have the identifying spike of the composite bill, and therefore can be described as a development from the proto-bill with the addition of a vertical spike. These two variations only cover a small part of the overall variations that the shape of the

standard bill can have. Besides the vertical spike, and the examples that also have spikes on the back of the head, the standard bill always retains the curved beak on the front. The spike on the back varies in shape and size and sometimes had decorative patterns on its outline, especially in the second quarter of the sixteenth century. Additionally, some other technical features that the weapon have based on its variations include small wings at the base of the blade above the socket and a small projection of the spike on the back on the front part of the blade that appears either curved creating a wave pattern on the overall front part of the blade or as a pointed edge. The vertical spike is usually quite long and varies in shape from quadrangular, to triangular or simply flat and pointed. This feature shifted the use of the bill from being primarily a cutting weapon to being equally a weapon for cutting and thrusting. The curved beak was used as with the previous weapons for pulling and perhaps striking, and the additional protruding features were used for pulling or causing damage during glancing hits. According to Oakeshott the various protruding spikes would make it an effective parrying weapon.[518] This is not completely accurate. Indeed the spikes, recesses and features of the standard bill could be used for parrying but they were also sharpened and as a weapon most features primarily have an offensive function. Borg highlighted the use of the weapon against horses and the damage it could cause to them because of all the protruding elements with pulling and twisting motions.[519]

The minor differences in terminology in scholarship continue from the previous forms of the weapon to the standard bill. Troso categorized this weapon as the *roncone*.[520] He also divided this category in two subdivisions, the first includes

[518] Oakeshott, *European Weapons and Armour*, p. 52.
[519] Alan C.N. Borg, 'Gisarmes and Great Axes', *Journal of the Arms and Armour Society*, 8 (1976), 337-42, 355-59.
[520] Troso, pp. 138-39.

weapons with a long head, a vertical spike and a short beak, and the second those that have larger beak, a spike on the back, a vertical spike and sometimes wings on the top of the socket. According to Troso the analogous terms in German English and French are *Rossschinder*, bill or brown bill and *guisarme*.[521] According to Viollet-leDuc, who calls this weapon a *fauchart*, this is the late fifteenth century development of the glaive.[522] He also used the Type B roncone as a descriptive term for certain standard bills with larger heads and long prominent spikes.[523] It is interesting that he also placed these bills in the wider halberd group, which would not be surprising if they were only limited to the scorpion bill because of its trapezoid blade. Buttin used the term guisarme both for the standard bill and for the wider weapon category.[524] Holmes mentioned that this is the finalized form of the bill.[525] Oakeshott referred to the weapon as bill and he mentioned that it derived from the common billhook.[526] Puricelli-Guerra also referred to this as a *roncone* and *ramgono*.[527] The latter is a localized version of the roncone. Waldman called this weapon roncone, which he characterized as the 'fully developed Italian Renaissance bill.[528] However, he only included those standard bills in which the full head is coaxial to the shaft and excluded those that do not, which he categorized in the ronca sub-group. Ellehauge referred to the standard bill as the typical guisarme.[529] However, he classified the examples of the standard bill that simply have the form of the composite bill with the addition of the vertical spike in his primitive guisarme category, and specifically as martial sickle with spearhead, and

[521] Troso, p. 99.
[522] Viollet-le-Duc, V, p. 425.
[523] Viollet-le-Duc, VI, p. 26.
[524] Buttin, Catalogue, p. 94.
[525] Holmes, pp. 4-5.
[526] Oakeshott, *European Weapons and Armour*, p. 52.
[527] Puricelli-Guerra, p. 8.
[528] Waldman, p. 119.
[529] Ellehauge, p. 26.

wherever applicable with spike.[530] Besides Troso, Elehauge's terminology and justification of the division and development of the bill has been most influential in labelling and categorizing this group. The term created for this subgroup reflects the wide recognition of this weapon in modern scholarship, its popularity in iconography, and mainly the fact that it is the finalized form of in the development of the wider bill group, where the weapon reached the full capacity of its function.

Examining the iconography of the weapon and surviving examples provides a good understanding of the different trends in its design throughout the examined period. One of the earliest depictions of the weapon from the second quarter of the fifteenth century has a curved front, a vertical spike on the top and a spike angled upwards on the back.[531] Below the convex front part of the blade a triangular swelling looks like later examples of a single wing but it is too short to be considered as such. The standard bill from a painting from the same period has the convex part in the middle of the front of the head, a horizontal spike in the middle of the back, and a triangular vertical spike on the top.[532] A bill from the end of the second quarter has a nearly straight blade on the front which highlights the rectangular main frame of the weapon.[533] There is also a vertical spike and a horizontal spike in the middle of the back. A standard bill from a painting dated either to the end of the second or the beginning of the third quarter of the fifteenth century has a simpler head with the lower part of the blade being convex and going inwards towards the socket.[534] The beak is short and thin. There is also a vertical spike and a horizontal spike on the back. Two sketches from the

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530 Ellehauge, p. 22.
531 Chieri, *Crucifixion*, Baptistery of the Duomo, Torino. **Figure 236.**
532 Giovanni Boccati, *Capture of Christ*, *c.* 1447, tempera on wood, Galleria, Perugia. **Figure 237.**
533 *The Resurrection of Christ*, late C15th, tempera on wall, Chapel of St Sebastian, Lanslevillard. **Figure 238.**
534 Beato Angelico, *The Humiliation of Christ*, *c.* 1440, fresco, Museo di San Marco, Florence. **Figure 239.**

Beauchamp pageant from the last quarter of the fifteenth century show two different design patterns. The first has a convex blade on the front a vertical on the top, whose alignment with the shaft is accented with sketch lines, and a small horizontal spike on the back.[535] The second has a rectangular head, a spike on the back and a shorter vertical spike.[536] The depiction of a bill from the end of the same period resembles the forms of a composite bill with the addition of a small vertical spike.[537] The head is much wider that how standard bills are usually depicted.

From the first quarter of the sixteenth century onwards there is an even greater variation in the depiction of the standard bill. A miniature from the early first quarter shows bills with long blades and a small vertical spike.[538] The middle of the blades is slightly convex. The beaks are thin and the spikes on the back are all horizontal. Most importantly all bills depicted have small spikes between the bottom of the blade and the top of the socket. A bill from Hobein's *Capture* from the same period shows the vertical spike as a direct projection of the socket and the blade and the back spike, which grows on the lower part of the back, growing from that central axis.[539] Several paintings from the first quarter of the sixteenth century realistically depicted features of the standard bill that could be found in contemporary or later examples. Such an example shows in detail the decorative fluting on the flat surfaces of the standard bill's head.[540] The front of the head has a pointed projection of the long spike on the back side. It is also worth mentioning

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[535] *The Beauchamp Pageant*, p. 70. **Figure 240.**
[536] *The Beauchamp Pageant*, p. 82. **Figure 241.**
[537] Luca Signorelli, *Episodes From the Life of St Benedict*, 1497-98, fresco, Abbazia di Monte Oliveto Maggiore, Siena. **Figure 242.**
[538] BnF, MS Français 5091, fol. 10^{v}. **Figure 243**
[539] Hans Holbein the Younger, *The Capture of Christ*, c. 1524, oil on panel, Kunstmuseum, Basel. **Figure 244.**
[540] Bernardino di Betti, *Enea Piccolomini Leaves for the Council of Basel*, 1502-08, fresco, Duomo, Siena. **Figure 245.**

that the top of the vertical looks reinforced. One of the most extravagant and detailed examples of a standard bill, also from the same quarter, has a complex head that is wide and decorated with several indents that form pointed edges at several parts of the weapon.[541] It is one of the few examples that the front of the head is projected outwards and has a convex lower part but at the same time has the small wings at the top of the socket. Different types of standard bills can also be found in the *Weisskunig*. The first design has a long rectangular head and a back-spike that is curved downwards.[542] The second design has a wide projected lower part of the front of the head, similar to that found in Bernardino's painting that was previously mentioned.[543] The beak of those bills is long but makes a wide curve that ends with the tip facing upwards, and their spikes on the back are small. The third type of design has a rectangular head, short vertical spike and no spike on the back.[544] It is a peculiar shape but as it will be demonstrated later, surviving weapons exist that correspond exactly to this form of the bill. Finally Tintoretto's Crucifixion from nearly thirty years later depicts standard bills with long heads and the small pointed projection of the back-spike on the front side, vertical spikes and sharply curved beaks.[545] The variety briefly demonstrated here is reflected in surviving examples of the weapon as well. Some of the more detailed depictions show weapons with complicated designs, but what is not reflected enough in art is the decorations that progressively became more common on the weapon towards the end of the first quarter of the sixteenth century.

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[541] *The Martyrdom of St Leodegar*, 1515, painting on spruce, Germanisches National Museum, Nuremberg. **Figure 246.**
[542] *Der Weisskunig*, p. 144. **Figure 247.**
[543] *Der Weisskunig*, p. 334. **Figure 248.**
[544] *Der Weisskunig*, p. 367. **Figure 249.**
[545] Jacopo Robusti Tintoretto, *Crucifixion*, 1568, oil on canvas, Chapel of St Casian, Venice. **Figure 250.**

In contrast to the multitude of imagery of standard bills from the second quarter of the fifteenth to the second quarter of the sixteenth, surviving examples are usually dated only in the last sixty years of that period. The earliest example that will be presented here is dated to the third or fourth quarter of the fifteenth century and has a straight blade in front of the axis of the shaft, a long vertical spike and a horizontal spike.[546] It also has langets on the flat sides of the weapon. One of the earliest examples is dated to the fourth quarter of the fifteenth century and has a simple form that corresponds to some of the bills seen in the *Weisskunig*.[547] The head and the beak are wide. The vertical spike is triangular, long and wide as well. It is positioned above the axis of the shaft. The spike on the back is horizontal and slightly curved downwards. The front part of the head with the blade and the beak is projected in front of the axis of the shaft. The socket is made of two pieces of metal joined with an additional piece and welded together, which leaves part of the top of the shaft uncovered. A similar weapon possibly from the first quarter of the sixteenth century also resembles some of the iconography from this period.[548] The blade and the beak are also in front of the axis of the shaft and the vertical spike is long and quadrangular. The spike on the back is decorated with a small pattern created by indents. A small concave decorates the space between the base of the vertical spike and the beak. It is worth mentioning that the tip of the beak faces upwards. A slightly different weapon that also has the blade and the beak in front of the shaft has the rare addition of a second spike on the lower part of the back of the head.[549] The part under the blade forms an unusual droplet shape that goes up to an indent towards the socket. A very different bill from the same period has the long rectangular frame seen in previous illustrations, with the

[546] Berlin, Deutsches Historisches Museum, W 9, Standard bill. **Figure 251.**
[547] Philadelphia, Philadelphia Museum of Art, 1977-167-451, Standard bill. **Figure 252.**
[548] Leeds, Royal Armouries, VII.1966, Standard bill. **Figure 253.**
[549] Figure. Leeds, Royal Armouries, VII.1513, Standard bill. **Figure 254.**

whole head rising above the axis of the shaft.[550] The vertical spike is long and thin and so is the spike on the back. There are two small horizontal wings at the top of the socket. The middle of the blade has an edge that is the projection of the spike on the back. A standard bill of the same form and from the same quarter has its pair of wings facing upwards and a reinforced quadrangular spike.[551] A weapon also of this form and from the same period has some decorations carved in the middle of the blade and a golden decorative band at the top and bottom of the socket.[552] Its vertical spike and the tip of the horizontal spike on the back are quadrangular. Finally, the blade of another standard bill of nearly identical form is heavily decorated. Besides some light fluting, the lower part of the blade and the socket was decorated with gilded designs.[553] There are also langets on the shaft nailed on the socket on the sides of the back and the front of the weapon. This design of the standard bill becomes the norm in the second quarter of the sixteenth century. A weapon dated to the second or third quarter has the same fluting on the blade, a quadrangular vertical spike, and a horizontal spike decorated with small indents.[554] What changes however, is the progressively increasing decorations of the blade. An example of that is the heavily decorated with engraved designs blade of a standard bill with a particularly long beak and vertical spike.[555] The decorations are contained within the fluted area and on the horizontal spike. A weapon that is worth mentioning is less refined and with a simpler design than most bills of this period.[556] It does not have a spike on the back and its beak looks awkwardly wide. Towards the end of the second quarter the form of the weapon usually remains

[550] London, The Wallace Collection, A929, Standard bill. **Figure 255.**
[551] Philadelphia, Philadelphia Museum of Art, 1977-167-422, Standard bill. **Figure 256.**
[552] Philadelphia, Philadelphia Museum of Art, 1977-167-430, Standard bill. **Figure 257.**
[553] Philadelphia, Philadelphia Museum of Art, 1930-1-161, Standard bill. **Figure 258.**
[554] Leeds, Royal Armouries, VII.1582, Standard bill. **Figure 259.**
[555] Philadelphia, Philadelphia Museum of Art, 1977-167-433, Standard bill. **Figure 260.**
[556] Philadelphia, Philadelphia Museum of Art, 1977-167-432, Standard bill. **Figure 261.**

similar but the decorations are even greater, often at the expense of effectiveness, which is also the turning point towards the decline of this weapon group. A weapon from this period has inlayed gilded design all over the head.[557] The level of detail and craftsmanship makes hard to believe that this weapon was ever used for anything other than display. A last example is of a weapon that became so slender with long thin technical features that it is also impossible it was used in combat.[558] Weapons like that signaled a time that the shape and aesthetics of the weapon were more important than its function.

Compared to the standard halberd that has both surviving weapons and iconography throughout the period of its use, it is peculiar that barely any standard bills have been catalogued and dated between the second and the third quarter of the fifteenth century. An explanation for this might be the small changes the bill went through ever since it reached this final form, which might be misleading for the modern researcher, dating earlier objects later. Returning to the standard halberd analogy, early examples of them are usually hard to tell apart because their heads have the distinctive darker colour because of the high iron content, and even so the colour of the metal is not enough to date an object within this period.

The examination of most surviving objects as well as the iconography reveals that the bill, and particularly the standard bill, was quite popular in Italy. It is slightly ambitious to claim that the proto-bill and the composite bill all evolved in Italy into the standard bill, but at least it is safe to say that by the time the form of the standard bill became popular the epicentre of its use was in that area. When it comes to surviving examples of staff weapons from the first half of the sixteenth century the standard bill comes second perhaps only after the standard halberd in

[557] New York, The Metropolitan Museum of Art, 36.25.2003, Standard bill. **Figure 262.**
[558] Philadelphia, Philadelphia Museum of Art, 1977-167-435, Standard bill. **Figure 263.**

high concentration. It is interesting to consider that the standard bill might have overshadowed in popularity other staff weapons in Italy during this period just like halberds were most common amongst the Swiss and the Germans.[559]

Generally it appears that the standard bill had two main design trends, which are divided based on whether the full head is on the axis of the shaft or if the blade is shifted towards the front side. Examples in iconography are split, but when it comes to material culture those with a coaxial shaft and head outnumber the rest. Another observation that can be made is that the standard bill more than any other staff weapon has examples with open sockets that were created by folding the metal around the shaft and joining them on the bottom. This whole process was most likely the result of replacing the previous shaft. Finally, the standard bill is perhaps the only staff weapon that did not lose its role and functionality once it started getting more elaborate and decorated.

10.5. The Scorpion Bill (Roncone)

A sub-category of the standard bill that deserves particular attention is the scorpion. This weapon's head is trapezoid with the extra features developing on the corners and the top. One side, which can be interpreted as the front, is a straight blade angled inwards towards the bottom resembling the straight blade of a standard-halberd. The top of the blade ends in a sharp, curved spike. The angle of the spike is nearly horizontal and sometimes facing upwards. In contrast to the usual downwards angled spike of the standard bill this feature could not be used as a hook for pulling. The bottom part of the spike is a continuation of the main

[559] Puricelli-Guerra, p. 9.

blade and its top is also sharpened. The back side of the weapon is a nearly straight blade that has a spike growing at the top horizontally and angled downwards. In some examples this is closer to the beak of the standard halberd than to the back-spike of the standard bill. This impression is strengthened by the fact that the position of this feature is on the top of the back and not on the middle. It is uncommon however some examples have an additional smaller horizontal spike in the middle of the back blade. The spikes on the front and the back side of the weapon are roughly positioned on the same level creating this way a bladed horizontal axis. On the top of the weapon's head, on the same vertical axis as the shaft, a long blade-like spike rises. The size of the vertical spike is as long as the rest of the weapon's head and both of its sides are sharpened. The head is attached to the shaft with a socket. Two small angled spikes or wings grow at the point where the head attached to the shaft two small. The spike on the front side is angled downwards and the spike on the back is angled upwards. The weapon usually has some form of decoration, usually with engraving or *pointillé* techniques.

The features of the scorpion not only allowed it the same multiple functions as the standard bill but perhaps even more. The front and back sides were used for cutting. The vertical spike was used for thrusting. The spike on the back was used for pulling and piercing, and the spike on the front for piercing. Additionally, the bladed upper part of the spikes was most likely used for pushing. The small basal spikes could not have been used offensively because they are too short, but they could protect the user's arms from glancing hits.

Regardless the shape of the weapon that one could argue that it does indeed look like a scorpion, with the vertical spike being the tail and either the spikes or the wings being the pedipalps, the name was most likely given to the

weapon because of a maker's mark from northern Italy that appears on numerous of these weapons which nowadays survive in many museums and collections. This way the scorpion mark became synonymous with the weapon. The mark was large compared to most discreet maker marks and often stamped in the middle of the weapon as it can be seen on examples from the first quarter of the sixteenth century and onwards. Most arms and armour studies do not specifically discuss this weapon but those that do mention this weapon as scorpion. Besides the agreement on the term, there appears to be inconsistency in the categorization of the weapon in a wider staff weapon category. Most museums such as the Royal Armouries and the Philadelphia Museum of Art categorize the weapon as a bill. The Metropolitan Museum of Art of New York has it categorized as a guisarme, which of course is confusing. In his evolutionary staff weapons table Dean presented the scorpion as a variant of the bill at the end of the fifteenth century.[560] Stone on the other hand categorizes the weapon as a type of halberd.[561] Ellehauge classified this weapon as a particular variation of the typical *guisarme*, which is his description for the standard bill. More recently Puricelli-Guerra simply identified the weapon as a bill variant.[562] This creates an interesting conundrum in combination with the much earlier categorization of Viollet-le-Duc, who described this weapon as a halberd but also associated it with certain forms of the standard bill, which was subsequently included in the wider halberd group.[563] Waldman went further than Stone and presented the scorpion as the Italian regional variation of the halberd.[564] It is likely that his approach partially reflected Troso's theory that the scorpion was the Italian

[560] Dean, *Charts*.
[561] Stone, p. 545.
[562] Puricelli-Guerra, p. 9.
[563] Viollet-le-Duc, pp. 26-7.
[564] Waldman, p. 69.

rendition of the Swiss and German halberd.[565] Troso's approach is perhaps the most valuable and questions the nature of the weapon. He did mention that the weapon could have been developed as a weapon-fashion response to the halberd which reached the peak of its popularity in the first half of the sixteenth century. He also acknowledged the technical similarities to the standard-halberd, but he still refused to dogmatically categorize it in the same group and suggested the best approach would be to treat it as a hybrid of a standard-halberd and a standard bill. Troso was not willing to categorize this weapon as a standard bill perhaps because of his thorough and ironclad study system of the technical features of bills, which did not have space for the interpretation of hybrid weapons. Judging its categorization because of its form as well as its function the weapon can easily be categorized as a bill and specifically as a standard bill. Its features allow the same use as the latter. In addition to that, a halberd is defined by the blade, which especially in this period is quite prominent in the overall design of the weapon. The scorpion's blade is much narrower and if anything can be characterized as its primary offensive feature that would be the vertical spike. Therefore, the suggested categorization of this weapon is in the wider bill group, but as a hybrid of the bill and the halberd with the first being the dominant design influence.

The chronological frame of the scorpion-bill is limited compared to other bill types but its unique form makes it easy to identify. The weapon was in use in the first quarter and the early second quarter of the sixteenth century and its form regardless of minor variations retained its key technical features. Some interesting changes in individual objects are worth mentioning, as they did not change the main form but they enhance the use of certain aspects of the scorpion. The vertical

[565] Troso, p. 118.

spike of such an object has a different crosscut.[566] The sides of the blade are not only sharpened but the whole spike is diamond-shaped to increase its penetrative capability. The tip of the back-spike is also reinforced for the same reason. The basal spikes are not curved but they simply protrude horizontally from the top of the socket. Another scorpion has all the typical features and shape of its group but has an extra horizontal spike in the middle of the back side.[567] This particular feature makes the weapon look more like a bill than a halberd but most likely does not change its use or effectiveness. Most importantly this scorpion has two long langets welded to the socket and riveted to the shaft securing the head. The two langets are positioned at the two opposing sides of the blades. A third object worth mentioning also has shorter langets elongated from the socket at the sides of the blade.[568] The flow of the blade and spikes is extremely smooth. The spike on the top has a reinforced spine. Both the spike on the front and the back are reinforced and formed thicker and diamond shaped at the tip, which clearly shows that piercing was one of the main intended actions to be performed with this weapon. The blade is decorated with *pointillé* floral and bird designs. Most importantly, the weapon does not have a scorpion stamp. The lack of the mark and the fluid master-crafted design demonstrate that other workshops must have produced this type of weapon and that the scorpion as a name was based on the quantity of surviving material culture with this specific identifying feature.

One of the most interesting objects examined during this research is a composite glaive from the first quarter of the sixteenth century which is also stamped with the very same maker's mark that scorpions have on them when

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[566] Philadelphia, Philadelphia Museum of Art, 1977.167.467, Scorpion bill. **Figure 264.**
[567] New York, The Metropolitan Museum of Art, 14.25.360, Scorpion bill. **Figure 265.**
[568] Leeds, Royal Armouries, VII.906, Scorpion bill. **Figure 266.**

stamped.[569] At the point where the head of the weapon joins to the socket two small angled spikes spring, which are also identical to those of a scorpion. The general design of this composite glaive is not something extraordinary or unusual, but it is a demonstration of the artificial process of denomination of certain staff weapons in modern times in a context of research. It is likely that the stamp was used from its workshop in different types of staff weapons, but researchers such as Dean in the early twentieth century that tried to establish a specific typology attached the 'scorpion' term only to a specific weapon because they had never examined an alternative. If anything, this is proof of the problem of the artificial, and often situational nomenclature produced by research, and of how new evidence can alternate our perception of the typology of arms and armour.

10.6. The Spiked-Scythe Bill

A unique variety of this weapon group is the spiked-scythe bill. Viollet-le-Duc referred to this weapon as *guisarme*.[570] As mentioned before Stone has categorized this weapon as a *guisarme*, but ffoulkes first grouped it as a bill because of the similarities with the standard bill.[571] Puricelli-Guerra saw this weapon as an evolution of the agricultural scythe and categorized it as a glaive.[572] Stone acknowledged that the spiked-scythe bill belongs to the wider bill weapon group but he categorized it in his Glossary as the *guisarme*, adding this way another term to be associated with the bill.[573] The descriptive name used by Ellehauge for this

[569] Leeds, Royal Armouries, VII.948, Composite glaive. **Figure 267.**
[570] Viollet-le-Duc, V, pp. 492-93.
[571] Charles ffoulkes, *Armour and Weapons* (Oxford: Clarendon Press, 1909), p. 103.
[572] Puricelli-Guerra, p. 6.
[573] Stone, p. 255.

weapon was martial sickle of the *guisarme* type.[574] This characterization is complicated but at the same time covers several aspects and associations of the weapon, namely its purely martial character away from the agricultural tool and the connection to the wider bill group which Ellehauge referred to as guisarme. According to Dean's diagram the spiked-scythe bill evolved from the composite bill.[575] The forms are much alike and Dean's theory might be true considering that the function of a composite bill with an angled spike and the spiked-scythe bill would be the same. Finally, Blair referred to this weapon and especially the examples with the thinner curved blade, as a Welsh bill, and discussed its relationship with the other types of the weapon.[576] The same term is used for weapons of this sub-group in the catalogues of certain museums. It is however problematic because it immediately associates the object with a specific provenance. This is justified in the case where it is backed by archival material such as in the catalogue of the Royal Armouries for individual objects, but the wider categorization and labelling needs to be questioned because material examples of unknown provenance can be found in several collections. Throughout this research I have been against using terms that limit or connect a weapon to a specific geographic area. This happens because it is difficult to know for certain where a weapon originated or if it was only used in a specific area, especially in a period where staff weapon designs and varieties appear to generally travel. This is why the terms Swiss and French vouge were avoided, and this is why the partizan was not categorized exclusively as an Italian weapon, even though the majority of material culture and iconography is from northern Italy. This is also why a descriptive term was chosen here instead of the Welsh bill.

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574 Ellehauge, p. 22.
575 Dean, Pole Arms.
576 Blair, 'Welsh Bills', pp. 71-85.

The head of this weapon can essentially be described as a scythe-like blade mounted vertically on a shaft with a socket that had a thin spike protruding from the back of the blade at a ninety degree angle. The width of the blade varies as well as the shape and length of the spike. Usually the blade is slender and curved to the point that its edge faces forward. The spike on the back is formed of a horizontal straight spike. About one to two centimetres from its end a vertical spike grows upwards either completely straight or slightly angled backwards away from the main blade. The weapon has a very distinctive form because of its slender blade and spike that create a unique frame. The concave side of the blade is sharpened and used for cutting and its end when curved sufficiently could cause damage when hitting directly. The spike on the back was used for thrusting even though that must have been a secondary function because it doesn't have the length required ad it is placed away of the vertical axis of the shaft. It is very likely that the spike was used for trapping other blades or staff weapons. Additionally, just like all other bills the curved blade was used for pulling.

The examination of the iconography and weapons from this sub-group is challenging. Most depictions of the weapon are from the third quarter of the sixteenth century or later. Accordingly, most objects have been dated to the late sixteenth or early seventeenth century, so it is likely that this subgroup developed as a combination of the standard bill and the scythe when the first was already in decline. However, there are a few weapons that might be from the examined period. The problem is that the usual curatorial dating followed here is controversial and many similar objects are dated by different collections from the middle of the fifteenth all the way to the middle of the seventeenth century. Therefore, the objects that will be included here are assessed individually based on

their resemblance to other weapons from the same period. One of the earliest examples can be dated to the third quarter of the fifteenth century.[577] The weapon's head resembles an oversized composite bill that has its spike growing from the bottom and not the middle of the back. A small horizontal edge grows at the bottom of the spike's base. An example from the early fifteenth century or later has a much longer and curved blade that looks like a scythe.[578] The spike on the back is long and grows even higher than the top part of the curved blade. Finally, a weapon with a form that must have developed even later, most likely after the first quarter of the sixteenth century, has a thin scythe-like blade and a thin quadrangular spike on the back.[579] A smaller horizontal spike grows at the base of the back and another small vertical spike grows from the top-most part of the blade's curve. Later examples from after the examined period generally have forms that follow the design the second and third weapons.

10.7. Conclusions

Puricelli-Guerra's persistence on the agricultural origin and constant connection of the bill with the original tool is remarkable.[580] Of course the earliest forms of the bill were just agricultural implements. However, his claim that the perfection of the form of the bill by the end of the fifteenth century was detrimental to its efficacy as a tool is at least inaccurate. By the time the standard bill appeared the agricultural nature of the object was long gone. Even in the case of the composite bill the addition of extra offensive features was so important that it is mistaken to keep

[577] Philadelphia, Philadelphia Museum of Art, 1977-167-441, Spiked-scythe bill. **Figure 268.**
[578] New York, The Metropolitan Museum of Art, 14.25.155, Spiked-scythe bill. **Figure 269.**
[579] Philadelphia, Philadelphia Museum of Art, 1977-167-438, Spiked-scythe bill. **Figure 270.**
[580] Puricelli-Guerra, p. 8-11.

examining anything past the proto-bill under the spectrum of a tool and not a weapon. The perfection of the bill and its more complicated sixteenth century forms had to go through several changes before reaching that stage, but it was always in a military context.

The development of the bill is aligned with the general development of staff weapons in the late fifteenth century. The vertical spike progressively increases in length and several other protruding elements are added or removed in different versions of the weapon. The hook-shaped blade of the agricultural bill becomes smaller and less prominent in the overall design of the weapon in the transitional bill and the standard bill. This change reflects the general design trend in staff weapons that appear to be popular from the last quarter of the fifteenth century onwards, where the vertical spike is designed longer and stronger. Perhaps this major overarching development is an expression of the progressive change in use of staff weapon, with thrusting becoming the primary function.

Chapter XI: The Bardiche[581]

11.1. Special Conditions and the Form of the Bardiche

The discussion about this weapon will follow a slightly different structure than that of most previously discussed weapon groups. The structure includes a description and an examination of the terminology of the weapon. However, the discussion about artistic depictions and material culture will be restrained because of the limited examples available during this research. A discussion on the variety will be made regardless, based on secondary literature and objects examined, and a provisional dating for this weapon will be produced. Generally, two-handed axes were popular in Northern and Eastern Europe but certain forms made their way in the areas covered by this research as suggested by surviving iconographic material and weapons. The bardiche was not an exception. Weapons of this category are generally large two-handed axes with large crescent-shaped heads. Only the outside of the convex blade is sharpened. The back of the blade is either concave or straight. The top of the blade forms a sharp end usually extending far above the top of the shaft. The head is attached to the shaft with one or two eyes. When the weapon has one eye then it is located in the middle of the back of the blade or somewhere between the middle and the bottom. In the cases that two eyes attach the blade to the shaft then they are either both located roughly in the middle or the top is in the middle and the bottom on the very bottom end of the back of the blade. In most cases the top eye is placed on the top of the shaft. Often the top and the bottom of the blade curve inwards creating two concaves above and below the eye. The bottom of the blade is either ending in another pointed end or is flat.

[581] The word is of eastern-European origin but it has been well established as a term in museums to describe this weapon category.

One of the most characteristic features of this weapon that appears in several surviving examples is the elongation of the lower end of the blade backwards and downwards to a point that it either touches the shaft or it is stretched even more to form a small langet under the blade as a direct continuation. Some weapons with only one eye have langets attaching it to the shaft on the sides. Weapons of this group were used primarily for cutting. The elongated sharpened top of the blade also allowed to be used for thrusting. This was possible with those weapons that the top of the blade did not curve all the way back but stopped roughly at the level of the shaft, therefore aligning on the same axis which would allow thrusting hits.

11.2. Nomenclature and Origin

An immediate question formed when examining museum catalogues written in English is whether this weapon should be called and categorized as a bardiche or a gisarme. To answer that it is necessary to mention what the discussion around these two terms has been in scholarship this far. First of all it is important to list some of the variations of the weapons' names as they appear in modern literature. Gisarme has a French root but often other variations of the word are used such as *guisarme*, *gysarme*, *jasarme* and *gesa*. The origin of the term bardiche is most likely eastern European, which is also the most used in English scholarship. Other popular spellings are the French *berdiche* and the similar German *Berdysch*. In Italian literature the weapons is referred to as *berdica*. In modern research the term Gisarme has been the subject of much debate as to whether it refers to the bill or to a long shafted axe. Most specialized works that mention the weapon considered it as one or the other and some of them included a brief discussion of the form

and origin of the weapon that justified the author's categorization. The root of the problem is the usual lack of contemporary descriptions of its technical features.

One of the earliest specialized works on staff weapons is Macoir's article on the bardiche.[582] Macoir referred to the weapon as bardiche but he also mentioned the terms *berdiche* and *bardiche Russe*, and argued that the origin of the term and perhaps the weapon itself were of eastern-European origin.[583] The term Buttin used for this weapon group is *bardiche Russe*.[584] He mentioned that it was used in continental Europe as both material and art examples can be found in several countries. The provenance attributed with the term *Russe* is based on the assumption that the weapon originated in Eastern Europe and specifically Russia. Additionally, Buttin identified the *guisarme* as the French term for the bill, and particularly for the standard bill. Blair suggested that the gisarme is a long, crescent-shaped axe, or at least that this was the case with the use of the term in England.[585] Borg's specialized article on this weapon is thought provoking and sheds most light to the identification of this weapon by discussing literature from the fourteenth and fifteenth century and surviving iconography.[586] He refers to the weapon discussed here as a gisarme. In contrast to most scholarship examples that identify the term gisarme as a one of the forms of the bill, Borg successfully proved that early on the term relates more to an axe-like weapon and by the fifteenth century to the weapon referred to here as the bardiche. Caldwell's analysis of Scottish axes and staff weapons also provided a detailed analysis of both the gisarme and the bardiche and the overlap of forms and terminology, which is

[582] Macoir, 'La Bardiche'.
[583] Macoir, pp. 303-18.
[584] Buttin, *Catalogue*, p. 136.
[585] Blair, *European and American Arms*, p. 24.
[586] Alan Borg, 'Gisarmes and Great Axes', *Journal of the Arms and Armour Society*, 8 (1976), 337-42.

useful even outside the geographical limits of his research.[587] He agreed with Blair and Borg that the gisarme is an axe-shaped weapon but he connected it to long-shafted axes in general and not specifically to the weapon discussed here, to which he refers as a bardiche. Snook used the terms bardiche or *berdysh* and mentioned that it was a weapon of Russian infantry. Seitz did not discuss the term bardiche at all and simply used *guisarme* to describe the standard bill.[588] Stone on the other hand described it as a bill with a long upward-facing spike on the back.[589] However, he identified the weapons discussed here as *berdiches*. [590] Ash referred to this weapon as the Bohemin-Austrian bardiche, and specifically to the variation where the top of the blade narrows to form a vertical spike.[591] Troso simply used the term bardiche and noted that differentiation between some examples of this weapon and some types of what he refers to as great-axe is the way the lower part of the blade touches the shaft or becomes a thin eye.[592] Oakeshott mentions the debatable identification of the gisarme and the fact that the term is often attached to the bill but he categorizes it as derivative of the axe and not the billhook.[593] He also mentions the bardiche as a long axe that was in use from the first quarter of the sixteenth century, and he insightfully highlights its features by comparing it to the proto-halberd and the standard halberd but he did not comment upon the relationship between the gisarme and the bardiche.[594] This is peculiar considering he identified the gisarme as a crescent-shaped two socketed axe, which is nearly identical to the description and design he provided for the bardiche. However, Oakeshott did mention briefly the problem of terminology of the gisarme and that

[587] Caldwell, pp. 276-90.
[588] Seitz, I, p. 232.
[589] Stone, p. 255.
[590] Stone, p. 111.
[591] Ash, p. 102.
[592] Troso, p. 32.
[593] Oakeshott, *European Weapons and Armour*, p. 53.
[594] Oakeshott, *European Weapons and Armour*, p. 49.

it is sometimes used as a term for the bill. Viollet-le-Duc categorized this weapon in the wider axe group and used the term *hache*.[595] Specifically he mentioned that this type of axe has a striking similarity to the *fauchart*, the term he uses for the glaive. It is not an unjustified observation considering that examples of the bardiche with a long and slightly convex form can easily be compared to the blade of the simple glaive that roughly has the same shape. Of course this is not enough to claim a relationship between the two as their structure is very different. He briefly mentioned certain versions of the weapon that have the addition of a vertical spike on the top of the shaft or a horizontal spike on the back of the top eye, and he used for them the term *godendac*.[596] This is something that can be immediately disputed because *godendac* or *Goedendag* was a weapon for striking with a very limited geographical use and definitely an axe-like weapon.[597] Finally, Waldman did something unusual and used both the gisarme and the bardiche to describe the weapon discussed here.[598] However, in his own work he divided the two weapon groups, considering the gisarme the western-European and bardiche the eastern-European weapon. According to Waldman the main technical difference is the small concave indentation in the case of the latter. The weapon examples he discussed are phenomenal but his analysis of weapon groups and his justification for his division was poor.

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595 Viollet-le-Duc, VI, pp. 11-13.
596 Viollet-le-Duc, V, pp. 475-77.
597 The problem of identifying what the *goedendag* was is the subject of several brief studies. It was certainly a weapon used in the Low Countries from the fourteenth century and its function was primarily striking and maybe thrusting. It is unclear whether it was a single handed weapon or a short staff weapon. It most likely derived from a tool. For more details on the origin, form and use of the goedendag see Robert Coltman Clephan, 'Notes on the Goedendag', *Proceedings of the Society of Antiquaries of Newcastle-upon-Tyne*, 9 (1899), 40-3, John Hewitt, 'Contributions Towards the History of Mediæval Weapons and Military Appliances in Europe: The Goedendag, A Foot-Soldier's Weapon of the Thirteenth and Fourteenth Centuries', *Archaeological Journal*, 19 (1862), 314-8, Lech Marek and Daniel Wojtucki, 'The Goedendag, a Fourteenth-Century Weapon of the Flemish Infantry in Silesia', *Fasciculi Archaeologiae Historiae*, 20 (2007), 83-90, and Herman van Duyse, *Le Goedendag, arme flamande: Sa légende et son histoire* (Ghent: J. Vuylsteke Libraire, 1896.
598 Waldman, pp. 165-76

It is clear that the two terms have been used occasionally to define either completely different weapons or similar weapons. However, the bardiche as a term is usually limited in scholarship to the axe shaped weapon discussed here, in contrast to the gisarme that appears to be changing meanings as to what weapon to define especially between English and French research and even within them. Therefore, it is safer to stay with the use of the bardiche as the term to define this weapon group, because regardless not being descriptive it is a distinctive technical term. Additionally, as it has been demonstrated throughout this chapter, because of the overlap and confusion created with the term gisarme and its variations, it is important to mention how it has been used previously, but is safer not to use it to label any weapon categories.

11.3. Representation, Variations and Conclusions

The bardiche does not appear to be as popular a staff weapon in the fifteenth and early sixteenth century as others such as the halberd or the bill, which is not only reflected by the scarce iconographic examples but also by the relatively few surviving weapons, at least in central and western Europe. Even the artistic and material representation of the weapon is asymmetrical. Depictions of weapons that could be identified as bardiches survive all the way back from the first quarter of the fifteenth century, but the majority of material examples are dated to the beginning of the sixteenth century. A speculation behind this gap is that as a weapon a bardiche is effectively a large axe, which sometimes had a limited thrusting component, and is an object of complicated construct because of the lower eye and shape of blade, which perhaps was not easy to manufacture especially considering the rather simple use of the weapon. Additionally, earlier

examples than those that survived might have been too plain to preserve compared to their sixteenth-and seventeenth-century counterparts.

Two iconographic examples will be specifically mentioned because they depict early forms of the weapon that are sometimes omitted in scholarship. One of the earliest detailed depictions of the bardiche is dated to the first quarter of the fifteenth century.[599] There is one wide top eye, the blade of the weapon is thick and the lower part is not crescent-shaped. Instead, the lower part of the weapon extends towards the shaft and creates a thin eye. A second iconographical example shows two different variations of the bardiche close to each other and is dated to the second quarter of the fifteenth century.[600] The bardiche on the right is crescent-shaped and the lower end of the blade forms an unusual second eye by wrapping around the shaft. The same happens with the lower eye of the bardiche on the left but the rest of its structure is unusual as well. The blade is straight and the flat and the middle of the back of the blade extend to create two eyes of a total of three. The depictions of the bardiches in these two frescos are two of the earliest examples of large axes that have their lower end join directly to the shaft forming a small eye. This is also the difference with the proto-halberd from the same period, which is also an axe-like weapon but its lower eye is an extra metal strip welded to the back of the blade.

Stone's examples of bardiches displayed side by side from the fourteenth to the seventeenth century allow a useful comparison of the small differences in some variations of the weapon.[601] The leftmost weapon according to the author is from the late fourteenth or early fifteenth century. Its blade looks a lot like a proto-

[599] Giacomo Jaquerio, *Thamarys*, Castle of Manta, Cuneo. **Figure 271.**
[600] Giacomo Jaquerio, *The Road to Calvary*, Church of St Anthony of Ranverso, Turin. **Figure 272.**
[601] Stone, p. 110. **Figure 273.**

halberd but it only has a single narrow eye in the middle of the back of the blade and the thin characteristic connecting eye of the bardiche on the bottom of the back. The straight spike on the top of the blade can be interpreted as an earlier focus to thrusting compared to later examples that never appear to retain this completely straight element. In fact if it was not for the lower eye so unique of this weapon group it could be argued that this is not even a bardiche, but the binding of the weapon's head to the shaft indicates an earlier form. The second example presented by Stone has a larger curved blade and is dated to the late fifteenth century. What is interesting about this weapon is that the bottom of the blade becomes flat where it meets the shaft and then is elongated downwards to be secured with two nails on the shaft. The third and fourth examples are closer to the most commonly surviving bardiches with the punched dotted design along the back of the blade and the concave at the top of the back of the blade. The latter forms a spike that is aligned vertically with the shaft and could be potentially used for thrusting. Two examples of bardiches that have some interesting technical variations are dated between the second quarter of the sixteenth and the seventeenth century. The first has a crescent-shaped blade, a small top eye, and the bottom of its blade goes close to the shaft to create a vertical elongation and is nailed in place.[602] Five centrimetres above the lower eye a nail is put through the shaft and pinned on the blade creating a second low eye. The second bardiche has a wide, full and slightly convex blade.[603] The top of the blade is made into a quadrangular short spike. The back side of the blade is nearly flat and nearly touches the shaft. The bottom goes further in and makes contact with the shaft and a downwads elongation of the lower part of the blade is nailed in place. The

[602] Leeds, Royal Armouries, VII.868, Bardiche. **Figure 274.**
[603] Leeds, Royal Armouries, VII.867, Bardiche. **Figure 275.**

variety and different forms of the bardiche was a matter that was addressed by Macoir.[604]

Dating the bardiche based on iconographical evidence has an added difficulty compared to other staff weapons. This weapon is essentially a large axe and it is easy to find earlier examples that look somewhat like it. However, the technical features of the bardiche are specific, such as the lower eye and the thin projection of the blade that comes back and down towards the shaft, and hard to imprint on an illustration. The weapon is so underrepresented in art before the late sixteenth century that is impossible to construct anything other than a generic timeframe before that. It was definitely used from the beginning of the sixteenth century, and the fragmental depictions from the fifteenth century suggest that might have been in use since the early fifteenth century. Therefore, it is likely that the weapon was used throughout the examined period but it was not well-known. Besides reasons previously explained such the simplicity of the weapon the lack of evidence of the weapon might be connected to its more limited geographical use. If indeed was a weapon used in Russia, maybe Scandinavia as well as Scotland, the artistic production of the central Europe was not significantly affected during the examined period. Even if that is the case and the bardiche originated and was popular outside the geographic boundaries set for this research it is important to discuss it, first because of its association with the term gisarme and second because its name often comes up in staff weapon studies. Borg addressed very accurately the problem of origin for this weapon group and he suggested there is no reason to believe that the material examples examined, that according to their collection entries are eastern-European, are not actually from central Europe.[605] The

[604] Macoir, pp. 319-35.
[605] Borg, p. 339.

bardiche and its simultaneous presence and absence from art and material culture make it one of the most interesting and enigmatic staff weapons.

Chapter XII: The Axe-Hammer Group

12.1. Introduction

The weapons of this group are often referred to by specialists and non-specialists alike as pollaxes.[606] The weapon was popular in central Europe already from the beginning of the fifteenth century and remained in use for at least hundred more years. In contrast to other staff weapons that have often been considered a low quality infantry piece of equipment, the pollaxe is often considered to be the staff weapon of the nobility and the knight, which is not entirely true.[607] Weapons of this group certainly did not have the wide infantry use that is suggested by iconography such as other staff weapons like the halberd and the bill, but it was not only used by a military elite. Part of this belief is created by the fact that weapons of this group were depicted used in foot-combat tournaments. This sub-chapter will not delve as much in depth in the martial context of the weapon as much as in the variety of forms and their timeframe, as well as the terminology associated with them.

A common misunderstanding is that the term pollaxe derives from the word pole-axe. However, the original term originates not from pole but from poll, which is the top of the head from where the hair grows.[608] This name encapsulates the structure of the weapon with different offensive features growing around the top of the shaft. The problem is that as a term the pollaxe is excluding many weapons that have been categorized as such repeatedly in scholarship or

[606] This includes the variations of the word that are also used similarly in scholarship: poleaxe, pole-arm, poll-axe, polax or simply axe.
[607] Jacob Deacon, 'The Pollaxe: c.1350-1500' (unpublished master's thesis, University of Cardiff, 2016), p. 3. Through the examination of iconography and literature Deacon argued and disproved this popular belief.
[608] "poll, n.1". OED Online. March 2017. Oxford University Press. http://0-www.oed.com.wam.leeds.ac.uk/view/Entry/146918 [accessed May 16, 2017].

collections because they do not have an axe element. Additionally, the role of the hammer, which is more common as an element than the axe, is diminished by this term. Weapons of this group are composed of two or three different features taken from a bigger list which includes: an axe blade, a long hammer-head, an angled or curved horizontal spike called a beak, a coronel-shaped hammer (a hammer that ends in three or four prongs) and a vertical spike of various sizes. Unlike most other staff-weapon groups there is no socket in any of the weapons sub-groups discussed here. The head is comprised of different structural parts that when they are put together hold everything in place. The elements on the back and the front of the weapon's head are joined in a single horizontal piece. The vertical is attached to a single piece of metal with a rectangular top which extends downwards forming langets. Depending on the weapon example one or the other part is first fitted on the shaft and then the other is placed on top of it. Finally, rivets or nails secure the langets on the shaft, and larger rivets, with heads that usually have the form of short quadrangular spikes, are screwed perpendicularly to the weapon's head to secure the two main parts into place. Langets appear to be an integral part of all the weapons of this wider group. A rare and useful depiction of the different parts of the axe-hammer disassembled is included in a fight-book from the third quarter of the fifteenth century.[609]

The different denominations attached to this group developed because of the variety of combinations that the aforementioned offensive features can produce. I firmly believe that as a group the corpus of these weapons should be referred to as axe-hammers to include all different variations. The division I am suggesting into sub-groups is provisional both to acknowledge well-established divisions and terminology, but mainly to be able to refer to more specific forms of

[609] Copenhagen, Det Kongelige Bibliotek, MS Thott.290.2º, fol. 110r. **Figure 276.**

the weapon.[610] The dating of sub-groups will be made separately in order to determine the wider specific timeframe of each variation. The collective date will show the overlap and the overall timeframe of use of the whole axe-hammer group within the examined period. Finally, it is important to highlight that as a group the weapons discussed here are disproportionally unpopular in scholarship compared to their representation in art, and surviving material culture, especially compared to other staff-weapon groups such as the halberd, the bill or even the bardiche, that have received shorter or lengthier specialized study. The only lengthy works on the subject are Anglo's studies that examine the wider group and refer to all weapons in it as 'axes' in the context of European martial arts, and more recently the aforementioned dissertation by Deacon.[611]

For previously discussed staff-weapon groups it was easy to determine the front and back of the weapon because of the sized and placement of the main feature. Axe-hammers present the problem that all features develop alike around the top of the shaft. For research purposes the side with the beak will always be referred to as the back, because the offensive feature on the other side is usually the identifying element for each sub-group.

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[610] The division here is influenced by Waldman's approach that also used a definition for the wider group and then specialized terms to refer to his sub-groups. Waldman, pp. 151-64.

[611] Sydney Anglo, 'Le Jeu de la Hache: A Fifteenth-Century Treatise on the Technique of Chivalric Axe Combat', *Archaeologia*, 109 (1991), 113-28; Sydney Anglo, *The Martial Arts of Renaissance Europe* (New Haven: Yale University Press, 2000), pp. 152-59. In both of these works Anglo included a specific terminology in French that he attached to different parts of the axe-hammer based on his translation of the *Jeu de la Hache*. According to this the vertical spike is called *dague*, the axe is *taillant*, the hammer is *mail* and the total of the prongs *croix*, the beak is *bec du faucon*, the perpendicular rivets are called *croisse*, and the langets are called *languets*.

12.2. The Pollaxe

The axe-blade on the front part of the head is the key feature for weapons of this sub-group. The shape of the blade is usually straight or slightly convex. A hammer sometimes can be found on the back of the weapon's head. The form of the hammer-head varies from a flat or ribbed large surface to a small ball with a flat end. Sometimes in the case of flat hammer surfaces a small triangular or quadrangular spike grows from the middle. In most cases a vertical spike rises on top of the axis of the shaft. Its shape is either quadrangular or like a blade with a diamond-shaped cross-cut. The pollaxe just like the rest of the weapons of the group was a hybrid used for cutting, striking, thrusting and pulling. Judging by the iconography and the number of surviving objects the pollaxe was certainly one of the most popular weapon groups and sub-groups examined here.

Viollet-le-Duc included this weapon in his wider *hache* group.[612] Regardless the fact he uses the term for a variety of weapons and staff weapons, he mentioned and included sketches of two variations of the pollaxe with two distinct hammerheads on the back of the weapon's head. A variation of the word that is often used by arms and armour scholars is pole-axe. Oakeshott uses it to describe the wider weapon category of axe-hammers even though he acknowledged that the term pollaxe derived from poll and not pole.[613] DeVries and Smith suggested that the pollaxe derived from the halberd in the early fifteenth century as the knightly and refined version of the latter.[614] They based this theory on the visual similarities between the two weapons and the potential similar function because of their features. It is a possible theory, but the development of the pollaxe and the halberd

[612] Viollet-le-Duc, VI, pp. 16-9.
[613] Oakeshott, *European Weapons and Armour*, p. 50.
[614] DeVries and Smith, pp. 30-32.

seems to have happened in parallel to each other, in both cases from previously used long shafted axes. Additionally, the majority of pollaxes as well as other weapons in the wider group have an element used for striking, which is something that does not appear in any type of halberd. Troso referred to this weapon as the infantry-man's axe.[615] It is worth mentioning that the wider group is one of the least researched by Troso, who only mentions all subgroups in passing. Rimer used the term poleaxe to describe this specific sub-group but did not consider the other variations.[616] More recently Deacon used the term pollaxe to describe the whole axe-hammer group.[617] He recognized the need for all the different types to be grouped together under a wider label and he chose the pollaxe as the most recognized term. Of course as already discussed this excludes terminologically the hammer element.

The illustrations of pollaxes from the fifteenth century vary in quality and most times it is hard to discern their precise technical features. Iconographical examples survive from the first quarter of the fifteenth century but it is only from the second quarter onwards that the different parts of the weapon are depicted in detail. A miniature from the second quarter of the fifteenth century shows the technical features of a pollaxe in great detail.[618] The weapon has a long convex axe, a spike and a ribbed hammerhead. A pollaxe from the third quarter of the fifteenth century has a straight axe-blade, an oval-shaped spike and a triangular beak.[619] The top and bottom of the axe has a subtle concave pattern that resembles the mordaxt, which is a form of the pollaxe that will be discussed later.

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615 Troso, p. 42.
616 Graeme Rimer, 'Weapons', in *Blood Red Roses: The Archaeology of a Mass Grave from the Battle of Towton AD 1461*, ed. by Veronica Fiorato, Anthea Boylston and Christopher Knüsel (Oxford: Oxbow Books, 2007), pp. 119-29 (pp. 126-26).
617 Deacon, pp. 13-44.
618 London, British Library, MS 2278, fol. 63r. **Figure 277.**
619 London, British Library, MS. ADD 37421, fol. 1. **Figure 286.**

It is possible that pollaxes were in use from even earlier but the earliest surviving example is dated to the beginning of the second quarter of the fifteenth century.[620] In contrast to later examples all of its features are welded together on the top of the head. It has an axe, a coronel-shaped hammer and a vertical spike. A weapon from the end of the second quarter of the fifteenth century has a slightly convex blade with a cut-out decorative pattern.[621] The hammerhead on the back is flat and from its middle a polyhedral spike grows and is angled downwards. Instead of a spike a small leaf-shaped blade grows from the top. From the third quarter of the fifteenth century the decoration of pollaxes becomes more complicated with the addition of inlayed brass elements or with small carved designs near the joints of the different metal parts. A weapon from that period has a straight axe-blade on the front and a ribbed hammerhead on the back.[622] The spike at the top is cylindrical. Brass strips are inlayed on the base of the axe and the hammer. A similar weapon from the same period also has a straight axe and a ribbed hammerhead, and its spike is cylindrical at its base and quadrangular towards the top.[623] The body of the axe is decorated with a cut-out design and inlayed brass strips. The head has been refitted to a new shaft as it is easily observed from the cut langets. What is particularly interesting is that instead of the perpendicular rivets that secured the pieces of the head together this is was done instead by long metal strips with carved designs that were fitted aligned on top of the langets. A pollaxe from the beginning of the last quarter of the fifteenth century has a convex axe blade and a ribbed hammerhead.[624] On the top the spike is triangular like the tip of a spear with a diamond-shaped cross-section. The body of the blade, of the

[620] London, The Wallace Collection, A925, Pollaxe. **Figure 278.**
[621] New York, The Metropolitan Museum of Art, 14.25.302, Pollaxe. **Figure 279.**
[622] London, The Wallace Collection, A926, Pollaxe. **Figure 280.**
[623] Leeds, Royal Armouries, VII.1670, Pollaxe. **Figure 281.**
[624] New York, The Metropolitan Museum of Art, 14.25.340, Pollaxe. **Figure 282.**

hammer and the base of the spike are decorated with carved designs and then gilded. Another material example from the same quarter has a much plainer form and no decorations.[625] The blade of the axe is straight and thin and the hammerhead is ribbed. The spike on the top is quadrangular. A weapon from the end of the fifteenth or the beginning of the sixteenth century has a lot of additional decoration in the form of brass carved strips that are placed between the langets and small brass panels placed at the bottom of the spike.[626] Finally, a pollaxe from the second quarter of the sixteenth century has a convex blade and a ribbed hammerhead.[627] The spike on the top is quadrangular and grows from a wide pyramid-shaped base. The top and bottom of the blade a small wave pattern created by concaves which makes the axe-head similar to those of the mordaxt form. This is not peculiar considering that the separation is artificial and the latter can be considered to be a part of the pollaxe sub-group.

The mordaxt is a variant form of the pollaxe that emerged in the last quarter of the fifteenth century. This weapon has a convex blade, a beak on the back, and a short vertical blade on the top instead of a spike. The upper and lower parts of the blade that go back towards the shaft usually have a distinctive wave pattern created by multiple concaves. It is very likely that the mordaxt was the late-fifteenth or early-sixteenth century version or evolution of the pollaxe, after the latter was declining, or a late parallel development particularly in Germany. It could also be included as a subcategory of the halberd but the categorization within the axe hammer group and the division from the halberd is primarily based on fight-books that transcribed techniques for the use both of the standard halberd as well as for the axe-hammers and treated them as similar weapons. Most importantly the

[625] Philadelphia, Philadelphia Museum of Art, 1977-167-468, Pollaxe. **Figure 283.**
[626] Leeds, Royal Armouries, VII.1542, Pollaxe. **Figure 284.**
[627] London, The Wallace Collection, A927, Pollaxe. **Figure 285.**

blade of the axe is more curved than any of the standard halberd forms. The use and association of the term mordaxt with this group is artificial and abuses the original term *Mordagst* as found in fight books of the late fifteenth century such as the one produced by weapon-master Peter Falkner.[628] It is unclear if the term refers to the weapon of the described form or to a bec-de-corbin that is also depicted. The choice of the term was based on Waldman's use of the same term to describe this specific object, and therefore does not create further new terminology and become part of the problem.[629] One of the earliest depictions of the weapon is a woodcut from the third quarter of the fifteenth century that was mentioned by Waldman as an example of the overall design of the weapon.[630] Two mordaxts can also be seen in a woodcut from the end of the same quarter but they lack the wave pattern on the upper and lower part of the blade.[631] Falkner's fight-book is the source for the most detailed depictions of the weapon.[632] A surviving mordaxt from the end of the fifteenth of the beginning of the sixteenth century has a convex axe with the wave pattern on the top and bottom.[633] Decorative holes are punched on the body of the axe. The beak is triangular and has elliptic surfaces. The spike has the shape of an elongated diamond. On the top of the langets extra metal strips are added that have been carved with elaborate designs. Depictions of weapons that have great similarity both to previous examples as well as to the surviving example mentioned can be found in a fight-book from the second quarter of the sixteenth century.[634]

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[628] Vienna, Kunsthistorisches Museum, MS KK5012, fols 62r-65r.
[629] Waldman, pp. 156-57.
[630] Waldman, p. 158.
[631] MS Inc.0.A.7.2[888], fol. 30^{v}.
[632] MS KK5012, fol. 63^{r}. **Figure 287.**
[633] Leeds, Royal Armouries, VII.876, Mordaxt. **Figure 288.**
[634] Munich, Bayerische Staatsbibliothek, Cod.icon. 393, fol. 185^{r}. **Figure 289.**

The examination of the different forms of the pollaxe reveals that it was a versatile weapon with many variations. The weapon was used throughout the examined period. The form of the weapon developed slowly with small changes happening every time. From the third quarter of the fifteenth century the axe became smaller, which had as a result a form with a thin sharpened blade with a smaller central part of the axe behind it. It is clear that after the middle of the fifteenth century the weapon was often decorated. It is interesting that this type of decoration like the carving and gilding does not appear until nearly a century later for most of the other staff weapon categories. It is possible that this happened because the pollaxe was already in decline and was marginalized to a competition or duel weapon. Anglo argued about the efficiency of the pollaxe compared to other staff weapons and mentioned that it might have been versatile but not as effective against armoured targets.[635] The iconography of the pollaxe reinforces the belief that it was a knightly weapon. However, this should be viewed with caution because its limited depiction of use by masses of soldiers in the same manner that other weapons have might be interpreted as an additional criticism for its effectiveness and decline. Besides the remarks on the decoration of the weapon, the rest applies for all other sub-groups of the wider axe-hammer group.

12.3. The Bec-de-Corbin

The *bec-de-corbin* is a hybrid weapon, used for striking, thrusting and pulling. It has a similar structure to the pollaxe but instead of an axe it always features a hammerhead. The tip of the hammer is coronel-shaped with three or four prongs or flat, and is always narrow in contrast to the tall and wide hammerhead found in

[635] Sydney Anglo, 'Le Jeu de la Hache', p. 115.

the pollaxe group. The weapon also has a beak on the back of the head and a short spike on the top. The base of the hammer sometimes has deep and simple decorative carvings.

Viollet-le-Duc categorized this weapon in the wider *marteau* group, but in contrast to other weapons with a hammer element he specified that this is of the *bec du faucon* type.[636] This weapon according to Stone is a type of hammer that has a long point as a crow's beak as its French name suggests.[637] Stone's remark is brief but interesting because the weapon clearly has the spike on the back and the vertical spike on the top that is often found on weapons categorized as pollaxes. However, he acknowledges that the lack of an axe blade cannot group this weapon under that label. Troso referred to this weapon simply as *martello da fante*, which translates as infantry hammer.[638] Oakeshott called this weapon a 'long hafted war-hammer' but also provided the terms *bec-du-faucon*, *bec de corbin*, *martel* and *marteau*.[639] Waldman simply used the term *bec-de-corbin*. The choice of the latter term as the label for this subgroup was not as much made based on Waldman but rather to avoid an overlapping term. Bec-du-faucon was avoided as a term because it has been often used by museums and writers such as Anglo to describe the beak.

A simpler version of the bec-de-corbin has a plain head with the hammer being flat and the spike has the form of unsharpened downwards angled beak. The head appears to be in one piece resembling the construction of the hammer as a tool, where the head simply slides down the handle. Illustrations of this weapon are found in art already from the second quarter of the fourteenth century and with some sporadic use in art throughout the first three quarters of the fifteenth

636 Viollet-le-Duc, VI, p. 187.
637 Stone, p. 109.
638 Troso, p. 29.
639 Oakeshott, *European Weapons and Armour*, pp. 50-51.

century. Viollet-le-Duc categorized this weapon as a Marteau, but he also used the specific term *maillotins*.[640] In contrast to most of the depictions of this simpler weapon, Viollet-le-Duc's explanation for the assembly of this weapon was similar to that found in surviving pollaxes where the head is made of three pieces one falling into place after another and finally locked together with a pin. Unfortunately, there are no surviving examples of this weapon to prove him right or wrong. It is possible that the weapon followed the construction of a simple hammer and the depictions are reflecting that, but it is equally possible that more limited iconographic mediums could not transfer the information for the intricate parts that made this weapon.

Some of the earliest and more detailed depictions of the bec-de-corbin of the fifteenth century are dated to the beginning of the first quarter and can be found in a fighting treatise.[641] The hammerheads of the weapons illustrated appear to have three prongs. The beak is designed as the projection of the hammer. The bec-de-corbin depicted in a fresco from the same period shows the hammerhead in great detail having multiple sides that end in prongs.[642] Several examples of this weapon are found in a fight-book from the beginning of the third quarter of the fifteenth century.[643] The examples depicted in a manuscript from the fourth quarter of the fifteenth century have a completely flat hammerhead that appears to be aligned with the beak. Such weapons were common in fourteenth-century iconography but the fact they are portrayed in a specialized fighting treatise shows that the flat hammerhead was a feature that most likely existed as a feature of this

640 Viollet-le-Duc, VI, p. 180.
641 Los Angeles, J. Paul Getty Museum, MS Ludwig XV 13, fol. 36^{v}. **Figure 290.**
642 Giacomo Jaquerio, *Godfrey of Bouillon*, Castle of Manta, Cuneo. **Figure 291.**
643 MS Thott.290.2º, fol. 135^{r}. **Figure 292.**

sub-group.[644] A detailed depiction of the bec-de-corbin from the end of the last quarter of the fifteenth century is included in the Beauchamp pageant where an armoured knight uses it in a foot combat tournament against an opponent with an ahlspiess.[645] The vertical spike is short, the front part of the head has a three point coronel tip, and the fluke has the typical triangular shape found in weapons of this type. There is also a hand guard and a spike at the lower end. A bec-de-corbin in a woodcut from the first quarter of the sixteenth century has a beak and spike of equal size and a hammer with a flat triangular tip.[646] A painting from the beginning of the second quarter of the sixteenth century shows two bec-de-corbins used in the Battle of Pavia amongst other weapons, primarily standard halberds.[647]

Just as in the case of the pollaxe one of the earliest surviving examples of the bec-de-corbin is dated to the second quarter of the fifteenth century.[648] The offensive elements of the weapon are small. The coronel-shaped hammer has four prongs. The beak and the spike are quadrangular. There is a plain decorative carved pattern on the edges of the metal that covers the top of the head. Nails with wide heads are placed between the langets. A bec-de-corbin from the third quarter of the fifteenth century also has small similar feature and a plain design.[649] The hammer and the beak are designed as projections of each other and the spike on the top is missing. An example from the first quarter of the sixteenth century has a much smaller hammer and beak.[650] The coronel-shaped hammer has three prongs that at their base have small decorative carved lines. The beak is completely horizontal and larger than the vertical quadrangular spike. The head of a similar

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644 Rome, Biblioteca Nazionale Centrale di Roma, MS Vitt.Em.1324, fol. 25r. **Figure 293.**
645 *The Beauchamp Pageant*, p. 78. **Figure 294.**
646 Hans Baldung Grien, *The Martyrdom of St Lawrence*, The Metropolitan Museum of Art, New York. **Figure 295.**
647 Unknown French or Flemish artist, *The Battle of Pavia*, Royal Armouries, Leeds. **Figure 296.**
648 Worcester, Worcester Art Museum, 1014.165, Bec-de-corbin. **Figure 297.**
649 Leeds, Royal Armouries, VII.1578, Bec-de-corbin. **Figure 298.**
650 Leeds, Royal Armouries, VII.881, Bec-de-corbin. **Figure 299.**

weapon from the same period has the same basic form and decorations but the surfaces of the spike and the beak are concave which makes the edges looks like spines.[651] This design trick can also be found on a bec-de-corbin also from the same period but manufactured with a much greater level of craftsmanship.[652] The coronel-shaped hammer has three thin prongs and the tip of each one of them is jagged resembling even smaller coronel tips.

The use of the bec-de-corbin appears to be in parallel with the pollaxe. It was used from the beginning of the fifteenth century and was definitely in use by the end of the second quarter of the sixteenth century. It is likely that it was replaced slowly with weapons such as the Lucerne hammer that had their main function shifted to thrusting. Examining the form of surviving weapons it is interesting that the form changed in about a century from having short and thick offensive technical features to thinner and longer elements.

12.4. The Lucerne Hammer

Weapons of this sub-group have the same technical characteristics as the bec-de-corbin: a narrow hammerhead with a coronel-shaped tip, a beak and a spike. The identifying difference is the length of the spike, which in the case of the Lucerne hammer is much longer and always quadrangular. The three offensive elements of the bec-de-corbin roughly create a triangular projection with equal sides. However, the same projection of the Lucerne hammer creates an isosceles triangle with the two sides being much longer than the base. It could be argued that this should be categorized simply as a form of the bec-de-corbin. The difference is that the

[651] Leeds, Royal Armouries, VII.883, Bec-de-corbin. **Figure 300.**
[652] Leeds, Royal Armouries, VII.4106, Bec-de-corbin. **Figure 301.**

function of the Lucerne hammer shifted from being a hybrid that could equally strike, thrust and pull to being predominantly a thrusting weapon.

Dean identified this weapon as a variety of the pollaxe from the fifteenth century that is discernible because of its coronel shaped head on one end and the long spike on the top.[653] Stone also adopted Dean's view on the matter, even though as briefly discussed earlier, the lack of an axe element made him group the bec-de-corbin outside the pollaxe group.[654] Oakeshott briefly discussed the geographic origin of this weapon and that it is primarily a hammer without an axe element yet he still categorized it simply as a pole-axe following Dean's example.[655] Troso grouped this weapon as a variation of the bec-de-corbin called a Lucerne hammer and being identified by the long quadrangular spike.[656]

The surviving examples of this weapon group present only a small level of variation. One of the earliest surviving examples is dated between the end of the fifteenth and the early sixteenth century.[657] The spike is tall and quadrangular. At its base it has a stamp of the letter L. The hammer has four prongs and is decorated with deep carvings. The beak is triangular. An example dated to the first or beginning of the second quarter of the sixteenth century has a similar structure but its prongs and beak are thinner and longer.[658] The spike is equally tall and quadrangular, and an asterisk mark is stamped at its base. A pair of langets on the sides of the hammer and the beak is connected to the metal piece that extends to become the spike. Two more langets are connected as completely separate pieces and nailed both to the other two sides of the head and on the shaft. A Lucerne

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653 Dean, *Catalogue,* p. 62.
654 Stone, p. 419.
655 Oakeshott, *European Weapons and Armour*, p. 50-1.
656 Troso, p. 29.
657 Philadephia, Philadelphia Museum of Art, 1977-167-466, Lucerne hammer. **Figure 302.**
658 Leeds, Royal Armouries, VII.1661, Lucerne hammer. **Figure 303.**

hammer from the end of the second quarter of the sixteenth century has the same long and quadrangular spike with markings at its base, but the hammer and beak are significantly thinner.[659] The four prongs of the coronel-shaped head of the hammer are long and thin resembling a claw.

An observation on how examples of this weapon change in a period of about fifty years shows that the hammer was certainly considered to be a secondary feature. Examples such as the last surviving weapon exist from the rest of the sixteenth century, which shows that striking had become nearly insignificant. The thin prongs could hardly cause any damage to a target and some of them are so thin that it is likely they would get distorted, which makes the use of the weapon questionable even in tournaments. The focus on the quadrangular spike definitely shows a shift of use towards thrusting. It is also worth considering that any downward swings of the weapon with either the hammer or the beak could be disrupted by the spike, which supports the previous statement.

12.5. Conclusions

The depiction of weapons from this group appears to be popular in fifteenth century manuscript miniatures. This is remarkable because it provides proof that the general weapon group was in use or at least popular during this period. However, the size of the illustration is often so small that the offensive technical features are not clearly discernible and therefore it is extremely hard to place the weapon in a certain subgroup. It is also important to mention that most depictions of this group from the fifteenth century are from fight-books. In most cases the

[659] Leeds, Royal Armouries, VII.1407, Lucerne hammer. **Figure. 304.**

drills for staff weapons are only shown with the use of an axe-hammer. Considering that this was arguably a form of didactic literature and that usually the users are performing combat drills with them, this might have occurred because they were thought to be less hazardous than other staff weapons. However, they might have also been chosen because they were versatile weapons able to perform different actions. With a few exceptions they disappear from fight-books in the first half of the sixteenth century, but at the same time their depictions in general from the same period become progressively scarcer. This coincides with the general decline of staff weapons, which appears to happen even earlier for this group. Exceptions to that are the mordaxt and the Lucerne hammer that were probably a last resurgence of the use and development of the axe-hammer. The general representation of this group in art and the rare representation of it in imagery of warfare after the second quarter of the fifteenth century is a sign of its premature decline in popularity and use. It is likely that the axe-hammers gave way to other weapons such as the halberd and the bill during this period both in warfare as well as its iconography.

The mordaxt and the Lucerne hammer form a sub-group developed later than the other variations of the axe-hammer group around the last quarter of the fifteenth century. Their form and development can be interpreted in different ways. The design and function of the mordaxt is close to that of the standard halberd. The fact that most depictions of the weapon as well as the material examples are from Germany can be mean that it developed as a variant of previous forms of the axe-hammer influenced by the standard halberd, whose production peaked during this period and was quite popular in Italy, Switzerland and Germany. It is already clear that some of the previous variations of the axe-

hammer, already had technical features used in the same manner as those of the standard halberd, but the mordaxt was the first to include all these and to present a striking visual resemblance. However, it is important to mention that the mordaxt developed during a period when one of the identifying features of the standard halberd became the long vertical spike, which reinforces the use of it for thrusting. The short vertical element, spike or blade, of the mordaxt is what separates it from the halberd group and alongside the convex blade most likely what identified it during its period. A weapon from the end of the second quarter of the sixteenth century shows precisely this direction towards the merger of the mordaxt with further elements of the halberd. The main frame of the weapon has all the usual characteristics but the blade is convex, which is the main change the standard halberd went through as well in the same period signaling the change to a decorative object.[660] On the other hand the Lucerne hammer is an obvious evolution of the bec-de-corbin subgroup. The period of its use also coincides with the previously mentioned changes in the standard halberd form, but it is also worth taking under consideration that other weapons such as the standard bill adopted a reinforced vertical spike, which signifies a general turn and increase of the importance of the thrusting function. Most variations of the axe-hammer group were in decline from before the end of the fifteenth century, nearly half a century before other staff weapon groups. The Lucerne hammer was the only variation that developed most likely as an adaptation to the changes made in other weapons.

This weapon group appears to have the most surviving examples with the original or at least contemporary shafts. This provides precious and rare information towards the material of the shaft as well as for any other extra features that have not survived on other weapon categories such as the rondel guard or

[660] Leeds, Royal Armouries, VII.2430, Mordaxt. **Figure 305.**

even a spike at the lower end of the weapon. The examples that survive with those features are extremely valuable to research, especially considering that the overall iconography of the axe-hammer's and particularly the pollaxe shows them with those extra features. Considering the number of staff weapons such as composite bills that are illustrated with rondel guards in works such as the *Weisskunig* or the *Beauchamp Pageant*, and the fact that there are no corresponding surviving examples to examine those extra features highlights the importance of the axe-hammers with those extra elements.

Chapter XIII: Other Militarized Tools

13.1. The Military Fork

Because of its simple form the military form can easily be connected to its agricultural predecessor. Scholarship hardly argues about the origin of the weapon and there is no dispute as to its name. A point of differentiation amongst authors is the variety of military fork they examined and the remarks that they made on this weapon group. Oakeshott stated that the weapon originated from the common pitchfork, and that the military version had two or three tines.[661] He also mentioned that in the fifteenth century most forks had one or two downward spikes on the middle of the head. Stone acknowledged that the military fork had significant changes in its structure than the simple agricultural tool and that often additional features were added to the original frame.[662]

As previously mentioned the military fork derived directly from the agricultural fork. What is surprising is the amount of different small variations that can be found for a weapon with such limited use and origin. The most common form has two tines that are considerably thicker than of those found on a tool and the head is attached on the shaft with a socket. Sometimes the inside of the tines and the flat tom of the socket from which the tines grow from on the side are sharpened. More complicated variations have additional features such as a hook that grows on one of both sides of the socket, perpendicular to the tines. Another variation has spikes growing on the same spot as the hooks. Base on those features the main use of the military for was definitely thrusting. However, it is possible

[661] Oakeshott, *European Weapons and Armour*, p. 53.
[662] Stone, p. 450.

that the tines were used for pushing or trapping other staff weapons. The hooks and the spikes could be respectively used for pulling and lateral hits.

13.2. The Military Scythe

Just like the military fork, the military scythe developed from the agricultural tool, but unlike the fork it did not go through major modifications. The construction of the weapon was rather simple, with the blade a scythe simply mounted vertically above a wooden shaft. The blade was secured in place either with a socket or with langets that connected the sides of the weapon onto the top of the shaft. The weapon was used for cutting with a few exceptions where the blade is straight and in which case it could potentially be used for thrusting as well. Of all the weapons discussed in this chapter it appears to be the one with the least military character because it was simply a repurposed everyday object with a minor modification to add length for combat. Because of this it is unlikely it was used by organized armies and it is most likely something that was put together quickly to arm non-professional troops. A major difference between the military form and the military scythe is that the first is often made of a much better quality of steel while the second, precisely because it uses a tool directly, is made of steel rich in iron which leads to visible darker corrosion.

Because of its simple form, also just like the military fork there is no debate in scholarship towards its name. The scythe blade is easily recognizable because of the slightly concave blade and the often reinforced opposite side of it. Stone simply refers to it as a scythe that has been adapted for fighting.[663] The scythe was

[663] Stone, p. 545.

transformed to a weapon because of the dire need of poorly resourced men to arm themselves in time of need against a cavalry.[664] Of course it is expected that in that role the military scythe was highly ineffective and most likely in the hands of men with no military experience but it was a weapon nonetheless and it could add reach in combat for its user. Ellehauge noted that the scythe is a tool with a long history and in the examined period had already been used for a long time in weaponized versions that could have several minor variations.[665]

13.3. Conclusions

Similar to the agricultural flail, the fork and the scythe have been around for hundreds of years and they were used in combat before, during and after the examined period. It is safe to assume that they were not the weapons used by organized armies because they were mostly modified tools. Exceptions of course exist as suggested by early sixteenth century iconography.[666] Dating surviving examples is problematic because both weapon groups were used until the end of the eighteenth century while their form remained unchanged. Most examples can be dated anywhere between the early sixteenth and the late eighteenth century. During the examined period it is possible that the popularity of weapons based directly on agricultural implements increased because of conflicts such as the German Peasant Wars in the middle of the first half of the sixteenth century.

[664] Puricelli-Guerra, p. 6.
[665] Ellehauge, p. 8.
[666] *Der Weisskunig*, p. 352. **Figure 306.**

Chapter XIV: Materials and Mechanics

14.1. Introduction

The aim of this chapter is to elaborate certain technical aspects of staff weapons. Generally, staff weapons are composed of a metal head fastened to a wooden shaft.[667] The study of staff weapons focuses on the head, whose varying technical characteristics are the defining features of the different categories that have been previously discussed. Besides the shape and basic function of a weapon the examination of its different parts can be approached through the different disciplines, which can provide new information and raise questions. This type of study is generally overlooked in the subject of staff weapons and only occasionally works will talk about experiments or even about more practical issues concerning this weapon group such as assembly procedures, additional technical features other than the head, and problems caused by conservation.[668] The only author who mentioned such issues recently was Waldman, who discussed different types of fastening methods, and other technical issues such as the production and material of the shaft.[669] Discussing the technical aspects of the shaft is frustrating because of the limited and distorted information, but it is a subject that needs to be addressed. Aspects of metallurgy also need to be addressed and how materials science can help extract further information from surviving weapons. The most extensive work on metallurgy and weaponry regarding roughly the examined

[667] The term metal is used in this chapter as a synonym for ferrous iron that varies in carbon concentration.
[668] This refers to historic conservation and not modern conservation conducted in museum standards. Staff weapons went through certain treatments already from the seventeenth century often as pieces stored in collections. Their shafts were lacquered and their heads were polished with abrasive and oil. Future reference to conservation in this chapter refers to historic conservation. The term polishing wherever met in this research also refers to the early process that was somewhat destructive to the head of the weapon, as opposed to modern polishing-furbishing.
[669] John Waldman, *Hafted Weapons in Medieval and Renaissance Europe: The Evolution of European Staff Weapons Between 1200 and 1650* (Leiden: Brill, 2005), pp. 86-104.

period is William's monograph on the metallurgy and production of swords.[670] His approach delved into the history of metallurgy more than into materials science, but hopefully such an approach will be followed extensively in the future for staff weapons.

14.2. Metallurgy

14.2.1. General Metallurgy and Crystallinity of Metals

To understand why a weapon made of metal exhibits certain features and properties, some background information about the metallurgy of metals is necessary. Metals on the microscale are polycrystalline solids.[671] In crystalline solids, individual atoms of the element fill periodic positions in space during solidification, creating a crystal matrix or structure.[672] The crystal matrix of a metal part is dependent on the alloy used and the processing history. Polycrystallicity means that during solidification many identical matrixes start to develop within the liquid metal independently to each other. Thus, large numbers of crystals, in contact with each other, are created. After solidification is complete these crystals are called grains. The crystal structure of the grains is important because it controls the mechanical properties of the metal.[673] The structure changes throughout the manufacturing process and use life of a metal part.

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[670] Alan Williams, *The Sword and the Crucible: A History of the Metallurgy of European Swords up to the 16th Century* (Leiden: Brill, 2012).
[671] W. D. Callister Jr., *Materials Science and Engineering*, 5th edn, Greek translation (Thessaloniki: Tziolas, 2004), pp. 59-94.
[672] H. Chandler, *Metallurgy for the Non-Metallurgist* (Materials Park: ASM International, 1998), pp. 13-47.
[673] Chandler, pp. 49-58.

The mechanical properties of a metal object are its strength and toughness.[674] Strength refers to the ability of an object to withstand mechanical loading without plastically deforming. Toughness refers to how the metal will react when it starts to deform, for example a brittle material is said to have low toughness. There is an inverse correlation between strength and toughness. A part that is strong will have low toughness and vice versa. For example glass is a very strong material that can withstand heavy loads but when the loads exceed a threshold it shatters, showing low toughness.

The crystallization process does not happen without any faults.[675] During crystallization, several defects can occur within the developing crystal structure. In point defects, it will be the omission of an atom or the addition of several atoms, lodged between the periodic positions. In line defects, whole planes of atoms are added to the matrix. These defects cause internal stresses as neighbouring atoms either want to move in the gap or are pushed from the extra atoms. Thus, some atoms are under compressive stress, while others are under tensile stress. When an object is mechanically loaded, the applied force has the potential to move these defects.[676] These defects can then accumulate at the boundaries between different grains. As more and more defects accumulate, they create voids between the grains which develop into cracks. The cracks can also form on the outside surface of an object, initiating at rough points or where chips have occurred. During further mechanical loading these cracks increase in size and can lead to part failure.

[674] Callister, pp. 156-92.
[675] Callister, pp. 103-27.
[676] Chandler, pp. 385-406.

14.2.2. Iron (Ferrous) Metallurgy and Historical Notes

Iron is relatively soft as a pure metal. Its softness can be attributed to the crystal structure of the pure metal allowing defects to freely move through the matrix. With the addition of alloying elements however, iron can become stronger and more ductile. The main elemental addition to make iron stronger is carbon. The carbon atom is smaller than the iron atom (~65pm versus ~130pm). Thus, during the solidification and crystallization of a steel part, the carbon atoms migrate into the spaces between iron atoms in the crystal structure. These interstitial atoms then present an obstacle to the movement of defects through the crystal lattice. Thus, iron with inclusions of carbon shows higher strength and toughness than pure iron itself. However, excessive amounts of carbon reduce the alloy's ductility and make it brittle. The optimum amount of carbon, for an iron-carbon alloy to be called steel is between 0.7 and 2.2% per weight. Below 0.7 % carbon the alloy was called (historically) bloom steel and above 2.2% cast iron.

The smelting of iron from ferrous ores is a difficult process due to its high melting temperature (~1500 °C). The first type of iron that was successfully smelted by ancient blacksmiths was a spongy-like alloy called bloom iron. The production of bloom iron was a laborious process with iron-bearing ore being smelted in pit kilns using charcoal. These kilns were not able to achieve the temperature necessary to melt iron but used the charcoal to reduce and melt iron oxides from the ore. The metal produced was called iron bloom. The resultant bloom was consolidated by hot forging to make it denser and more suitable for tool and weapon production. Bloom iron has low carbon content (<0.7%) and several detrimental element inclusions making it relatively soft and ductile. Thus,

its mechanical properties are worse than that of bronze.[677] Hence, the Bronze Age and the Iron Age show significant overlap in terms of metallurgy.[678]

The exchange of ideas between bronze and iron metallurgy led to the development of better furnaces able to achieve higher temperatures and in some cases full melting of iron. During this time a dichotomy in ferrous metallurgy occurred. In the Far East, furnaces able to melt iron were developed and were used to produce cast iron. In the West, the improvement of furnace technology led to the development of bloomeries able to achieve higher temperatures (lower than melting). The higher temperatures lead to the production of larger amounts of bloom iron of higher quality.[679] Another, innovation of these furnaces was the ability to heat up a bloom iron ingot close to melting temperature (1400-1450 °C) and cover it with charcoal to increase the amount of carbon in the bloom, thus producing steel.[680]

This process produced steel ingots of variable carbon content. To produce high quality steel a blacksmith would choose bars, forge weld them and mix them by forging and 'folding' the steel many times.[681] When the bars used were of highly variable carbon content after the welding operation wave like features would be present on the surface of the articles, such as in the case of the renowned Damascus steel that presents a rippled water effect on its surface. A problem of this method is that the weapon or part produced is prone to pitting corrosion. Pitting corrosion occurs when one localized area of the metal acts as an anode and

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677 G. G. Gnesin, 'Iron Age: Origin and Evolution of Ferrous Metallurgy', *Powder Metallurgy and Metal Ceramics*, 55 (2016), 114-123 (p. 116).
678 G. G. Gnesin, 'Origin and Development of Knowledge on Inorganic Materials', *Powder Metallurgy and Metal Ceramics*, 55 (2016), 241-249 (p. 246).
679 Gnesin, 'Iron Age', p. 119.
680 S. Srinivasan, 'Ultrahigh-Carbon "Wootz" from crucible Carburization of Molten Iron: Hypereutectoid Steel from "Tamil Nadu Process" at Mel-siruvalur', *Materials and Manufacturing Process*, 1 (2016), 1-7 (p. 2).
681 Gnesin, 'Iron Age', pp. 119-20.

the rest of the bulk material acts as a cathode. This results in progressive removal of material and the formation of holes or pits.[682]

Cast iron describes iron alloys that contain a large amount of carbon (>2.2%). Thus, cast iron demonstrates better strength than bloom iron but with increasing carbon content is found to be brittle. Cupola furnaces used in the production of cast iron were developed in China during the Han dynasty (206 BCE – 220 CE). Because of that, Chinese metallurgy developed around the production of cast iron articles, including weapons and tools. Cast iron technology moved to the west after the establishment of the Mongolian empire by Genghis Khan.[683] Cast iron was employed in the west to produce cannonballs starting in the fifteenth century.[684]

14.2.3. Metallurgical Interpretation of Ferrous Objects

Experimentation using surviving weapons from the examined period is not something new, it is however rare. An experiment held in 1978 focused on cutting wedges and cross-sections from the head of a standard bill from the first quarter of the sixteenth century.[685] Through that experiment the authors were able to determine that the weapon was made of a single, high carbon, billet of steel, and they were able to get measurements for the overall hardness of the metal. A similar experiment focused on the metallography of much earlier edged weapons follows

[682] Callister, pp. 716-17
[683] Gnesin, 'Iron Age', p. 118.
[684] M. Hernandez, M. Hernandez-Escampa, C. Abreu, J. Uruchurtu, M. Bethencourt and A. Covelo, 'Characterization of a Historical Cannonball from the Fortress of San Juan de Ulua Exposed to a Marine Environment', *Archaeometry*, 58 (2016), 610-23 (p. 610).
[685] J. G. O'Hara and A. R. Williams, 'The Technology of a Sixteenth Century Staff Weapon'. *Journal of the Arms and Armour Society*, 9 (1979), 198-200.

principles that could be applied in staff weapons from the examined period.[686] The experiment was conducted by removing wedges of metal from sword blades and then running a series of tests and examinations to determine the structure of the material and its hardness. Such experiments can provide potentially great insight and information on the materials used to make staff weapons and their structure, but at the same time they are by definition destructive to the object. Schneider was the first and only to approach the construction of certain staff weapons, specifically the proto-halberd and the standard halberd, from a metallurgical perspective.[687] He demonstrated how different pieces of metal were welded together during the forging process and how that can be traced through examination.[688] He also briefly discussed how the metals used and the process of manufacturing halberds improved from the fourteenth to the fifteenth century.

Here I will attempt to show how with a basic knowledge of materials science such as the aforementioned information, a close examination of objects can produce additional data. This will be demonstrated with a brief assessment of weapons from different categories mentioned in the previous chapter.[689]

The head of an ahlspiess from the second half of the fifteenth century comprises three parts: the head, the rondel and the socket.[690] The socket and the rondel show tool markings. Additionally, the socket at the base of the head seems to be composed of two flanges nailed to the wood and tapered into a cylinder close to the guard. The head section seems to have been cast and only shows some nicks

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[686] R. F. Tylecote and B. J. J. Gilmour, *The Metallography of Early Ferrous Edge Tools and Edged Weapons* (Oxford: British Archaeological Reports, 1986), pp. 1-18.
[687] Hugo Schneider, 'Zur Fabrikation der Halbarte', *Zeitschrift für schweizerische Archäeologie und Kunstgeschichte*, 19 (1959), 60-65.
[688] Schneider, 'Zur Fabrikation der Halbarte', pp. 62-63.
[689] The meanings of different details indicated by red markings on examples in the appendix are explained individually.
[690] Philadelphia, Philadelphia Museum of Art, 1977-167-462, Ahlspiess. **Figure 307.**

near the guard and along one side. The tip of the quadrangular spike shows uneven tapering suggesting sanding and polishing. The three parts seem to have been forge-welded during manufacture. The rondel shows tool markings on the point of contact with the head, which is indicated by the red box. The socket would probably have to be fitted closely on the selected staff. This configuration would also facilitate quick and easy attachment of the weapon to new poles. The fact that only the tip shows evidence of repeated polishing is only natural considering that this weapon was only used for thrusting.

The head of a standard bill weapon from the second quarter of the sixteenth century composed of two pieces: a single piece that comprises the whole head and is extended to create the socket and a small ring at the base of the socket.[691] The head has four distinct features: the vertical spike, the back spike, the beak above the blade and two small protrusions basal wing. The two spikes and the blade show signs of repeated polishing. The top spike particularly has signs of heavy corrosion and has lost its straight shape, which are results of repeated polishing, suggesting that this feature of the weapons has been used more than the others. The head appears to have been forged from a single bar of metal. It is possible to postulate that the different features were formed by drawing and forging a bar of metal. This could be further supported from the clear signs of corrosion which could be attributed to uneven mixing of the alloy of the metal which would lead to evidence of pitting corrosion as can be seen here. The red boxes mark those areas. The fastening of the weapon to the wooden shaft is achieved by friction-fitting the socket on a shaft and nailing it into place. The socket itself was created by two metal elongations of the head drawn together and welded. The ring at the bottom of the socket is most likely made from the same

[691] Leeds, Royal Armouries, VII.1582, Standard bill. **Figure 308.**

ingot because at the point of friction there is no sign of pitted corrosion, which is usually when metals with different mineral content are in contact for a long time especially in a humid environment. A strip of metal was welded into a ring at the top of the socket and then pushed downwards and stuck in place. This was more of a decorative addition because there is no indication that the two flanges of the socket could break open.

A corseke from the second quarter of the sixteenth century is composed of a single piece of metal formed into three distinct features: the blade, the wings and the socket.[692] The blade shows signs of extensive polishing and its central line has been distorted due to uneven removal of material. The socket shows some superficial tool markings which suggest that the socket was produced as a cylindroid of a higher diameter before being adjusted to accommodate the wooden staff. The weapon was probably drawn out and forged from a steel ingot that contained a mixture of alloys similar to how a sword blade would be produced. This is supported by some evidence of pitting corrosion which could be attributed to the mixing of steels with varying carbon content (see inside red boxes).

The head of a bec-de-corbin from the early sixteenth century comprises two parts: the horizontal, which includes the coronel-shaped head and the beak, and the vertical, which includes the vertical spike and the langets.[693] The horizontal element was fitted on the shaft and then the vertical element was fitted on top of it to secure it in place. The maker's mark can be seen on the spike. The tip of the spike and the beak demonstrate signs of extensive loss of material, possibly due to extensive polishing. Evidence of corrosion can be seen only on the langets. This can be explained by the difference in the metal between the langets and the nails

[692] London, The Wallace Collection, A1014, Corseke. **Figure 309.**
[693] Leeds, Royal Armouries, VII.881, Bec-du-corbin. **Figure 310.**

used to fasten it to the wooden pole. This difference in metal leads to galvanic corrosion taking place. It is notable that extensive corrosion is absent from the head of the weapon, suggesting that the two parts are made of the same alloy. This suggests that the makers of the weapon could procure high quality and consistent grades of steel.

A pollaxe from the end of the last quarter of the fifteenth century also has two main elements, but in this case the horizontal element secured the vertical element in place.[694] The weapon also has more components including a rondel and small strips of metal that support it, and long strips of brass that decorate the spaces between the langets. Small brass inlayed elements were also placed at the base of the vertical spike. The tip of the spike shows signs of plastic deformation and deflection from the central line of the weapon. Evidence of force application on the weapon can also be seen on the point of contact between the pollaxe's head and the brass support (red rectangle). Some delamination and subsequent repair can be seen. Some material loss can be observed on the top of the spike due to polishing. The absence of polishing on the axe's blade is peculiar, suggesting that it was not used offensively. However, the rest of the polished elements and the damaged langets and brass elements suggest use. Perhaps this is an indication that the weapon was used in foot-combat tournaments and not warfare. The holes on the blade were a common decorative practice, especially on pollaxes and standard halberds. This would weaken the weapon in the long-term because they could act as crack initiation sites. The corrosion markings present along all the steel faces of the weapon suggest a mixture of steel ingots. However, galvanic corrosion due to contact between the steel and the brass cannot be ruled out.

[694] Leeds, Royal Armouries, VII.1542, Pollaxe. **Figure 311.**

A mordaxt dated to the last quarter of the fifteenth or first quarter of the sixteenth century is composed of the head and several fastening pieces to secure the head on the wooden staff.[695] The head is composed of an axe, a beak on the back and a vertical spike that resembles a spear tip. The axe and beak show cutting edges, suggesting use, while the spear does not. The way those marks are faded indicates extensive polishing (red rectangle). The spike specifically shows a significant loss of material. This can be seen by the disruption of the decorative pattern at its base (red rectangle). No clear evidence of corrosion can be seen apart from in the holes of the axe head. This suggests that the weapon was drawn and forged from a single ingot of steel.

The body of the blade of a proto-halberd from the second quarter of the fifteenth century is an example of why metal examination is important even on a simple level in staff weapon studies.[696] The weapon seems to have been repeatedly polished after corrosion had set in leading to the corrosion pits being evident. Cracks and scratches can be seen. Both start at possible failure points: the edge of the weapon and the welding area where the eyes joined. The edge is where the highest loading and unloading of forces occurs. The welding area has different material properties than the rest of the weapon due to heating after initial formation. The eyes are clearly made of the same metal as the blade. It can be suggested that because the inside of the head is sharpened that the main blade was a spolio from a repurposed weapon. However, the matching eye material suggests they were made together. Most surviving proto-halberds have severe corrosion damage, which progressed faster because of the poor quality of steel used initially.

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[695] Leeds, Royal Armouries, VII.876, Mordaxt. **Figure 312.**
[696] Leeds, Royal Armouries, VII.1657, Proto-halberd, detail. **Figure 313.**

These few examples demonstrate how the examination of staff weapons from a metallurgical perspective can reveal simple but useful information about the objects. Different types of corrosion give data on the material of the weapon as well as its use. The damage and scratches caused by polishing indicate whether a weapon was used or not depending on the amount of material removed. Additionally, metallurgical details revolving around fastening procedures and elements such as the langets, the nails, the eyes and the socket can potentially raise questions about the amount of time and effort and quality of material needed to produce certain weapons. Most importantly, pitting corrosion and destruction from polishing on weapons with different offensive technical features can provide new information as to which of them were extensively used. As an area of research metallurgy is an area that has potential for future research regarding staff weapons, especially by material scientists who could look at surviving objects from a different perspective.

14.3. Interpreting the Wooden Component

One of the hardest subjects to tackle in the study of staff weapons is the wooden shaft. Ironically, it is the shaft that provides each staff weapon with the most important feature it has, its length. The information we can extract about the length, shape and material it was made of is fragmentary and not definite. The problem is caused by the conservation of staff weapons after their decline and their use as decorative and display objects. Most weapons from the examined period have replacement shafts. This could have happened either during the working lifetime of the weapon, or most likely the replacement took place later. When the staff weapons examined here became obsolete they were fitted with new long and

varnished shafts to better serve their purpose as decorative objects. So the question that remains is what information can be extracted by examining surviving shafts, considering that sometimes the originals, or at least contemporary shafts, can be detected by the material, and especially the good fitting of the head. The latter is the best indicator for the identification of an original shaft, but even that should be treated with caution because the weapon might have had the shaft changed during its working lifetime, therefore making the shaft not the original but equally useful to research. The aforementioned factors make it difficult to study the wood grain without the removing of the lacquer.[697]

The consensus of scholarship that briefly dealt with the issue of the shaft is that most of them were made of ash. Douglas Ash's article on the halberd investigated their shafts and why certain types of woods were preferred over others.[698] According to Ash the original shaft of Swiss staff weapons in the late fourteenth, fifteenth and early sixteenth centuries was almost exclusively made of ash. This was because this type of wood and its grain is light and at the same time strong enough to withstand blows. Shafts made of other types of wood such as pine or mahogany are nearly always replacements after modern restoration. Those materials were not inferior but they were seen as less rigid and heavier than the ash. Waldman also discussed the shaft of staff weapons and agreed that the ash was by far the material of choice.[699]

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[697] According to Edlin there are fourteen ways to identify different types of wood. However, the easiest way to examine the characteristics of this diagnostic process is to take a sample of the wood that is being investigated. Just like the similar experiments and the metal, such a process would destroy the shaft of the weapon and the object in general. Furthermore, during conservation many of the elements of the wood that are part of the identification would be destroyed. Herbert L. Edlin, *What Wood is That?: A Manual of Wood Identification with 40 Actual Wood Samples and 79 Illustrations in the Text* (New York: The Viking Press, 1969), pp. 43-76.
[698] Ash, p. 105.
[699] Waldman, pp. 92-95.

Because the shafts are so problematic and could be the subject of a completely separate research I will simply refer to some indicative measurements from surviving material. The average length of shafts that do not appear to have been reduced or modified in any other way is between 165 and 195 centimetres. Striking staff weapons and weapons from the axe-hammer group are excluded from this because they are significantly shorter. Their average size is between 155 and 175 centimetres. These averages represent the sample objects examined from the Royal Armouries, the Metropolitan Museum of Art and the Wallace Collection, and are measured in a scale of a five-centimetre divergence.

Additional observations on the shafts of surviving material show a variety of shapes in their cross-section. Most examples have a circular cross-section, but some have also been polished and waxed during historic conservation, which makes the identification of original shafts even harder. The second most common cross-cut is octagonal. Shafts of that style are often covered with leather straps nailed on them or wrapped in a decorative layer of fabric. It is hard to determine whether that kind of decoration was in place initially for any of the weapons or added later. The last type of cross-section is rectangular. Many shafts that can be identified as original or at least dated in the examined period belong in this category. Some shafts have a rectangular middle section where the hands were put on the weapon and the lower section is circular.

One of the questions raised while the surviving material in this thesis was examined was about the purpose of a rectangular or octagonal shaft since the circular appears easier to hold. There are several possible reasons for that. First of all it needs to be mentioned that circular shafts survive nearly in every category, octagonal shafts in categories such as the winged staff weapons and the partizan,

and rectangular shafts particularly survive in the axe-hammer group and the bill group. This simple division shows that rectangular shafts were used in weapons with multiple elements around the head, with the most notable exception being the halberd. A potential explanation for this has to do with the control of the different elements of a weapon without directly looking at its head. The grip on a rectangular shaft shows that the offensive horizontal elements are on the short sides of the rectangular, therefore, the user of such a weapon by aligning their palm on the grip could control where the weapon was facing without looking at it.[700] This theory is confirmed by the fact that weapons that usually had a circular shaft were used primarily for thrusting, which of course is irrelevant to the head's direction, and *vice versa* it is an additional indication on how certain weapons were used. Another reason behind the variety of cross-sections is that circular shafts were easier to hold, but could slide easier, while the other shapes were harder to hold but offered a better grip.

The staff weapon was versatile and useful in many specialized forms of combat and the different types and technical characteristics gave the user an edge. Their design often shows specialized craftsmanship, but the fact they were composed of a ferrous head on a long wooden shaft created an inequality of material and vulnerability in both assembly and use.

[700] Something to consider on this matter is that modern sports that rely on hand-eye coordination at high speed such as tennis or ice hockey use rackets and sticks with rectangular or multi-angled cross-sections to offer greater control and awareness of position away from the hands.

14.4. The Physics of Technical Characteristics of Staff Weapons

One of the less discussed subjects in the study of staff weapons is the technical characteristics of the individual staff weapon categories besides the offensive features, especially those that have to do with the structure and assembly of the weapon. Perhaps the most detailed research done on this specialised subject was the two aforementioned works by Schneider and Waldman, who explored the assembly of staff weapons and their material. Waldman x-rayed sections of halberds to demonstrate how spikes, nails and bolts affected the internal structure of weapons.[701] The x-raying procedure causes minimum damage to most objects and can provide information about the material, the structure and even show potential cracks and joints that are invisible to the eye, but they are costly and require specific facilities to conduct this type of experiment.

The secondary technical characteristics of staff weapons can be considered as defensive and structural. Defensive characteristics include guards of varying material and size aimed at the partial protection of the user's limbs, which usually come in the form of round metal or leather guards known as rondels.[702] The matter of structural characteristics is significantly more complicated as it concerns the different components of weapons and how their physical attributes affected their use and construction. The way such characteristics were placed on the weapon needs to be discussed, as well as the choice and replacement of the wooden shaft, and most importantly, metal components such as the eyes or langets, that secured the offensive features of the weapon to the shaft.

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[701] Waldman, pp. 87-98.
[702] Stone, p. 528. Stone also refers to these guards as *rondelles* and lance guards.

14.4.1. Assembly and Structure: The Problem of Physical Force and the

14.4.1.1. The Langets[703]

It was noted in the chapters for individual weapon groups that langets were a feature of many staff-weapon types. These metal strips extended from the head to the shaft and were clearly used to improve the sturdiness of weapons. Langets have holes that were cut out during production and they are nailed on the shaft. They are usually straight but there are a few undulated examples where this pattern was used for decorative purposes. The length of the langets varies, but proportionately it roughly covered from a fifth to sometimes three fifths of the entire shaft. The number of the langets also varies on individual weapons and cannot be related to specific categories. However, on the basis of surviving examples, it generally varied from one to four. Most cases of surviving examples or depictions have an even number of langets (two or four) placed on opposite sides, parallel to each other. This positioning creates the impression of a rectangular grip closer to the head, while at the same time the rest of the grip/shaft is round. Rare examples had five or six langets, thus creating a polygonal shape on the upper grip of the weapon. A fundamental question that needs to be answered at the end of this discussion is what part of a staff weapon takes the most stress first upon impact, and second, in the long term in the form of continuous stress, therefore where will a staff weapon break. Subsequently, another question that needs to be answered is if this affected the positioning of the support mechanisms (langets).

[703] The physics principles, theorems and equations used in this chapter are simple examples that can be found in most Physics handbooks. See Marcelo Alonso, Fundamental University Physics (London: Addison-Wesley, 1967).

The metal strips were usually nailed and/or screwed to the head and the shaft of the weapon to create an external support system. A closer look at certain weapon categories reveals an alternative to the structural use of the langets. Axe-hammers from the second quarter of the fifteenth century onwards often make use of langets as an internal support mechanism. The metal strips were placed on the shaft before the head, then those on facing sides connected at the top of the shaft with an open vertical loop on the top of each of them. The head with the exception of the vertical spike was then fitted down, with the offensive features developing around a horizontal socket. Following that, the vertical spike was either nailed or screwed down between the vertical loops of the langets. Finally, screws or nails were fitted through holes on the horizontal socket and the vertical loops, thus binding everything together.

The langets provided a simple or complex support system for different weapons, and because of the nature of the material, extra hardness and possible protection from enemy strikes that could harm the weapon. But a further examination of the categories of weapons that were actually fitted with langets might strengthen or weaken these claims and possibilities. Surviving weapons or examples in art fitted with langets include weapons from nearly all categories discussed in the second chapter. However, a quantification of the surviving examples examined shows that certain groups have langets more often than others. Weapons such as the standard halberd, all weapons of the axe-hammer group and the ahlspiess usually have langets which vary in size in individual examples. In contrast to that, weapons such as the glaive, the partisan and the winged staff weapons group rarely have them and in the cases they do they are short. A quick study of the staff weapon categories featuring langets, and particularly langets that

cover at least a fifth of the shafts length reveals that most of them had the potential to be used for striking or cutting. On the same line, weapons without langets, or with short langets of about five to ten centimetres are usually those with long blades that could be used for thrusting. Therefore, it is useful to investigate further how the function (striking, cutting and thrusting) of these weapons caused the need for those extra support systems. This will be explored by answering the question of why these weapons were more likely to have their shafts broken.

14.4.1.2. Initial Statement of a Theoretical Experiment on Langets: A Theoretical Analysis about Pendulum Motion Compared to Thrusting Motion

To determine the likelihood of breakage of staff weapons, the ideas of pressure, tensile stress and strain have to be considered. Those factors will be examined on the basis of the nature of the offensive technical features that staff weapons might have (e.g. hammer, blade), as well as on the nature of the materials staff weapon shafts and heads are made of. The approach followed for this brief examination is the same as a contained physics experiment on materials. The results of this experiment will help to better understand the purpose of the langets and subsequently the use of staff weapons by determining what were their weaknesses.

It is difficult to demonstrate the points of critical failure on staff weapons used in pendulum motion without using destructive analysis. An alternative to this is a theoretical analysis in form of a simulation in a theoretical experiment. The purpose of this is to try and comprehend what a user from the examined period would know through experience. This is to determine the importance and function

of langets, whose importance has not been acknowledged sufficiently in scholarship.

14.4.1.3. Accepted Factors

The start of a theoretical experiment starts with a series of assumptions which act as parameters for the simulated situation.

a) An assumption which must be made is that axe blades and spike tips are sharp with no additional smaller protruding feature, whereas hammerheads are flat and blunt. Of course specific staff weapons such as partizans are examples of weapons with straight blades that end in wings, and certain hammerheads are not entirely flat but are coronel-shaped. These are specific features that do not dilute the nature of the experiment. For more detailed results a practical experiment would reveal more, but such a thing is extremely difficult and costly to perform.

b) Also to be assumed is a vacuous system (vacuum) to give a more accurate theoretical comparison, due to the allowance to ignore air resistance. The latter would only add an additional parameter, which is not necessary when removed entirely from the experiment.

c) The third assumption is that the shaft of the staff weapons examined is inelastic, inplastic and of brittle material, although with some associated flex which is reasonably small and not big enough to be added as an additional parameter.[704] The flex/bend that the weapon is subjected to is either vertical or lateral, but not torsional (the shaft is not twisted).

[704] The flex in this case refers to the term used for bending in applied mechanics. Bending/flex is the behaviour of a solid slender object/material subjected to an external temporary or continuous stress or load applied perpendicularly to a longitudinal axis of the element.

d) The weapon acts as a critically damped pendulum system on swing and impact.[705] This is the simplest form of physical/mechanical behaviour that can be applied to an object, this case a staff weapon, used for swinging and striking or cutting.

e) The swing does not have any associated acceleration moving at a constant velocity. Of course different users and different strikes would give different results, and the velocity of the hit is something that realistically fluctuates, but a constant speed can be defined as the average.

14.4.1.4. The Experiment

The force associated with the swing can be modelled as a critically damped oscillator giving the force to be $F = -cv$ (where F is force of impact measured in Newtons (N), c is the damping constant and v is the velocity of the swing measured in m/s).

The pressure of the impact is $P = \frac{F}{A}$ (where P is pressure measured in Pascals (Pa), F is force measured in Newtons (N), and A is surface area measured in m^2).

Putting these two equations together one can find that $= \frac{-cv}{A}$.

This leads to a set of proportionalities, a situation where all but two variables are kept constant, making them irrelevant to the trend of change in the equations.

[705] A critically damped pendulum system is a complex type of a harmonic oscillator (damped oscillating system). The latter is a system that, when displaced from its equilibrium position, experiences a restoring force, F, proportional to the displacement x, where x is a positive constant.

$P \propto \frac{1}{A}$ - Pressure is inversely proportional to surface area

$P \propto v$ - Pressure is directly proportional to velocity of swing

$P \propto F$ - Pressure is directly proportional to force

$F \propto \frac{1}{A}$ - Force is inversely proportional to surface area

First, this leads to the premise that a smaller area has a larger direct force and a larger pressure, which is why axes, blades, hammers and spikes penetrate larger targets. Second, although this is seen in practice, the question is how to determine why the hammer (in this case of staff weapons having a hammer feature) shaft has a higher tendency to break. This can be achieved by using Young's relationship, as this has the ability to show what factors are most important in shaft breakage.[706]

The equation for Young's relationship is as follows: $Y = \frac{FL_0}{A\Delta L}$ (where Y is Young's modulus, F is the Force, L_0 is the original length, A is the area and ΔL is the change in length.)

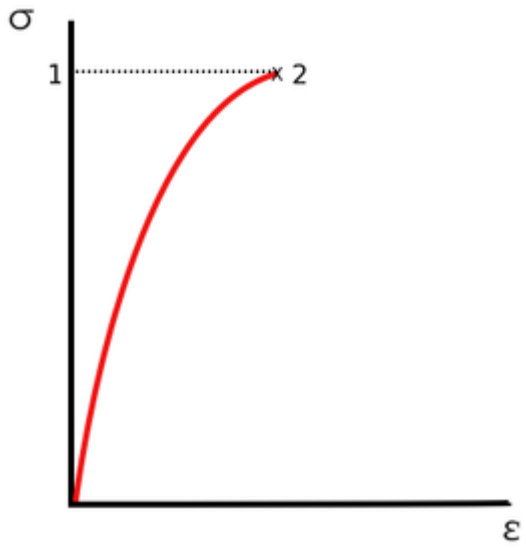
For this though as it is a flex not a stretch, L_0 is replaced with rθ (where r is radius of curvature and θ is angle of curvature.) ΔL is replaced with $2\pi r(\frac{\Delta\theta}{360})$ (Δθ is the change in angle and π is the constant 3,14.

[706] Young's modulus, also described as the elastic modulus, is a measure of the stiffness of solid material. Stiffness is a mechanical property that describes the elasticity of such materials. It defines the relationship between stress (force applied per unit area) and strain (proportional deformation) in linear elastic solid materials. The modulus is named after nineteenth-century British physicist Thomas Young, who applied previous concepts developed in the eighteenth century.

From this we get an altered Young's relationship equation, $= \frac{Fr\theta}{2\pi Ar(\frac{\Delta\theta}{360})}$.

Young's relationship is also a comparison of Stress, σ, (Top) and Strain, ε, (Bottom).

Below is a graph of the relationship of stress against strain for a wooden material.



Point 2 on the graph is where a material would break, from which it can be seen that ε is most significant and with the only variable that is dependent to it being area, it can be seen that a larger area leads to larger deformations which results in snapping of the shaft. Metal strips have a much greater ability to withstand strain which is the reason for their implementation.

As a result, because of the pendulum action required to deliver the hit, and because of the surface delivering the strike in the case of the hammer, a factor which is reduced in the case of an axe/blade (such as on halberds or axe-hammers), the shaft is more likely to break because of stress caused on impact or

after several hits. The chance of breaking is also augmented by how brittle and inelastic wood inherently is compared to other materials.

14.4.1.5. The Tip of the Spike and Thrusting Motion

Spikes do not suffer strain in terms of flexibility or extension. Therefore they suffer very small chance of breakage. This is directly connected to the lack of the pendulum motion required to hit. The strike is directed from behind the axis, on the axis and pointed to a target through a minimal point. The possible outcomes are deflection, penetration of the target or breakage of the weapon itself. Because of the smaller blade/tip of the spear the chances for stress breaks are reduced significantly when compared to hammers, but at the same time the same feature makes penetration easier even against hard material such as steel (considering that the tip has the same hardness because it would be steel as well), or in the case of its contemporary use, armour.

14.4.1.6. Material Technical Characteristics and Mechanical Behaviour in Stress Studies

Several technical characteristics should be discussed separately and taken into account when discussing stress studies on weapons and support mechanisms, especially because the questions discussed here have to do with different materials used together to create a single object.

The langets, besides adding stability and reinforcing the weapon, might affect it in a negative way because of the manner by which they are secured and the

material characteristics of metals. Nails and bolts secured the langets on the weapon but at the same time disrupted the grain of the wood, which means that the shaft suffered fractures that weakened the wood. Considering that metal is a stiffer material than wood and that stiffer materials tend to have a higher ability to transmit vibration, screws and bolts transmitted the vibration through the core of the shaft. This could either be positive or negative based on the manufacturing of the weapon, as on the positive side violent high vibrations are mitigated so that sudden fractures become harder, but because of the generic disruption of the wood and travel of the vibration throughout the grain stress fractures become easier. The same vibration-transmitting abilities of metal help vibrations to travel down the shaft on the outside of the weapon alongside the langets. This does indeed mitigate the vibration stress, but at the same time because of the rigidness of the material makes it harder and more stressful for the user of the weapon (potentially one can drop the weapon held due to vibration, or more likely become tired easier).

Another factor that must be taken into consideration is the condition of the wood used for a shaft.[707] The use of seasoned or unseasoned wood would significantly affect some mechanical attributes of the weapon and of the type of stress it could take before breaking. Seasoned wood has a higher chance of breaking from stress fractures over time, because its grain has come closer together making it harder. Unseasoned wood on the other hand has a higher flex, that way effectively bending easier (even if it is not visible). That way unseasoned wood has a higher chance of breaking on impact but can also suffer stress fractures harder.

[707] Because of the nature of the material and the weapon (shafts were usually replaced) it is hard if not impossible to give a definitive answer to this. The replacement of shafts might not have been contemporary to their use.

14.4.2. Impact areas and the Variation of Weapons with Curved or Flanged Elements

Flanged and curved surfaces such as on mace-like weapons or weapons with flanged impact elements such as morgensterns or deep coronel-shaped hammers will have differing impact areas, although this is dependent on the material properties of the impact zone. Flanged elements will generally have the same impact surface area in all cases, but ball-headed maces and morgensterns will depend more so on the properties of hard material and impact, if the impact material is hard and completely rigid the area struck (perhaps such as plate armour) will be minimized, leading to the breaking/denting of the said area under the weight and impact force of the weapon. If the material is hard but brittle (a large target such as the human skull is the perfect example of this) the area hit will increase if the material fractures, thus the weapon will continue its motion pushing into the area struck. Finally, if the material is soft and malleable (an example is the unarmoured human abdomen) the area should maximize. That way the spread of the damage is mitigated on the soft tissue but the blow is still lethal because of the relative hardness of the material of the weapon and target area. Besides these specific remarks, the stress and fracture mechanics of these weapons are the same as discussed in the previous theoretical experiment.

14.4.3. Point of Critical Failure

The aforementioned experiment partly answers the question of the positioning of langets but it is important to clarify that the area of the weapon that is stressed the

most by physical forces is where the head attaches to the shaft as it is the point closest to the centre of mass and point of impact, thus suffers the most flex/bend. The same force travels throughout the weapon's shaft but at that place the force is spontaneously greater than in any other position. Because the shaft is wooden and the head's connecting bottom (usually an eye or socket) is made of metal, the fracture will occur on the very top of the shaft. This might be either directly the connecting point of the two materials, or within a small distance in which the force would travel fast, which it can be assumed it is between five and fifteen centimetres.

A stress fracture can also occur at the same place, the connection of the head to the shaft. When repeated impacts are delivered by-and-to the weapon there is a tendency for micro fractures to occur on the shaft, causing the point where tensile stress causes breakage to decrease. Therefore, support mechanisms were most likely placed through observation of a staff weapon's use and stress. Based on what was discussed the ideal positioning of the langets should be as high as possible up the shaft towards the head to strengthen a point visibly prone to stress and to theoretically mitigate it. Therefore, the progressive decrease in length of the langets in weapons such as the standard halberd from the third quarter of the fifteenth century to the first quarter of the sixteenth century is not a sign of decline of the weapon. It is a sign of mechanical insight and understanding that longer langets were redundant. The only weapons that appear to go against that trend are the axe-hammers which retain the lengthy langets throughout the period of their use.

Based on the properties of piercing, the break point of a weapon used for thrusting could be slightly different. Considering that the force goes down the

weapon perpendicularly with the starting point being the force that pushes the weapon and the end point being the target, the possible fracture points are two. The first is the same as with cutting and striking weapons, right below the blade, caused by the stress explained earlier. The second area that accumulates stress immediately or over time is the part of the shaft between the starting point of the force and the impact point. For weapons that would be held from the middle of the shaft the stress point would be the same as the cutting and striking weapons. For those held from close to the base of the shaft the break point would be close to the middle. This of course means that the langets for weapons used primarily for thrusting would be the longest, as the second possible point of fracture is further away from the head. This is not supported by identified surviving examples. However, the overall theory is indeed backed by another feature, a small metal cylinder occasionally found in weapons such as partizans and winged staff weapons on the middle of the shaft and nailed in place.[708] It is likely that piece of metal acted in the same way as a langet, supporting the area and mitigating the immediate force applied to the area.

14.4.4. Conclusions

The inherent physical problems of force output behind the use of any weapon including a hammer feature, regardless of size or shape, cause far greater stress to the object compared to thrusting weapons such as pikes. The stress was reduced but was still an important factor in the case of bladed weapons that were used in a nearly hacking motion. Therefore, the langets were a necessity. They were the

[708] Objects with that feature were examined at the Royal Armouries but no record photograph was able to be taken or provided.

counter-action against a physical problem caused by the very nature of the object. The detail of the problem shows that the manufacturers of weapons with langets were aware of the nature of the problem and solved it with the implementation of a support system that might appear to be crude, but when examined from a technical perspective it is as sophisticated as the nature of the object requires it to be. Even if the support systems used had flaws and potentially could be disruptive for the material characteristics of the shaft, their use shows meticulous craftsmanship and consideration of mechanical problems caused by the function of staff weapons.

Chapter XV: Case Study for Halberd VII.4156 from the Royal Armouries[709]

15.1. Introduction and Description

In order to demonstrate the different aspects of my research I will proceed with a detailed discussion of a halberd recently acquired by the Royal Armouries.[710] The object examined is a rare example of a staff weapon that raises questions as to its category classification, but also has the rare combination of technical features which can be used to explore the use of the weapon and the structural purpose of some of its individual characteristics.

The head of the weapon has a long trapezoid blade on the front of the shaft that is slightly concave towards the top to form a spike. The point where the blade goes inwards is nearly above the middle of the overall blade and creates a small edge. The blade was originally sharpened on both sides. The head is attached to the shaft with two metal eyes, which are welded to the head and nailed to the wood. They are also welded and hammered in a way that makes the part of their exterior around the shaft look like a polygon. The top of the back of the blade is flattened creating a solid and thick spike. A small vertical metal strip was placed inside the eyes on the back side of the shaft and nailed. The length of the strip covers the area from inside the upper eye, goes down and inside the lower eye, and then finally is nailed about three centimetres down the shaft. The metal parts of the weapon have been polished but signs of pitting corrosion are visible all over the head, especially in the centre, on the sharpened front part of the blade and near the parts where the eyes have been welded.

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[709] Leeds, Royal Armouries, VII.4156, Proto-halberd. **Figure 314.**
[710] The halberd was obtained by the Leeds Royal Armouries in 2015 and went on display in 2016.

The weapon has a comparable object which until the early twentieth century belonged to the collection of Charles Boissonas. The main identifying features that visually differentiated them are their distinct corrosion patterns and a small curve on the lower end of the extra metal strip. An initial examination and comparison to other halberds of this type allows both weapons to be dated somewhere between the last quarter of the fourteenth and the first half of the fifteenth century.[711] The assigned dating is mainly based on the general use and form of the two chronologically earlier halberd types, the proto-halberd and the composite halberd, and to the fact that the weapon appears to be some form of hybrid of the two. Other ideas will be mentioned later in the discussion of the weapon's individual features.

15.2. Weapon Categorization

The first issue concerning the object is its typological categorization, as its shape reflects structural elements that appear in different staff weapons. The narrow trapezoid head with the subtle concave top resembles early examples of the standard glaive. This is not enough however to consider the weapon as part of this weapon group because the head is not above the axis, which is a fundamental characteristic of the glaive group. The weapon is a halberd and the problem of its categorization has to do with the type of halberd (proto-halberd or composite halberd) that VII.4156 can be identified with because of its unique form. Considering that the composite halberd requires a beak growing either from one of

[711] The dating provided in the catalogue of the Boissonas collection vaguely places the weapon in the fourteenth or fifteenth centuries. In contrast to the other weapons of the same group, no additional information is given. Jean Boissonas, *Sammlung Charles Boissonas: Alte Waffen aus der Schweiz* (Berlin: Druck von Sadag, 1914), Kat. B., No. 69, Taf. 1.

the eyes or attached as a separate piece between them, initially the examined weapon cannot be placed in this category. However the metal strip between the eyes can be seen perhaps as the extra element that qualifies the object for that type. The strip is most likely placed there for reinforcement (its role will be discussed extensively later) and can be seen as an alternative, shorter form of a langet. Examples of composite halberds occasionally have long langets connecting the lower eye to the shaft either in pairs on the front and back, opposite sides, or a single langet on any one side.[712]

Langets are an extremely rare feature in proto-halberds. The earliest proto-halberds have a basic rectangular head that either angles or goes concave inwards to form the vertical spike. The shape of VII.4156 roughly follows the same principle, and has many similarities to the shape of later examples of proto-halberds, which have narrower blades.[713] Additionally, the form of the examined weapon is unusual both for proto-halberds or composite halberds the outside lower part of the trapezoid blade narrows towards the shaft. The final typological choice for VII.4156 would be that it is a proto-halberd, simply because of the absense of the beak of the composite halberd which is significant towards its function. However, the uniqueness of the object most likely means that it is a partial hybrid of the two different categories (the standard halberd is not

[712] Composite halberds are the rarest compared to the other two halberd types but examples with langets including surviving objects and iconography cover the full lifespan of the weapon, from the end of the fourteenth to the end of the fifteenth centuries. A pair of langets on the front and back of the weapon can be found in a composite halberd dated to the last quarter of the fourteenth century. New York, The Metropolitan Museum of Art, 14.25.35, Composite halberd. Langets on the sides of the weapon in a weapon that has structural characteristics that resemble both a proto-halberd an a standard halberd are depicted in Schongauer's *Christ Taken* from the last quarter of the fifteenth century. Martin Schongauer, *Christ Taken Captive*, 1470-1482, engraving, Vassar College, New York. **Figure 315.**

[713] Iconography of proto-halberds with narrow blades survives from the second to the last quarter of the fifteenth century. The *Schilling Chronicles*, produced in the late-fifteenth and early-sixteenth century are full of military themed illustrations, depicting a variety of staff weapons. However, most often halberds have the form discussed. Perhaps the best example of the lasting popularity of the narrow-bladed proto-halberd is the woodcut *Battle of Dorneck* (previously cited) which depicts proto-halberds and composite halberds of a variety of shapes. **Figure 19**.

considered as a typological possibility because in its case the head and the spike should be above the shaft and not on its side), and it maybe even borrows certain structural elements of the more modern standard halberd from the second half of the fifteenth century. Weapons such as the VII.4156 show the necessity for flexible methods of categorization, and are a constant reminder that resurfacing objects will, and should, sometimes change our views on typology.

15.3. The Significance of the Spike

Special attention is required when examining the vertical spike of the VII.4156. This unique physical characteristic can be the object of discussion not only towards its specific use but to also trigger a general investigation of the use of vertical spikes of halberds, and generally the use and development of thrusting elements during the examined period. Proto-halberds and composite halberds appear to generally follow two trends when it comes to the spike rising vertically in front or above the shaft. In the first, only the front concave or angled side really forms a point while the back side simply rises straight. The front part of the spike is always sharpened, but the back part varies on different weapons of the aforementioned types and is sometimes sharpened, or in other occasions is blunt. In this case, even in the examples where the back of the spike is sharpened, this occurs because the whole back is originally forged and sharpened as a long blade. In the latter trend both the front and back of the spike are sharpened and form a blade to the point where they meet. The cross-section of that blade is diamond or oval-shaped. The spike of VII.4156 is an exception to the two aforementioned designs. The concave part that forms the front part of the blade is sharpened, but the top of the back part, which rises from a fully sharpened backside, is completely flattened, creating

that way a triangular cross-section. This triangular spike is thicker that the rest of the blade and can be distinctively observed extending on the top three centimeters of the weapon's head.

It is not only the uniqueness of the spike compared to the two earlier types of the halberd that make it noteworthy, it is also the similarity to the spikes of certain standard halberds. In examples of standard halberds from the last quarter of the fifteenth century the lower elongated part of the spike, which rises above the shaft, is not sharpened on either of its sides. The upper part of the spike is forged to a thick spike, which can either be triangular, quadrangular, round, or emulate a diamond cross-sectioned blade whose front and back sides are not necessarily sharpened.[714] By observation this thicker spike part slightly varies in length in different examples, from two to roughly ten centimeters, but usually it is somewhere between two and five centimeters. The latter category of thicker spikes of fifteenth century halberds somehow resembles the top of earlier proto-halberds that had the same diamond cross-section.[715] This observation refers to specific weapons that only had the tip of the spike intentionally sharpened, but excludes proto-halberds that had the same feature because the back side was sharpened as a whole before the final manufacturing process.[716] Additionally, none of the spikes of these proto-halberds is thickened or reinforced in any way. The brief overview of this feature shows that there is a constant and developing trend to shape the

[714] A slightly different, possibly German, variant also includes a vertical reinforcing rib alongside the sides of the spike creating a cross-shaped cross-section. New York: Metropolitan Museum of Art, 25.135.7., Proto-halberd.
[715] See Zürich, Landesmuseum, 6345, Proto-halberd. **Figure 10**.
[716] This includes the majority of surviving proto-halberds such as: Zürich, Landesmuseum, 13153, Proto-halberd; Zürich, Landesmuseum, KZ 11476, Proto-halberd. **Figure 12**; Zürich, Landesmuseum, 3454.A, Proto-halberd. A close study of the back-blade is needed to examine whether the back part of the spike is formed and sharpened intentionally or simply follows the flow of the already forged blade.

halberd's vertical spike in a certain way and eventually reinforce it regardless of the weapon's type.

15.4. The Spike of the Halberd and Penetrative Force

An explanation for the need to reshape and reinforce the spike (and later to most parts of the halberd), especially in the fifteenth century, is the change to the equipment that the weapon had to overcome. A general discussion at this point is important to determine the reasoning behind the shape of the spike on the examined halberd. Non-thickened spikes persisted throughout the lifespan of the halberd, with the main change primarily being that standard halberds slowly acquired longer and thinner vertical spikes. Considering that the halberd was first and foremost an all-around infantry weapon of hybrid function, the increase of the popularity of the reinforced spike is most likely connected to the increasing quality of the armour used by infantry and cavalry (from the second quarter of the fifteenth century even infantry started using partial plate armour for protection). The explanation of this change can be given in simple terms of mechanics. If we assume that both the weapon's head and the armour were made of steel, a material with high hardness and stiffness proportional to its thickness, and bending capabilities inversely proportional to its thickness and curve, from an initial observation the best chance for the weapon to achieve a penetrating thrusting strike would be to strike the thinnest, less curved and largest part of the armour. This is based on the basic physics of penetration, where the potential to pierce through a surface is increased if the piercing object has similar or greater hardness and smaller surface than the material it seeks to pierce. Examples of this are everything from a needle pricking the skin to a knife thrusting to vegetables, or the

wanted goal in this case, a spike eventually going into flesh. The obvious problem in this case is of course the armour, which is worn exactly to stop the successful thrusting. Additionally, armour mechanics were also swiftly developing to decrease the chances of a successful hit against its user. This happened with the application of a variety of technical modifications such as increasing the density and thickness of the metal in exposed or highly targeted areas, by curving parts of the harness to deflect strikes and many more. The main problem for someone aiming to pierce through the armour from a mechanical perspective was the simple issue of the material, because as already mentioned both parts involved in the physical action were made of steel. To overcome this issue, the spike had to acquire further thrusting capabilities, which was achieved by further reducing the size of its tip (inversely proportional surface to armour) and increasing its hardness compared to its target, or to explain it in a technical manner, by reinforcing the bottom of the spike to increase hardness and stiffness and at the same time reduce the surface of the tip to increase the chances for initial penetration. Therefore the optimal target would still be the largest surface but this time the weapon had better chances of going through the armour. This time it was not just a needle going into the skin, but a nail banging through a sheet of metal. This is the simplest explanation of the progressive development of reinforced tips of various on halberds, as well as of other staff weapons used for thrusting (we must not forget the increasing popularity of the pike which effectively had only that spike on its end), as well as other weapons such as swords.[717]

[717] In the fifteenth century longswords with really long and narrow tips became popular particularly in Germany. Examples survive from the second half where the top 10 centimeters of the sword was thicker that the rest of the blade and had a triangular or diamond cross-section. Rarer examples of longswords completely dropped the sharpened blade and simply featured a lengthy spike. These swords were clearly aimed for use against heavily armoured opponents. Extensive examples of longswords used in this manner can be found in the German martial arts tradition of the fifteenth century, where even specific techniques such as half-swording were developed for using the weapon

Of course to penetrate armour a well-designed tip was not enough, significant thrusting power was also necessary in order to achieve it. Optimal thrusting power can be reached when the moving force is perpendicular to the axis of the spike. In the case of the spike of the halberd the force comes perpendicularly from the middle and back of the shaft where the user pushes or thrusts. This means that in order to get maximum power from the thrust, and subsequently translate the force to penetrating momentum, the spike needs to be on the same axis as the shaft. This only appears in the case of the standard halberd, because the spike of the proto-halberd and the composite halberd is above the blade and in front the shaft. Perhaps the shift in position of the halberd's head was not only a recognition of the increase of the thrusting capabilities of the weapon by manufacturers and users, but it might also be an indication to the shift of its use in the second half of the fifteenth century from a primarily cutting weapon to thrusting. This is why the VII.4156 becomes particularly interesting in the context of this discussion as it is an exception to the last argument. As mentioned earlier the object is a proto-halberd that appears to have influences from the structure of the composite halberd, and if the previous statement of the blade being the primary feature with these two categories is taken into consideration, then the reinforced spike of VII.4156 is completely out of alignment with this theory. There are several explanations for the unique occurrence of the weapon's combined technical features. The simplest explanation is that the weapon is as mentioned before a hybrid of the two chronologically earlier types of halberd and that the manufacturer, with a good understanding of its use and general mechanics, improved its secondary function by simply flattening the back of the spike and reinforcing it. This explanation seems likely considering that technological

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to penetrate through plate armour by holding a sword from its hilt and middle of the blade to maximize physical thrusting force.

developments and leaps are possible and believable in certain places long before they were widely implemented. The second explanation is that proto-halberds and composite halberds just like standard halberds were used primarily for thrusting but the technological development of the weapon progressed slowly from the fourteenth century onwards to its chronologically latest form. This seems highly unlikely because the technology and mechanics behind other thrusting weapons, especially the spear, was quite basic and used long before, during, and after all halberd types, and would have been acquired through experience and repeated use. The third possible explanation is that the object is a hybrid of all three different halberd types and developed while they were used simultaneously. This also appears to be reasonable because of the weird shape of the blade of the object as well as the direct resemblance to standard halberd reinforced spikes. If this explanation is correct and if VII.4165 is a hybrid transitional form of all three halberd types, then its dating changes significantly as well. Its manufacture and basic shape resemble halberds dated to the last quarter of the fourteenth century onwards but according to the triple hybrid theory, it would be dated somewhere between the second and last quarter of the fifteenth century or even later.

15.5. The Blade

The technical features of the head of proto-halberds and composite halberds generally develop around the blade. The spike is simply an elongation on the rectangular blade which forms because of the concave or angled upper front part of it. A close examination of most surviving examples reveals that most blades are sharpened on both sides, including the back part between the two eyes. The fact that this part was also sharpened makes impossible even the suggestion that the

back part was sharpened simply for backside strikes. This reveals that the production of the head was done in two parts, the first being the production of the blade and the shaping of the spike followed by the sharpening of both sides, and the second the welding of the two eyes or in some case an eye and a socket with the blade, and then the securing of the head on the shaft with the addition of nails. A possibility that cannot be excluded is that already made blades were used, reshaped and fitted as halberd heads, which would explain the dual side sharpening, as well as the shape of the mostly rectangular blade. The same principles generally apply to the blade of VII.4156, with the exception of the already discussed spike and the narrow trapezoid and not rectangular shape. The blade is also sharpened on both sides, which indicates that neither of the aforementioned procedures of fitting was used, but the narrower lower part in combination with the smooth transition to the upper concave part, make extremely doubtful that the blade previously belonged to a different weapon because of the unusual overall shape that does not match any other edged weapon without being heavily altered.

15.6. The Reinforcing Strip

One of the most uncommon features of VII.4156 is the metal strip attached vertically on the back side of the weapon's head. As already discussed at the beginning of this chapter, the metal strip resembles the langets used in composite and standard halberds as well as in different staff weapons and can easily considered to be one of them. To better understand the role of the strip it is important to briefly mention the role of the langets. According to authors such as Waldman their primary use was to protect the shaft from shattering blows that

could end on the weapon and break it.[718] This appears to be a reasonable and convincing explanation, especially in the case of long langets that cover at least one third of the shaft. However, this argument does not stand in the case of halberds (and generally staff weapons) with langets of between five and ten centimetres. The answer behind the use of the short langets as well as the metal strip can be found with the help of mechanics that study the offensive role of the weapon. The difference in material and their hardness between the head and the shaft can lead to impact fractures on the shaft, which simply leads to the head being broken off. These instant fractures are actually the result of stress micro-fractures of the wood caused by continuous use. Stress fractures on staff weapons used for striking either with a blade, horizontal spike, or impact element happen only a few centimetres below the head because of the immediate transfer of force upon delivering of impact. Short langets might disrupt the grain of the shaft but in the long term reinforce it against breaking as a result of repeated strikes. Of course the weapon can still break at that point regardless of the support mechanism. This results in what can be seen in the centre of Graf's Horrors of War, a halberd head broken off the shaft whose short langets have sprang open.[719] The same most likely applies for the strip on VII.4156. In addition to that, the positioning of the strip appears to be well thought on the opposite side of the blade and secured under the eyes. The latter means that under no circumstances the strip could be detached without replacing the shaft. Most importantly because of the position of the head and the direction of the strike the weakest part of the weapon and the most prone to stress fractures is exactly where the supporting metal strip is placed. That way the halberd was protected against potential shattering blows to the wide area between the eyes (the upper part of the shaft would still be exposed to those dangers), but most

[718] Waldman, p. 87.
[719] Urs Graf, *Horrors of War*, 1521, print, Kunstmuseum Kupferstichkabinett, Basel. **Figure 316.**

importantly the life and therefore use of the shaft was expanded, which would not only be crucial for the battlefield but would save the expense of replacing a broken or nearly broken shaft.

15.7. Conclusions

The metal strip and the spike prove that VII.4156 was mechanically a well-designed weapon and that its manufacturer either employed cutting edge technology ahead of its time or assimilated and applied some of the best and latest elements of the halberd weapon group on an outdated frame. It is more likely that the weapon was produced later, but the mixed and peculiar features make its dating puzzling and perhaps even impossible to provide a definite answer. A final thought worth mentioning, even though it seems unlikely, is that if thrusting hits were dealt by raising the halberd upwards (for example against cavalry, rider or horse), so angled from below and not perpendicularly to the shaft and the source of force, the position of the head becomes less relevant, as the hit is slightly ineffective because of the transition of force due to the awkward angle. This would make the design of this weapon and by extension most proto-halberds and composite halberds more effective. If this is the case, or if at least strikes were dealt using this motion, then the metal strip is perfectly positioned to prevent an easy break of the shaft under the head after an angled strike. However striking from that angle would be unnatural in most circumstances, so we have to assume that even a fine example of a halberd such as VII.4156 had design flaws, connected to the general design principles of its wider group and sub-group. Finally, the fact that there are two identical surviving weapons proves that this is not a unique random

occurrence but most likely an alternative form that developed on the border of the other two or three halberd types and borrowed key technical characteristics.[720]

[720] Unfortunately I have not yet had the opportunity to examine the weapon formerly in the ex-Boissonas collection. Perhaps a closer examination and comparison of both halberds can reveal further issues for discussion.

Conclusions

Staff weapons are one of the richest and yet most difficult areas in the wider field of arms and armour studies. The different forms, designs and functions offer the scholar a variety of material. The changes in warfare and particularly technical ingenuity are reflected in the development of most staff weapon groups.

Hoplological studies that briefly deal with western-European staff weapons as well as the examination and overview of the specialized scholarship allows certain observations. First, the overall scholarship on the matter is spread over a period of more than a century. The quality and detail of work varies but compared to other types of arms and armour and judging from the potential of the subject, the surface has barely been scratched. Second, many writers produce theories and terminologies of their own without consulting previous works, or by only considering specific strands of research which are usually defined by geographical limitations. A third observation is that scholars often reinvent ideas and terms that have already been part of the study of staff weapons. Fourth, studies from over half-a-century ago include forward-thinking interdisciplinary ideas that have been forgotten or are ignored and not taken into consideration in later research. Fifth, it is clear that certain weapons such as the halberd, the glaive and the bill have been more popular in specialized scholarship, while others such as the ahlspiess, the morgenstern and the pollaxe are underrepresented.

One of the most important problems in scholarship is the lack of a unified, easily recognizable typology. Hopefully this thesis has taken a step towards that by creating a classification system upon which further study and discussion can be built. The terminology produced can be used by specialists and non-specialists alike, by historians and curators to describe and label specific staff weapon within

different contexts of research. An easy to use typology can now more than ever launch further studies and interest in this field of research. Labelling is the key to research in the digital age and a consistently used terminology can encourage further study. At the start of this research I believed that the classification would only be a marginal part of the thesis, but the investigation of the subject, the lack of sources and the inconsistency in terminology both in collections and scholarships made me feel humbled with regard to the complexity of the subject. By the end of this research I believe I have made some progress towards solving the progress of terminology, and that the collected information of scholarship, iconography and material culture can be the fertile ground for further studies.

Presented here is the largest collection of illustrations of staff weapons, as well as surviving objects, in secondary literature. This can be used as an additional tool and reference point. Future considerations can include an analysis of the specific measurements of the examined objects both for quantitative and qualitative studies. The length of technical features, the weight of the weapons, the overall weight and weight distribution, can provide additional information about the changes in the development of weapon forms.

The use of metallurgy, materials science and physics has produced interesting results in a field of study that rarely reaches out to these disciplines. This is an indication of the potential of the subject, especially considering I conducted this kind of research with a basic understanding of the principles of these disciplines. Future study of staff weapons could bring together specialists from different fields to analyze in depth issues that were simply mentioned, such as the metallurgical analysis of stress on an object or the interpretation of the mechanical aspects of its function.

There are several aspects of research related to this investigation which had to be left out for purposes of space economy, including questions relating to social context, civic duty, and training. Alternatively, there is the potential for the expansion of other areas addressed herein, including physical and financial aspects of the production of staff weapons. However the topics discussed are merely the basis for a rich subject that has the potential for further studies. Perhaps this research will help in the future towards a better understanding of the context of the use of these weapons and will hopefully be a useful tool for those who want to study them. Besides approaching the subject from the perspective of scientific disciplines, the study of the use of staff weapons in their martial context can advance by utilizing the increasing popularity of fight-books. As a genre they are often characterized as didactic literature. Most of them are treatises that combine text and iconography to describe fighting techniques. The material covered in many of them includes fighting with a variety of weapons such as longswords, daggers, sword and buckler, as well as several staff weapons such as axe-hammers, the bill, the halberd and the partizan. The extent of our modern understanding of concepts of fighting dated in the fifteenth and sixteenth century, especially by reading treatises written in a cryptic style should by itself be the subject of further research. However, fight-books as a specialized genre on fighting are the perfect next step towards investigating the function of staff weapons and how that was perceived in the period they were used.

Appendix A: List of Examined Objects

Basel, Historisches Museum, 1910.93, Standard Halberd

Berlin, Deutsches Historisches Museum, W 1, Ahlspiess.

Berlin, Deutsches Historisches Museum, W 2, Vouge.

Berlin, Deutsches Historisches Museum, W 28, Simple morgenstern.

Berlin, Deutsches Historisches Museum, W 31, Composite bill.

Berlin, Deutsches Historisches Museum, W 32, Composite bill.

Berlin, Deutsches Historisches Museum, W 59/223, Kettenmorgenstern.

Berlin, Deutsches Historisches Museum, W 59/251, Proto-bill.

Berlin, Deutsches Historisches Museum, W 72/79, Simple morgenstern.

Berlin, Deutsches Historisches Museum, W 72/81, Kettenmorgenstern.

Berlin, Deutsches Historisches Museum, W 72/89, Simple morgenstern.

Berlin, Deutsches Historisches Museum, W 1494, Composite flail.

Berlin, Deutsches Historisches Museum, W 2521, Couteau de brèche.

Berlin, Deutsches Historisches Museum, W 2522, Couteau de brèche.

Berlin, Deutsche Guggenheim, W 59.203, Composite halberd.

Berlin, Deutsche Guggenheim, W 2826, Proto-halberd.

Berlin, Museum für Deutsche Geschicte, 59.210, Scorpion-Bill.

Berlin, Museum für Deutsche Geschichte, W 32.150, Vouge.

Bern, Historisches Museum, unknown inventory number, Composite halberd.

Bern, Historisches Museum, 1873.24, Proto-halberd.

Bern, Historisches Museum, 3463, Proto-halberd.

Bern, Historisches Museum, 25174, Winged spear.

Brescia, Civici Musei d'Arte e Storia, J 121, Composite glaive.

Copenhagen, Danish National Museum, 212, Standard glaive.

New York, The Metropolitan Museum of Art, 04.3.76, War spear.

New York, The Metropolitan Museum of Art, 04.3.83, Chauve-Souris.

New York, The Metropolitan Museum of Art, 08.261.1, Ahlspiess.

New York, The Metropolitan Museum of Art, 08.261.2, Winged partizan.

New York, The Metropolitan Museum of Art, 14.25.3, Friuli Type Corseke.

New York, The Metropolitan Museum of Art, 14.25.12, Winged spear.

New York, The Metropolitan Museum of Art, 14.25.15, Ranseur.

New York, The Metropolitan Museum of Art, 14.25.26, Composite glaive.

New York, The Metropolitan Museum of Art, 14.25.35, Composite halberd.

New York, The Metropolitan Museum of Art, 14.25.38, Friuli Type Corseke.

New York, The Metropolitan Museum of Art, 14.25.51, Standard halberd.

New York, The Metropolitan Museum of Art, 14.25.72, Ranseur.

New York: The Metropolitan Museum of Art, 14.25.74, Halberd.

New York, The Metropolitan Museum of Art, 14.25.89, Ranseur.

New York, The Metropolitan Museum of Art, 14.25.94, Winged partizan.

New York, The Metropolitan Museum of Art, 14.25.97, Winged partisan.

New York, The Metropolitan Museum of Art, 14.25.99, Ranseur.

New York, The Metropolitan Museum of Art, 14.25.119, Ox-tongue partizan.

New York, The Metropolitan Museum of Art, 14.25.123, Ranseur.

New York, The Metropolitan Museum of Art, 14.25.155, Spiked-scythe bill.

New York, The Metropolitan Museum of Art, 14.25.184, Feather Staff.

New York, The Metropolitan Museum of Art, 14.25.192, Winged partizan.

New York, The Metropolitan Museum of Art, 14.25.193, Standard halberd.

New York, The Metropolitan Museum of Art, 14.25.197, Chauve-Souris.

New York, The Metropolitan Museum of Art, 14.25.209, War spear.

New York, The Metropolitan Museum of Art, 14.25.233, Standard Corseke.

New York, The Metropolitan Museum of Art, 14.25.247, Ahlspiess.

New York, The Metropolitan Museum of Art, 14.25.259, Composite glaive.

New York, The Metropolitan Museum of Art, 14.25.260, Couteau de brèche.

New York, The Metropolitan Museum of Art, 14.25.272, Vouge.

New York, The Metropolitan Museum of Art, 14.25.286, Ranseur.

New York, The Metropolitan Museum of Art, 14.25.293, Ox-tongue partizan.

New York, The Metropolitan Museum of Art, 14.25.302, Pollaxe.

New York, The Metropolitan Museum of Art, 14.25.324, Ahlspiess.

New York, The Metropolitan Museum of Art, 14.25.340, Pollaxe.

New York, The Metropolitan Museum of Art, 14.25.351, Winged partizan.

New York, The Metropolitan Museum of Art, 14.25.356, Composite glaive.

New York, The Metropilitan Museum of Art, 14.25.360, Scorpion-Bill.

New York, The Metropolitan Museum of Art, 14.25.362, Standard Corseke.

New York, The Metropolitan Museum of Art, 14.25.389, Ox-tongue partizan.

New York, The Metropolitan Museum of Art, 14.25.396, Ahlspiess.

New York, The Metropolitan Museum of Art, 14.25.1366, Military flail.

New York, The Metropolitan Museum of Art, 25.135.7, Halberd.

New York, The Metropolitan Museum of Art, 29.156.8, Couteau de brèche.

New York, The Metropolitan Museum of Art, 29.156.18, Chauve-Souris.

New York, The Metropolitan Museum of Art, 29.156.38, Friuli Type Corseke.

New York, The Metropolitan Museum of Art, 35.26.2003, Standard Bill (Roncone).

New York, The Metropolitan Museum of Art, 36.25.2003, Standard bill.

New York: Metropolitan Museum of Art, 42.50.17, Halberd.

New York, The Metropolitan Museum of Art, 42.50.18, Standard Halberd.

New York, The Metropolitan Museum of Art, 42.50.20, Standard halberd.

New York, The Metropolitan Museum of Art, 48.149.33, Standard halberd.

New York, The Metropolitan Museum of Art, 48.149.34, Standard halberd.

New York, The Metropolitan Museum of Art, 49.120.11, Standard halberd.

New York, The Metropolitan Museum of Art, 52.208.8, Standard Halberd.

Leeds, Royal Armouries, VII.161, Winged partizan.

Leeds, Royal Armouries, VII.167, Winged partizan.

Leeds, Royal Armouries, VII.168, Winged partizan.

Leeds, Royal Armouries, VII.170, Winged partizan.

Leeds, Royal Armouries, VII.171, Winged partizan.

Leeds, Royal Armouries, VII.173, Winged partizan.

Leeds, Royal Armouries, VII.175, Winged partizan.

Leeds, Royal Armouries, VII.178, Winged partizan.

Leeds, Royal Armouries, VII.180, Winged partizan.

Leeds, Royal Armouries, VII.183, Ox-tongue partizan.

Leeds, Royal Armouries, VII.186, Ox-tongue partizan.

Leeds, Royal Armouries, VII.188, Ox-tongue partizan.

Leeds, Royal Armouries, VII.834, Chauve-Souris.

Leeds, Royal Armouries, VII.845, Friuli Type Corseke.

Leeds, Royal Armouries, VII.849, Friuli Type Corseke.

Leeds, Royal Armouries, VII.876, Mordaxt.

Leeds, Royal Armouries, VII.881, Bec-du-corbin.

Leeds, Royal Armouries, VII.883, Bec-de-corbin.

Leeds, Royal Armouries, VII.901, Military morgenstern.

Leeds, Royal Armouries, VII.906, Scorpion bill.

Leeds, Royal Armouries, VII.937, Composite bill.

Leeds, Royal Armouries, VII.943, Composite glaive.

Leeds, Royal Armouries, VII.948, Composite Glaive.

Leeds, Royal Armouries, VII.949, Composite glaive.

Leeds, Royal Armouries, VII.952, Standard glaive.

Leeds, Royal Armouries, VII.957, Couteau de brèche.

Leeds, Royal Armouries, VII.964, Standard halberd.

Leeds, Royal Armouries, VII.965, Standard halberd.

Leeds, Royal Armouries, VII.1239, Standard halberd.

Leeds, Royal Armouries, VII.1340, Chauve-Souris.

Leeds, Royal Armouries, VII.1343, Military morgenstern.

Leeds, Royal Armouries, VII.1366, Simple morgenstern.

Leeds, Royal Armouries, VII.1367, Experimental flail.

Leeds, Royal Armouries, VII.1404, Chauve-Souris.

Leeds, Royal Armouries, VII.1407, Lucerne hammer.

Leeds, Royal Armouries, VII.1497, Standard halberd.

Leeds, Royal Armouries, VII.1498, Standard halberd.

Leeds, Royal Armouries, VII.1506, Ox-tongue partizan.

Leeds, Royal Armouries, VII.1513, Standard bill.

Leeds, Royal Armouries, VII.1542, Pollaxe.

Leeds, Royal Armouries, VII.1564, Chauve-Souris.

Leeds Royal Armouries, VII.1578, Bec-de-corbin.

Leeds, Royal Armouries, VII.1582, Standard bill.

Leeds, Royal Armouries, VII.1584, Military morgenstern.

Leeds, Royal Armouries, VII. 1642, Holy Water Sprinkler.

Leeds, Royal Armouries, VII.1657, Proto-halberd.

Leeds, Royal Armouries, VII.1661, Lucerne hammer.

Leeds, Royal Armouries, VII.1662, Standard Corseke.

Leeds, Royal Armouries, VII.1668, Standard halberd.

Leeds, Royal Armouries, VII.1670, Pollaxe.

Leeds, Royal Armouries, VII.1712, Winged partizan.

Leeds, Royal Armouries, VII.1733, Simple morgenstern.

Leeds, Royal Armouries, VII.1734, Simple morgenstern.

Leeds, Royal Armouries, VII.1743, Chauve-Souris.

Leeds, Royal Armouries, VII.1966, Standard bill.

Leeds, Royal Armouries, VII.2027, Chauve-Souris.

Leeds, Royal Armouries, VII.2430, Mordaxt.

Leeds, Royal Armouries, VII.2838, Winged partizan.

Leeds, Royal Armouries, VII.2885, Winged partizan.

Leeds, Royal Armouries, VII.2937, Military morgenstern.

Leeds, Royal Armouries, VII.4106, Bec-de-corbin.

Leeds, Royal Armouries, VII.4123, Vouge.

Leeds, Royal Armouries, VII.4156, Proto-halberd.

Leeds, Royal Armouries, XIV.1, Composite weapon.

London, The Wallace Collection, A925, Pollaxe.

London, The Wallace Collection, A926, Pollaxe.

London, The Wallace Collection, A927, Pollaxe.

London, The Wallace Collection, A929, Standard bill.

London, The Wallace Collection, A938, Couteau de brèche.

London, The Wallace Collection, A992, Winged partizan.

London, The Wallace Collection, A1014, Corseke.

London, The Wallace Collection, A1024, Standard Corseke.

London, Royal Armouries-Tower of London, VII.838, Standard Corseke.

Paris, Musée de l'Armée, K 113, Ahlspiess.

Paris, Musée de l'Armée, PO 425, Ahlspiess.

Philadelphia, Philadelphia Museum of Art, 1930-1-161, Standard bill.

Philadelphia, Philadelphia Museum of Art, 1977-167-314, Standard halberd.

Philadelphia, Philadelphia Museum of Art, 1977-167-322, Standard halberd.

Philadelphia, Philadelphia Museum of Art, 1977-167-323, Standard halberd.

Philadelphia, Philadelphia Museum of Art, 1977-167-328, Standard halberd.

Philadelphia, Philadelphia Museum of Art, 1977-167-332, Standard halberd.

Philadelphia, Philadelphia Museum of Art, 1977-167-333, Standard halberd.

Philadelphia, Philadelphia Museum of Art, 1977-167-338, Standard halberd.

Philadelphia, Philadelphia Museum of Art, 1977-167-342, Standard halberd.

Philadelphia, Philadelphia Museum of Art, 1977-167-422, Standard bill.

Philadelphia, Philadelphia Museum of Art, 1977-167-430, Standard bill.

Philadelphia, Philadelphia Museum of Art, 1977-167-432, Standard bill.

Philadelphia, Philadelphia Museum of Art, 1977-167-433, Standard bill.

Philadelphia, Philadelphia Museum of Art, 1977-167-435, Standard bill.

Philadelphia, Philadelphia Museum of Art, 1977-167-438, Spiked-scythe bill.

Philadelphia, Philadelphia Museum of Art, 1977-167-441, Spiked-scythe bill.

Philadelphia, Philadelphia Museum of Art, 1977-167-448, Composite glaive.

Philadelphia, Philadelphia Museum of Art, 1977-167-451, Standard bill.

Philadelphia, Philadelphia Museum of Art, 1977-167-462, Ahlspiess.

Philadephia, Philadelphia Museum of Art, 1977-167-466, Lucerne hammer.

Philadelphia, Philadelphia Museum of Art, 1977-167-467, Scorpion bill.

Philadelphia, Philadelphia Museum of Art, 1977-167-468, Pollaxe.

Private Collection, Proto-halberd.

Private Collection, Standard glaive.

Vienna, Heeresgeschichtliches Museum, 686, Spear.

Vienna, Heeresgeschichtliches Museum, 686, War spear.

Vienna, Heeresgeschichtliches Museum, 126.207, Military morgenstern.

Vienna, Kunsthistorisches Museum: Hofjagd- und Rüstkammer A117, Ox-tongue partizan.

Worcester, Worcester Art Museum, 1014.165, Bec-de-corbin.

Zürich, Landesmuseum, 3453, Proto-halberd.

Zürich, Landesmuseum, 3454.A, Proto-halberd.

Zürich, Landesmuseum, 4327, Proto-halberd.

Zürich, Landesmuseum, 13153, Proto-halberd.

Zürich, Landesmuseum, KZ 11476, Proto-halberd.

Zürich, Landesmuseum, LM 6345, Proto-halberd.

Appendix B: List of Examined Iconography

Apt the Younger, Ulrich, *Crucifixion*, 1517, tempera on panel, Staatsgalerie im Schaezler, Augsburg.

Battle of Dorneck, 1499, woodcut, Kupferstich Kabinett, Basel.

The Battle of Pavia, Royal Armouries, Leeds.

Battle Scene, Accademia, Florence.

Angelico, Beato, *The Humiliation of Christ*, *c.* 1440, fresco, Museo di San Marco, Florence.

Beham, Hans Sebald, *Christ Taken Captive*, 1535, woodcut, Staatliche Kunstsammlungen, Dresden.

Beham, Hans Sebald, *Patron Saints of Hungary Stephen, Ladislas and Emmerich*, *c.* 1527, woodcut, Bodleian Library, Oxford.

Beham, Hans Sebald, *Quartermaster of a Landsknecht Company*, 1540, woodcut, Albertina, Vienna.

Beham, Hans Sebald, *Wounded Man in the Army's Train*, *c.* 1530, woodcut, Staatsgalerie, Stuttgart.

di Betti, Bernardino, *Enea Piccolomini Leaves for the Council of Basel*, 1502-08, fresco, Duomo, Siena.

Boccati, Giovanni,*Capture of Christ*, *c.* 1447, tempera on wood, Galleria, Perugia.

Bouts, Dieric,*The Capture of Christ*, second half of C15th, oil on wood, Alte Pinakothek, Munich.

The Caesar Tapestry, *c.* 1470, tapestry, Historisches Museum, Bern.

Chieri, *Crucifixion*, Baptistery of the Duomo, Torino.

Cimabue, *The Capture of Christ*, fresco, Church of St Francis, Assisi.

Cranach the Elder, Lucas, *Beheading of St Barbara*, *c.* 1510, oil on wood, Alte Pinakothek, Munich.

Cranach the Elder, Lucas, *Christ Before Caiaphas*, 1509, woodcut, Staatliche Kunstsammlungen, Dresden.

Cranach the Elder, Lucas, *Ecce Homo*, 1509, woodcut, Staatliche Kunstammlungen,Dresden.

Crucifixion, Baptistery of the Duomo, Turin.

Crucifixion, Oratorium of St Rocco, Lucca.

Decorative Table With Scenes From the Life of Judith, Museo di San Matteo, Pisa.

Dossi, Battista, *Hercules and the Pygmies*, Alte Museum, Graz.

Duccio (di Buoninsegna), *Crucifixion*, 1308-11, tempera on wood, Manchester Art Gallery, Manchester.

Dürer, Albrecht, *Christ Bearing the Cross*, 1498, woodcut , Albertina,Vienna.

Dürer, Albrecht, *Knight on Horseback with Spike Armour*, sketch, The British Museum, London.

Dürer, Albrecht, *Soldiers*, 1489, sketch in watercolour, Staatliche Museen Preussischer Kulturbesitz: Kupferstichkabinett, Berlin.

Dürer School, *Forest Scene*, Hederlein Kunsthistorisches Museum, Berlin.

Dürer School, *Christ Bearing the Cross*, Albertina, Vienna.

Fouquet, Jean, *Heures d'Etienne Chevalier: L'Adoration des Mages*, *c.* 1460, illumination on parchment, Musée Condé, Chantilly.

di Giovanni, Andrea, *Capture of Christ*, Oratory of the Saviour, Certona.

Graf, Urs, *Horrors of War*, 1521, print, Kunstmuseum Kupferstichkabinett, Basel.

Baldung Grien, Hans, *The Martyrdom of St Lawrence*, The Metropolitan Museum of Art, New York.

Holbein the Elder, Hans, *Christ Before Caiaphas*, *c.* 1498, tempera on wood Staatsgalerie, Stuttgart.

Holbein the Elder, Hans, *Resurrection*, *c.* 1498, tempera on wood Staatsgalerie, Stuttgart.

Holbein the Elder, Hans, *Graue Passion 'Ecce Homo'*, *c.* 1505-10, oil tempera on fir, Staatsgalerie, Stuttgart.

Holbein the Younger, Hans, *The Capture of Christ*, Kunstmuseum, Basel.

Holbein the Younger, Hans, *The Passion*, *c.* 1524, oil on panel, Kunstmuseum, Basel.

Hopfer, Daniel, *Crucifixion*, C16th, etching printed in ink, Swann Galleries, New York.

Jaquerio, Giacomo, *Christ Carrying the Cross*, 1491, tempera on panel, Abbazia di Sant'Antonio di Ranverso, Turin.

Jaquerio, Giacomo, *Godfrey of Bouillon*, Castle of Manta, Cuneo.

Jaquerio, Giacomo, *The passion of Christ*, early C15th, fresco, Church of St Anthony of Ranverso, Turin.

Jaquerio, Giacomo,*The Road to Calvary*, Church of St Anthony of Ranverso, Turin.

Jaquerio, Giacomo, *Scenes From the Life of Christ*, *c.* 1420, fresco, Castle of Manta, Cuneo.

Jaquerio, Giacomo, *Thamarys*, Castle of Manta, Cuneo.

Ligozzi, Ermano and Jacopo Ligozzi, *Gran Cavalcata*,*c.* 1580, fresco, Palazzo Ridolfi,Verona.

Lützelburger, Hans, *Battle between peasants and naked men*, 1522, woodcut, National Gallery of Denmark, Copenhagen.

Manuel, Niklaus, *The Battle of Sempach*, C15th, woodcut, Bildarchiv,Lucerne.

The Martyrdom of St Leodegar, 1515, painting on spruce, Germanisches National Museum, Nuremberg.

The Martyrdom of St Margaret, Santuario di Crea, Alessandria.

Master MS, *Calvary*, Alte Pinakothek, Munich.

Master of the Abbey of Affligem, *Jesus Carrying the Cross*, late C15th, tempera on panel, Musées Royaux des Beaux-Arts de Belgique, Brussels.

Pordenone, Giovanni Antonio, *Beheading of St Paul*, 1517, fresco, Parrochiale, Travesio.

The Resurrection of Christ, late C15th, tempera on wall, Chapel of St Sebastian, Lanslevillard.

Schäufelein, Hans, *Pilate Washing His Hands*, 1507, engraving, The British Museum, London.

Schäufelein, Hans, *Triumpal Procession of Emperor Charles V*, 1537, woodcut, Herzog August Library,Wolfenbüttel.

Schoen, Erhard, *Bohemian Captain*, Kunsthistorisches Museum, Vienna.

Schongauer, Martin, *Christ Taken Captive*, 1470-1482, engraving, Vassar College, New York.

Signorelli, Luca, *Episodes From the Life of St Benedict*, 1497-98, fresco, Abbazia di Monte Oliveto Maggiore, Sienna.

Soldiers, Frits Lugt Collection, Paris.

Solis, Virgil, *Halberdier Walking Left and Carrying a Halberd Over his Left Shoulder*, *c.* 1550, woodcut, The Metropolitan Museum of Art, New York.

Tintoretto (Jacopo Robusti), *Crucifixion*, 1568, oil on canvas, Chapel of St Casian, Venice.

The Treason of Judas, 13th century, mosaic, Duomo, Monreale.

Tura, Cosmè, *The Martyrdom of St Maurelius*, *c.* 1470, oil on wood, Pinacoteca, Ferrara.

Uccello, Paolo, *Battle of San Romano*, *c.* 1435-1460, tempera and oil on panel, Uffizi, Florence.

Vecchietta (Lorenzo di Pietro), *The Kiss of Judas*, Pinacoteca Nazionale di Siena, Siena.

di Vieri, Ugolino, *The Capture of Christ*, *c.* 1337, Museo dell'Opera del Duomo, Orvieto.

Wechtlin, Hans, *Christ before Anna*, 1508, Private Collection.

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Dresden, Sächsische Landesbibliothek, MS Dresd.C.93

Heidelberg, Bibliotheca Palatina, MS Cod. Pal. germ. 130

London, British Library, MS Royal 20 C VII.

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The Typology and Use of Staff Weapons in Western Europe c. 1400 – c. 1550

Iason-Eleftherios Tzouriadis

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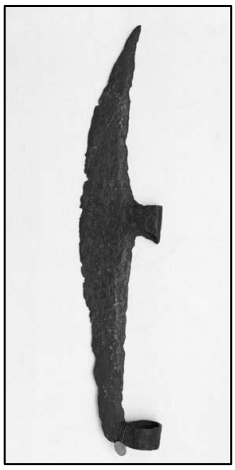

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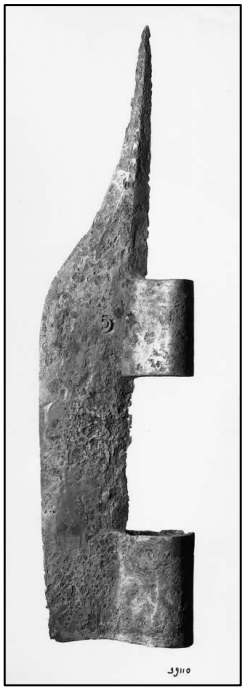

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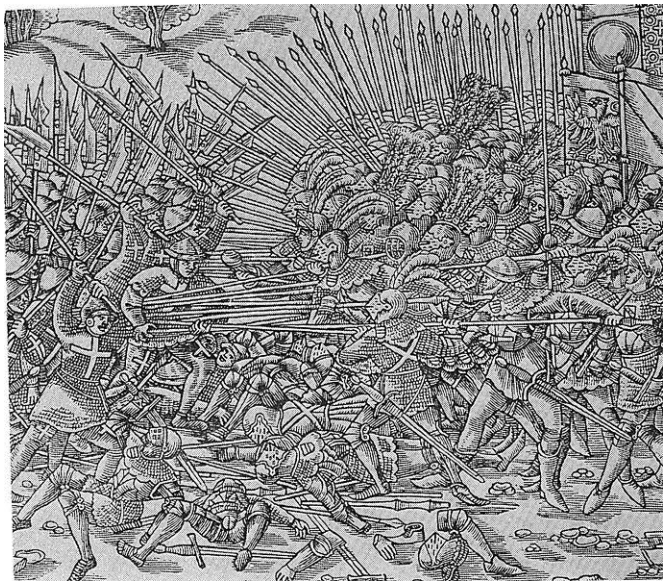

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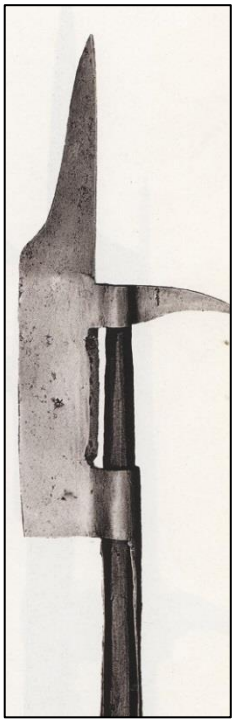

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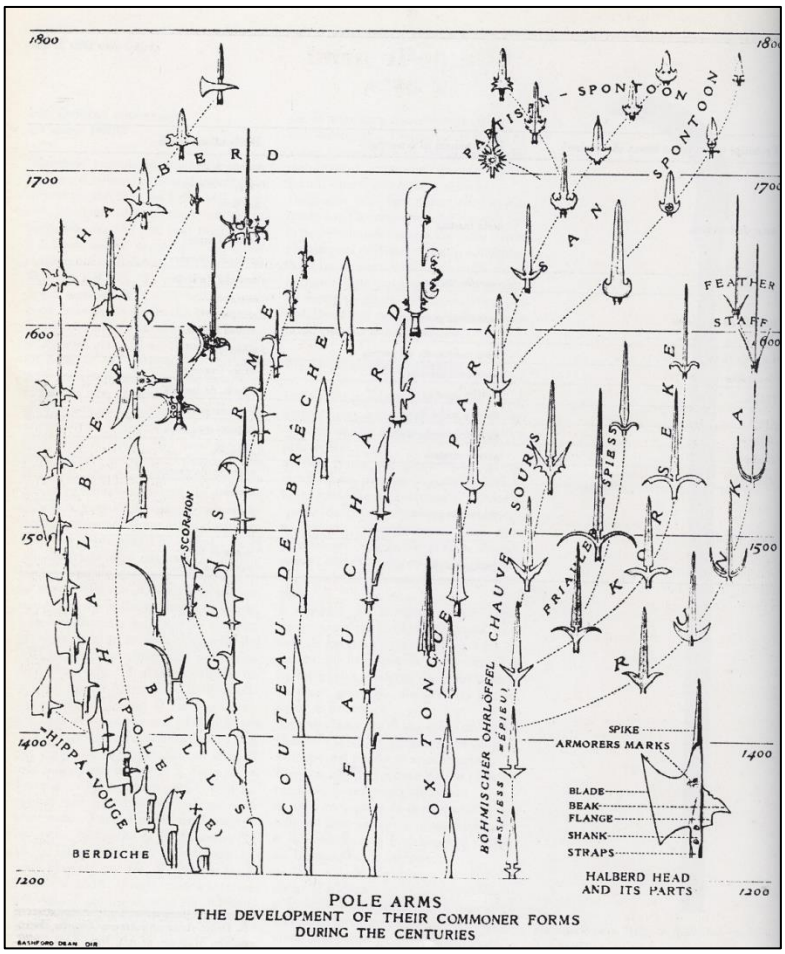

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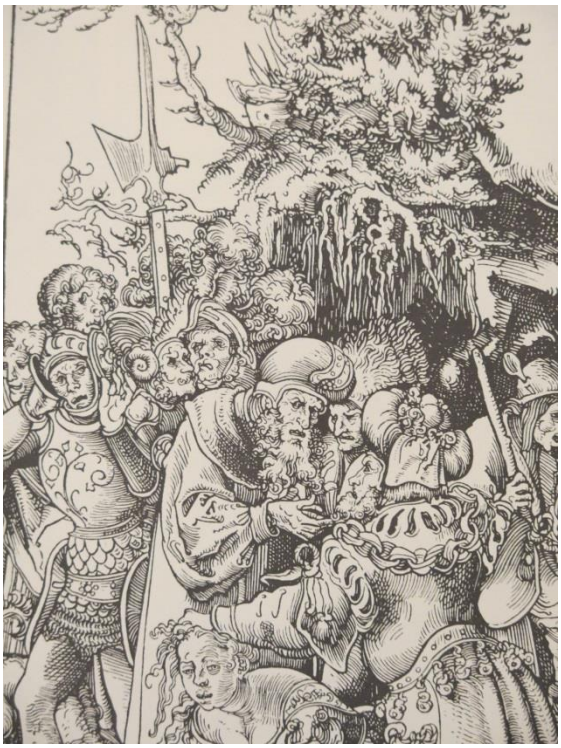

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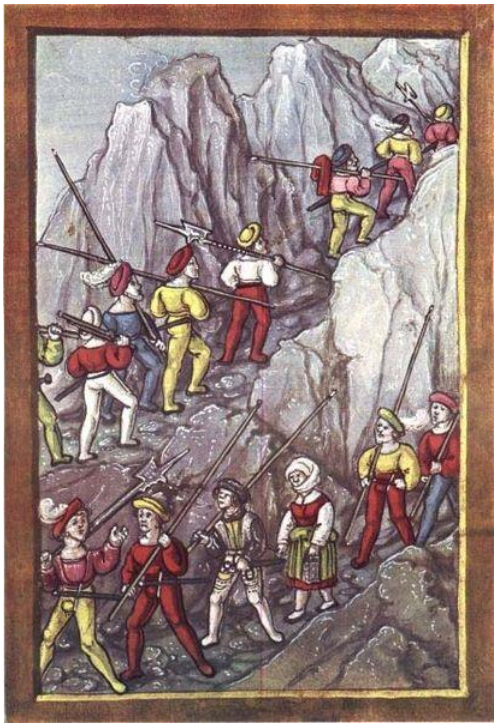

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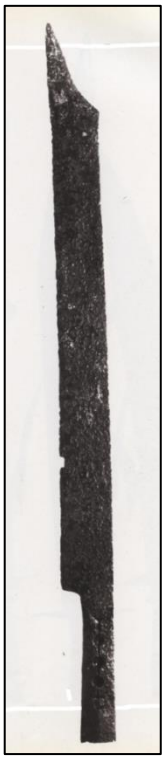

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Figure 68. Jean Fouquet, *Heures d'Etienne Chevalier: L'Adoration des Mages*, *c.* 1460, illumination on parchment, Musée Condé, Chantilly.

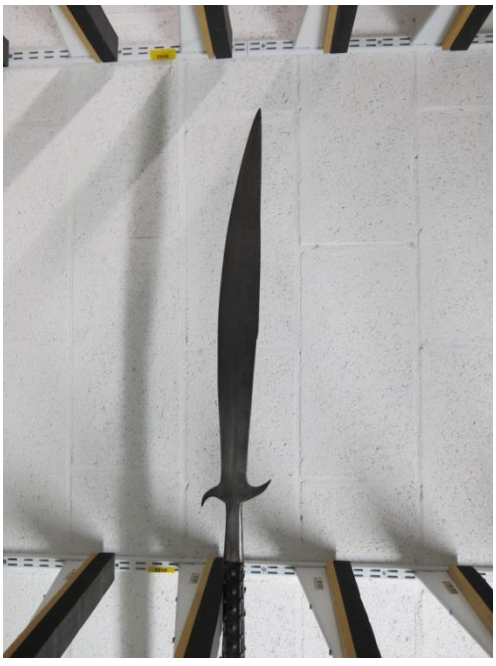

Figure 69. Leeds, Royal Armouries, VII.952, Standard glaive.

Figure 70. Leeds, Royal Armouries, VII.955, Standard glaive.

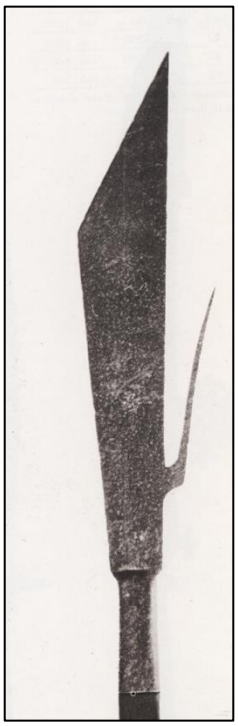

Figure 71. Private Collection, Composite glaive.

Figure 72. Cosmè Tura, *The Martyrdom of St Maurelius*, *c.* 1470, oil on wood, Pinacoteca, Ferrara.

Figure 73. Brescia, Civici Musei d'Arte e Storia, J 121, Composite glaive.

Figure 74. New York, The Metropolitan Museum of Art, 14.25.259, Composite glaive.

Figure 75. Leeds, Royal Armouries, VII.943, Composite glaive.

Figure 76. Copenhagen, Danish National Museum, 212, Standard glaive.

Figure 77. Dieric Bouts, *The Capture of Christ*, second half of 15th century, oil on wood, Alte Pinakothek, Munich.

Figure 78. Leeds, Royal Armouries, VII.949, Composite glaive.

Figure 79. New York, The Metropolitan Museum of Art, 14.25.26, Composite glaive.

Figure 80. Philadelphia, Philadelphia Museum of Art, 1977-167-448, Composite glaive.

Figure 81. New York, The Metropolitan Museum of Art, 14.25.356, Composite glaive.

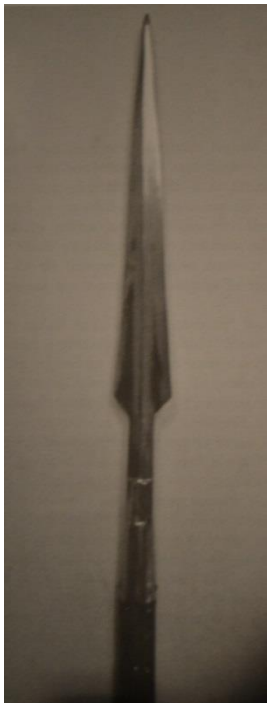

Figure 82. Vienna, Heeresgeschichtliches Museum, 686, Spear.

Figure 83. Bern, Historisches Museum, 25174, Winged Spear.

Figure 84. New York, The Metropolitan Museum of Art, 14.25.12, Winged spear.

Figure 85. Duccio di Buoninsegna, *Crucifixion*, *c.* 1308-11, tempera on wood, Manchester Art Gallery, Manchester.

Figure 86. Giacomo Jaquerio, *Christ Carrying the Cross*, *c.* 1491, tempera on panel, Abbazia di Sant'Antonio di Ranverso, Turin.

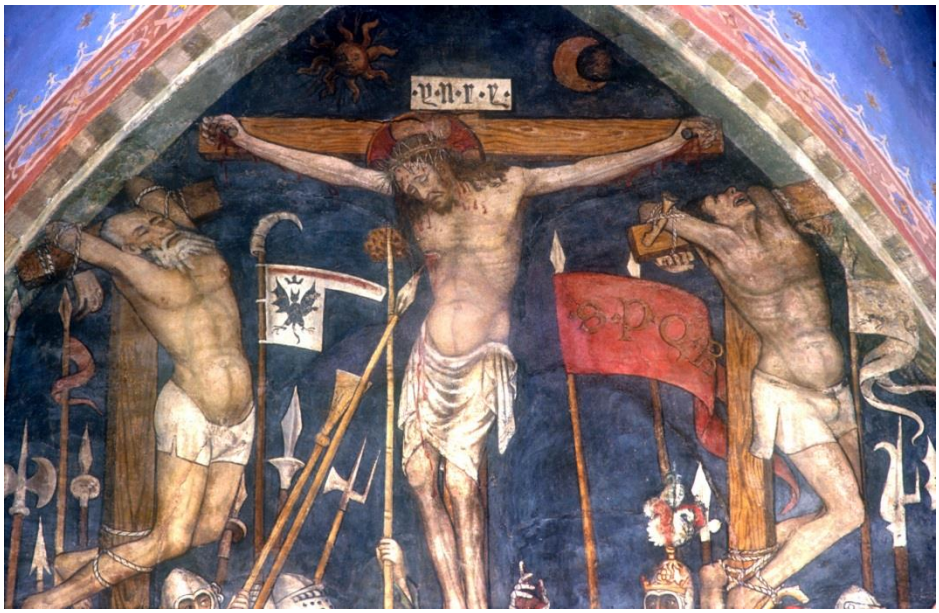

Figure 87. *Crucifixion*, Baptistery of the Duomo, Turin.

Figure 88. *The Resurrection of Christ*, late 15th century, tempera on wall, Chapel of St Sebastian, Lanslevillard.

Figure 89. Ulrich Apt the Younger, *Crucifixion*, *c.* 1517, tempera on panel, Staatsgalerie im Schaezler, Augsburg.

Figure 90. *Crucifixion*, Oratorium of St Rocco, Lucca, detail.

Figure 91. Lorenzo di Pietro, (Vecchietta), *The Kiss of Judas*, Pinacoteca Nazionale di Siena, Siena, detail.

Figure 92. *Soldiers*, Frits Lugt Collection, Paris.

Figure 93. Beato Angelico, *The Humiliation of Christ*, *c.* 1440, fresco, Museo di San Marco, Florence, detail.

Figure 94. *The Martyrdom of St Margaret*, Santuario di Crea, Alessandria, detail.

Figure 95. *Decorative Table With Scenes From the Life of Judith*, Museo di San Matteo, Pisa, detail.

Figure 96. New York, The Metropolitan Museum of Art, 04.3.76, War spear.

Figure 97. New York, The Metropolitan Museum of Art, 14.25.209, War spear.

Figure 98. Leeds, Royal Armouries, VII.1506, Ox-tongue partizan.

Figure 99. Luca Signorelli, *Episodes from the Life of St Benedict*, *c.* 1497-98, fresco, Abbazia di Monte Oliveto Maggiore, Siena.

Figure 100. Leeds, Royal Armouries, VII.188, Ox-tongue partizan (right).

Figure 101. New York, The Metropolitan Museum of Art, 14.25.389, Ox-tongue partizan.

Figure 102. Battista Dossi, *Hercules and the Pygmies*, Alte Museum, Graz, detail.

Figure 103. New York, The Metropolitan Museum of Art, 14.25.119, Ox-tongue partizan.

Figure 104. Vienna, Kunsthistorisches Museum: Hofjagd- und Rüstkammer A117, Ox-tongue partizan.

Figure 105. Leeds, Royal Armouries, VII.186, Ox-tongue partizan.

Figure 106. Hans Sebald Beham, *Quartermaster of a Landsknecht Company*, *c.* 1540, woodcut, Albertina, Vienna.

Figure 107. New York, The Metropolitan Museum of Art, 14.25.293, Ox-tongue partizan, 14.25.293.

Figure 108. Paris, Bibliothèque nationale de France, MS Français 5091, fol. 10^{v}.

Figure 109. New York, The Metropolitan Museum of Art, 14.25.351, Winged partizan.

Figure 110. New York, The Metropolitan Museum of Art, 14.25.192, Winged partizan.

Figure 111. Leeds, Royal Armouries, VII.161, Winged partizan.

Figure 112. Leeds, Royal Armouries, VII.173, Winged partizan.

Figure 113. Leeds, Royal Armouries, VII.175, Winged partizan.

Figure 114. Leeds, Royal Armouries, VII.168, Winged partizan (middle).

Figure 115. Leeds, Royal Armouries, VII.2838, Winged partizan.

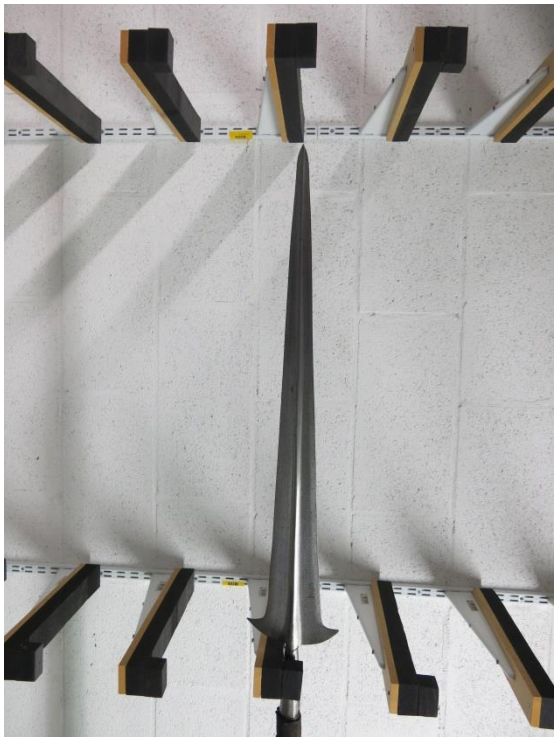

Figure 116. Leeds, Royal Armouries, VII.1712, Winged partizan.

Figure 117. Leeds, Royal Armouries, VII.170, Winged partizan (right).

Figure 118. Leeds, Royal Armouries, VII.171, Winged partizan.

Figure 119. Giovanni Antonio Pordenone, *Beheading of St Paul*, 1517, fresco, Parrochiale, Travesio.

Figure 120. New York, The Metropolitan Museum of Art, 14.25.94, Winged partizan.

Figure 121. London, The Wallace Collection, A992, Winged partizan.

Figure 122. New York, The Metropolitan Museum of Art, 14.25.97, Winged partisan.

Figure 123. Leeds, Royal Armouries, VII.2885, Winged partizan.

Figure 124. New York, The Metropolitan Museum of Art, 08.261.2, Winged partizan.

Figure 125. Leeds, Royal Armouries, VII.178, Winged partizan (left).

Figure 126. *The Beauchamp Pageant*, p. 70, detail.

Figure 127. Hans Schäufelein, *Triumpal Procession of Emperor Charles V*, 1537, woodcut, Herzog August Library,Wolfenbüttel, detail.

Figure 128. Dürer School, *Forest Scene*, Hederlein Kunsthistorisches Museum, Berlin, detail.

Figure 129. Berlin, Deutsches Historisches Museum, W 2, Vouge.

Figure 130. Berlin, Museum für Deutsches Geschichte, W 32.150, Vouge.

Figure 131. Leeds, Royal Armouries, VII.4123, Vouge.

Figure 132. New York, The Metropolitan Museum of Art, 14.25.272, Vouge.

Figure 133. Leeds, Royal Armouries, VII.1527, Vouge.

Figure 134. Paris, Musée de l'Armée, K 825, Vouge or composite glaive.

Figure 135. New York, The Metropolitan Museum of Art, 14.25.260, Couteau de brèche.

Figure 136. Berlin, Deutsches Historisches Museum, W 2522, Couteau de brèche.

Figure 137. Berlin, Deutsches Historisches Museum, W 2521, Couteau de brèche.

Figure 138. London, The Wallace Collection, A938, Couteau de brèche.

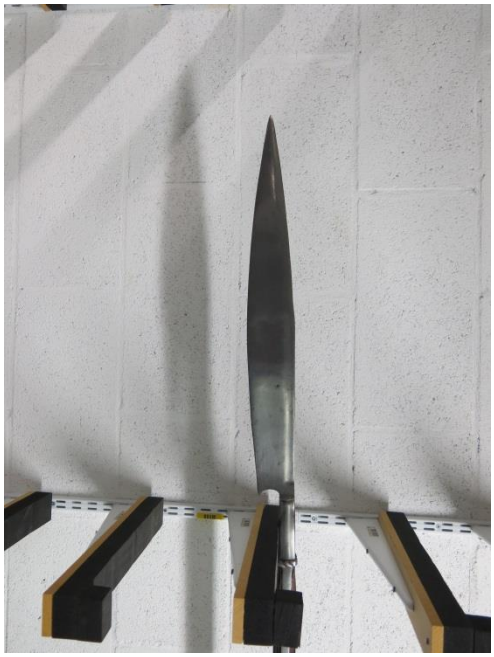

Figure 139. Leeds, Royal Armouries, VII.957, Couteau de brèche.

Figure 140. New York, The Metropolitan Museum of Art, 29.156.8, Couteau de brèche.

Figure 141. Ermanno Ligozzi and Jacopo Ligozzi, *Gran Cavalcata*, *c.* 1580, fresco, Palazzo Ridolfi,Verona.

Figure 142. New York, The Metropolitan Museum of Art, 14.25.233, Standard corseke.

Figure 143. Leeds, Royal Armouries, VII.1662, Standard corseke.

Figure 144. London, The Wallace Collection, A1024, Standard corseke.

Figure 145. London, Royal Armouries-Tower of London, VII.838, Standard corseke.

Figure 146. New York, The Metropolitan Museum of Art, 14.25.362, Standard corseke.

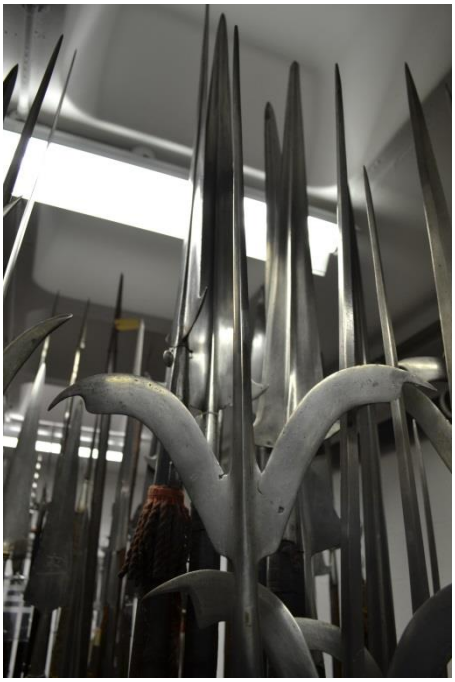

Figure 147. Leeds, Royal Armouries, VII.845, Friuli type corseke.

Figure 148. New York, The Metropolitan Museum of Art, 29.156.38, Friuli type corseke.

Figure 149. New York, The Metropolitan Museum of Art, 14.25.38, Friuli type corseke.

Figure 150. Leeds, Royal Armouries, VII.849, Friuli type corseke.

Figure 151. New York, The Metropolitan Museum of Art, 14.25.3, Friuli type corseke.

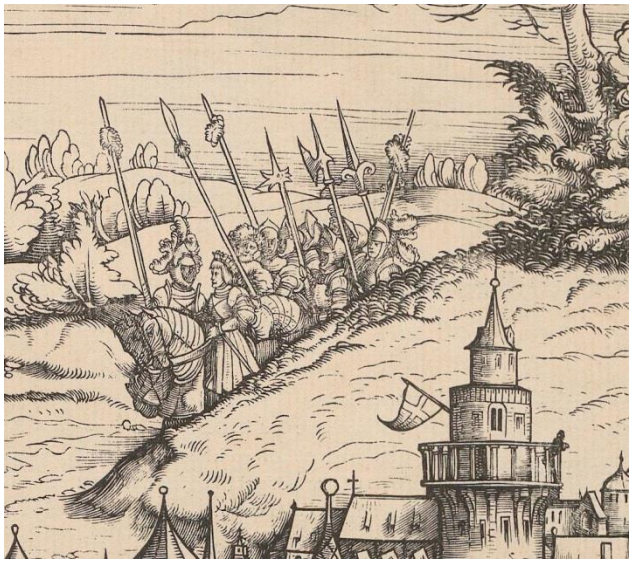

Figure 152. *Der Weisskunig*, p. 179, detail.

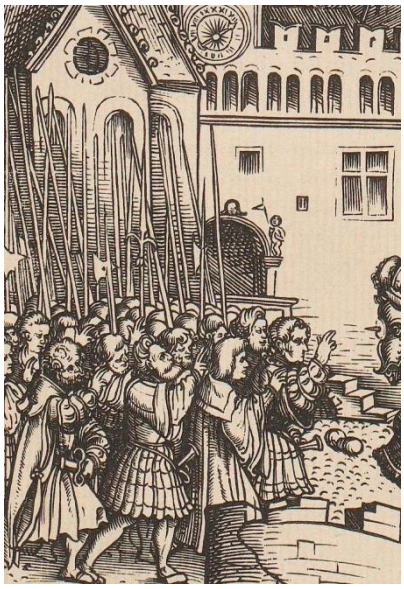

Figure 153. *Der Weisskunig*, p. 164, detail.

Figure 154. *Der Weisskunig*, p.334, detail.

Figure 155. Giacomo Jaquerio, *The Passion of Christ*, early 15th century, fresco, Church of St Anthony of Ranverso, Turin, detail.

Figure 156. New York, The Metropolitan Museum of Art, 14.25.72, Ranseur.

Figure 157. New York, The Metropolitan Museum of Art, 14.25.99, Ranseur.

Figure 158. New York, The Metropolitan Museum of Art, 14.25.123, Ranseur.

Figure 159. New York, The Metropolitan Museum of Art, 14.25.15, Ranseur.

Figure 160. New York, The Metropolitan Museum of Art, 14.25.89, Ranseur.

Figure 161. New York, The Metropolitan Museum of Art, 14.25.286, Ranseur.

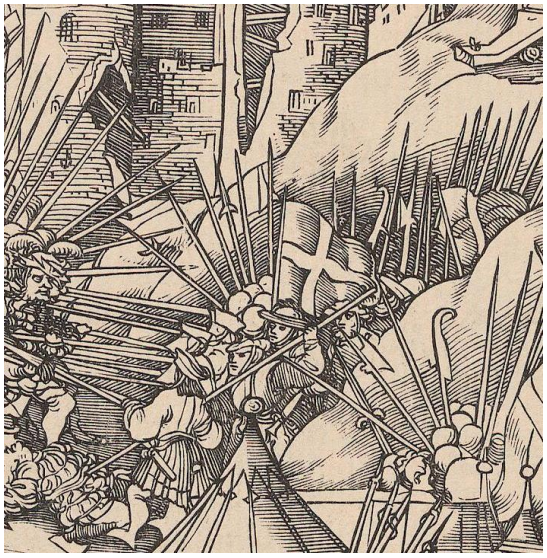

Figure 162. *Der Weisskunig*, p. 359, detail.

Figure 163. Dürer School, *Christ Bearing the Cross*, Albertina, Vienna.

Figure 164. Hans Schäufelein, *Pilate Washing His Hands*, 1507, engraving, The British Museum, London, detail.

Figure 165. Hans Sebald Beham, *Christ Taken Captive*, 1535, woodcut, Staatliche Kunstsammlungen, Dresden, detail.

Figure 166. New York, The Metropolitan Museum of Art, 14.25.197, Chauve-souris.

Figure 167. New York, The Metropolitan Museum of Art, 04.3.83, Chauve-souris.

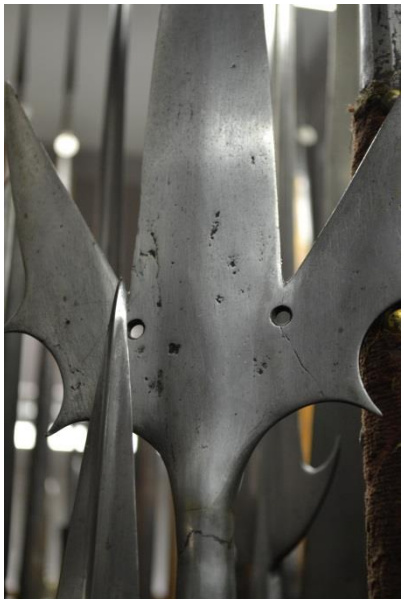

Figure 168. Leeds, Royal Armouries, VII.834, Chauve-souris.

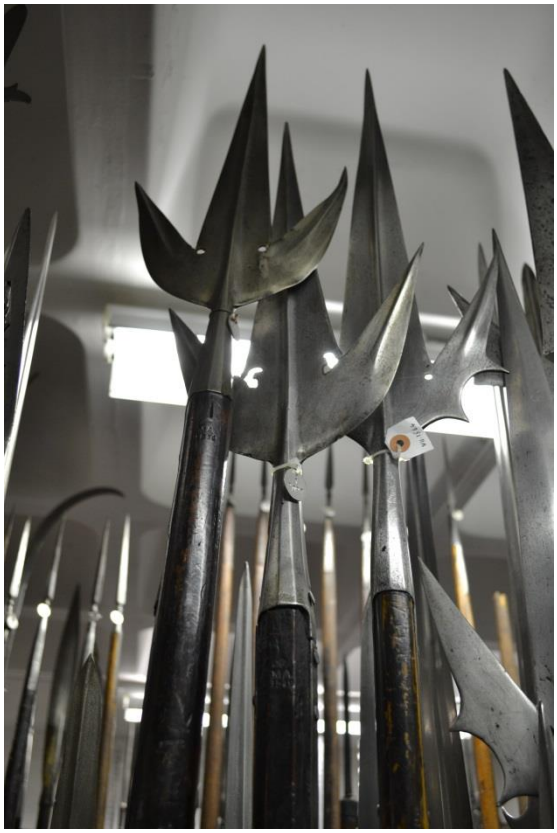

Figure 169. Leeds, Royal Armouries, VII.1743, VII.2027, VII.1564, Chauve-souris (left to right).

Figure 170. Leeds, Royal Armouries, VII.1340, Chauve-souris.

Figure 171. Marozzo, p. 83.

Figure 172. New York, The Metropolitan Museum of Art, 29.156.18, Chauve-souris.

Figure 173. Leeds, Royal Armouries, VII.1404, Chauve-souris.

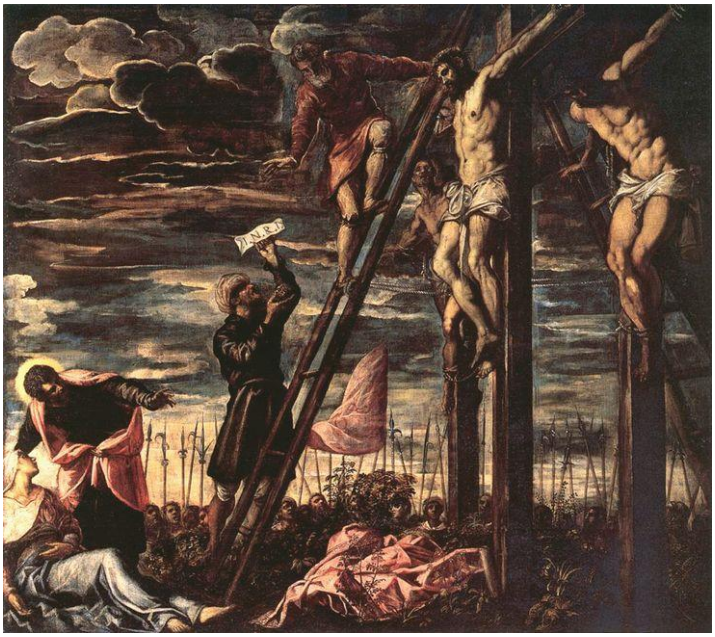

Figure 174. Jacopo Robusti Tintoretto, *Crucifixion*, 1568, oil on canvas, Chapel of St Casian, Venice.

Figure 175. New York, The Metropolitan Museum of Art, 14.25.184, Feather staff.

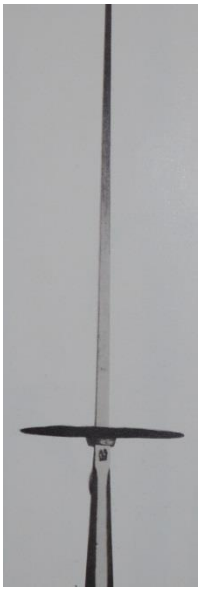

Figure 176. Paris, Musée de l'Armée, PO 425, Ahlspiess.

Figure 177. New York, The Metropolitan Museum of Art, 14.25.396, Ahlspiess.

Figure 178. New York, The Metropolitan Museum of Art, 08.261.1, Ahlspiess.

Figure 179. New York, The Metropolitan Museum of Art, 14.25.324, Ahlspiess.

Figure 180. Berlin, Deutsches Historisches Museum, W 1, Ahlspiess.

Figure 181. New York, The Metropolitan Museum of Art, 14.25.247, Ahlspiess.

Figure 182. Cambridge, Cambridge University Library, MS Inc.0.A.7.2[888], fol. 30^{v}, detail.

Figure 183. *The Martyrdom of St Leodegar*, 1515, painting on spruce, Germanisches National Museum, Nuremberg, detail.

Figure 184. *Der Weisskunig*, p.114.

Figure 185. Erhard Schoen, *Bohemian Captain*, Kunsthistorisches Museum, Vienna, detail.

Figure 186. Master MS, *Calvary*, Alte Pinakothek, Munich, detail.

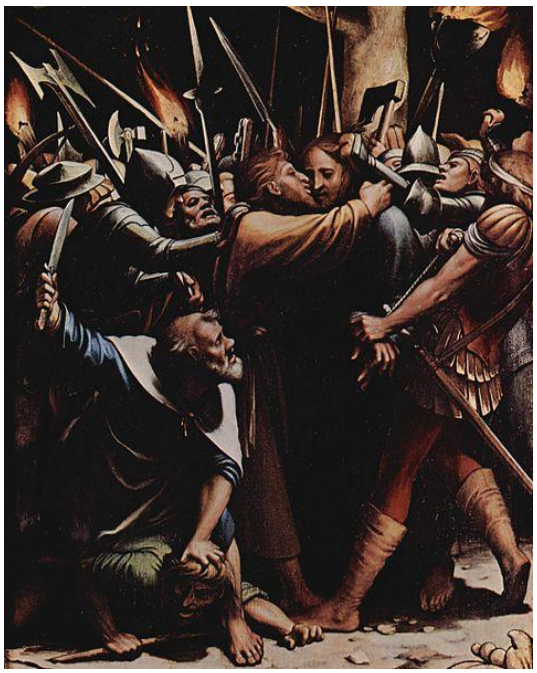

Figure 187. Hans Holbein the Younger, *The Passion*, *c.* 1524, oil on panel, Kunstmuseum, Basel.

Figure 188. Paris, Musée de l'Armée, K 113, Ahlspiess.

Figure 189. Daniel Hopfer, *Crucifixion*, 16th century, etching printed in ink, Swann Galleries, New York.

Figure 190. *Der Weisskunig*, p. 167, detail.

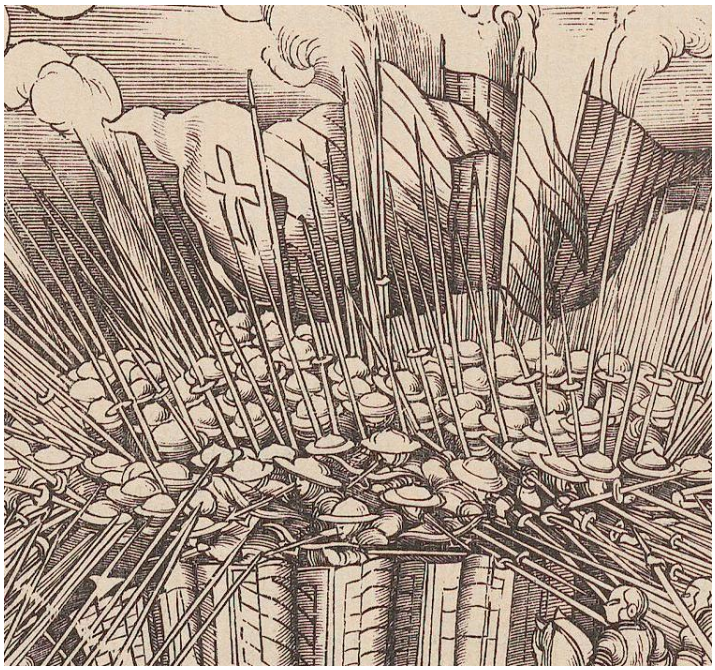

Figure 191. *Der Weisskunig*, p. 326, detail.

Figure 192. *Freydal*, p. 23.

Figure 193. Freydal, p. 147.

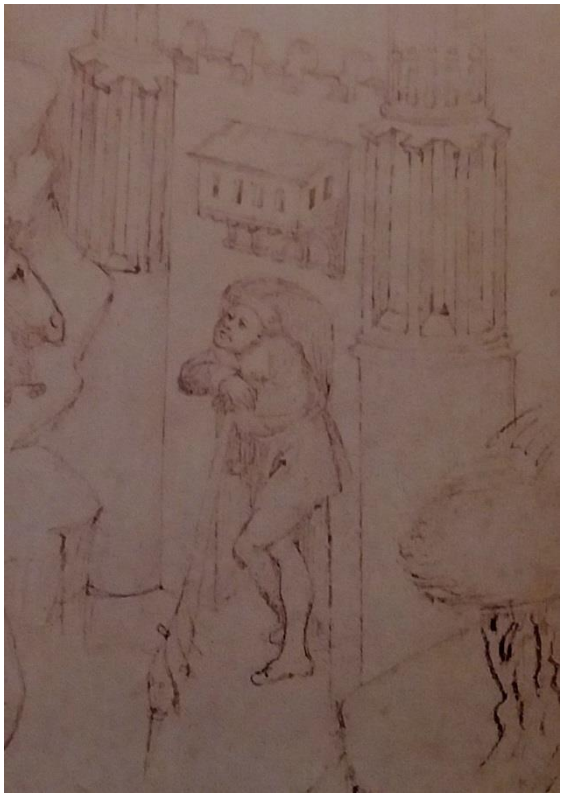

Figure 194. *The Beuchamp Pageant*, p. 73, detail.

Figure 195. Hans Holbein the Younger, *The Capture of Christ*, Kunstmuseum, Basel.

Figure 196. Leeds, Royal Armouries, VII.1366, Simple morgenstern.

Figure 197. Leeds, Royal Armouries, VII.1733, Simple morgenstern, detail.

Figure 198. Leeds, Royal Armouries, VII.1734, Simple morgenstern.

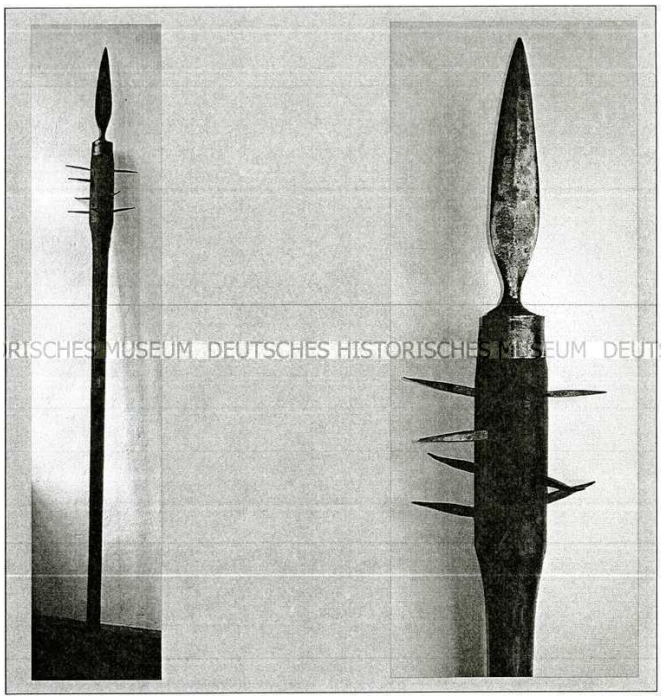

Figure 199. Berlin, Deutsches Historisches Museum, W 28, Simple morgenstern.

Figure 200. Berlin, Deutsches Historisches Museum, W 72/89, Simple morgenstern.

Figure 201. Leeds, Royal Armouries, VII.1584, Military morgenstern.

Figure 202. Leeds, Royal Armouries, VII.901, Military morgenstern.

Figure 203. Leeds, Royal Armouries, VII.2937, Military morgenstern.

Figure 204. Vienna, Heeresgeschichtliches Museum, 126.207, Military morgenstern.

Figure 205. Leeds, Royal Armouries, VII.1343, Military morgenstern.

Figure 206. Dieric Bouts, *The Capture of Christ*, second half of the 15th century, oil on wood, Alte Pinakothek, Munich, detail.

Figure 207. *The Caesar Tapestry*, *c.* 1470, tapestry, Historisches Museum, Bern, detail.

Figure 208. Dürer School, *Christ Bearing the Cross*, Albertina, Vienna, detail.

Figure 209. Master of the Abbey of Affligem, *Jesus Carrying the Cross*, late C15th, tempera on panel, Musées Royaux des Beaux-Arts de Belgique, Brussels, detail.

Figure 210. Hans Holbein the Elder, *Resurrection*, *c.* 1498, tempera on wood Staatsgalerie, Stuttgart.

Figure 211. Hans Holbein the Elder, *Christ Before Caiaphas*, *c.* 1498, tempera on wood Staatsgalerie, Stuttgart, detail.

Figure 212. Leeds, Royal Armouries, VII. 1642, Holy-water sprinkler.

Figure 213. Los Angeles, Jean Paul Getty Museum, MS 23, fol. 121^{v}, detail.

Figure 214. Leeds, Royal Armouries, XIV.1, Composite weapon.

Figure 215. New York, The Metropolitan Museum of Art, 14.25.1366, Military flail.

Figure 216. Lucas Cranach the Elder, *Christ Before Caiaphas*, 1509, woodcut, Staatliche Kunstsammlungen, Dresden.

Figure 217. Hans Holbein the Younger, *The Capture of Christ*, Kunstmuseum, Basel, detail.

Figure 218. Berlin, Deutsches Historisches Museum, W 59/223, Kettenmorgenstern.

Figure 219. Berlin, Deutsches Historisches Museum, W 72/81, Kettenmorgenstern.

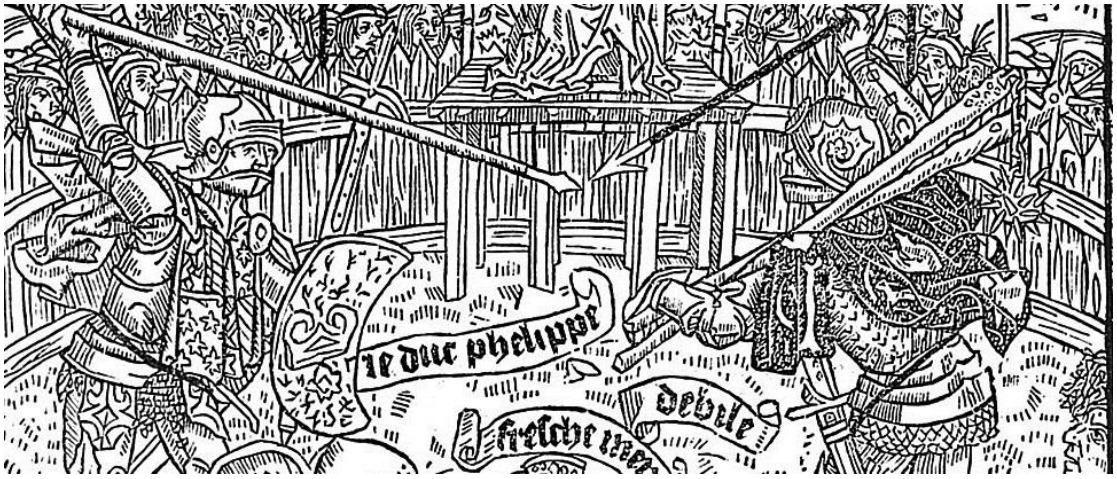

Figure 220. Olivier de La Marche, *Illustrations de Le Chevalier Délibéré* (Schiedam: Unknown, 1498), plate 10, detail.

Figure 221. Hans Lützelburger, *Battle between peasants and naked men*, 1522, woodcut, National Gallery of Denmark, Copenhagen, detail.

Figure 222. *The Triumph of Maximilian I*, p. 33.

Figure 223. *Freydal*, p.83.

Figure 224. Berlin, Deutsches Historisches Museum, W 1494, Composite flail.

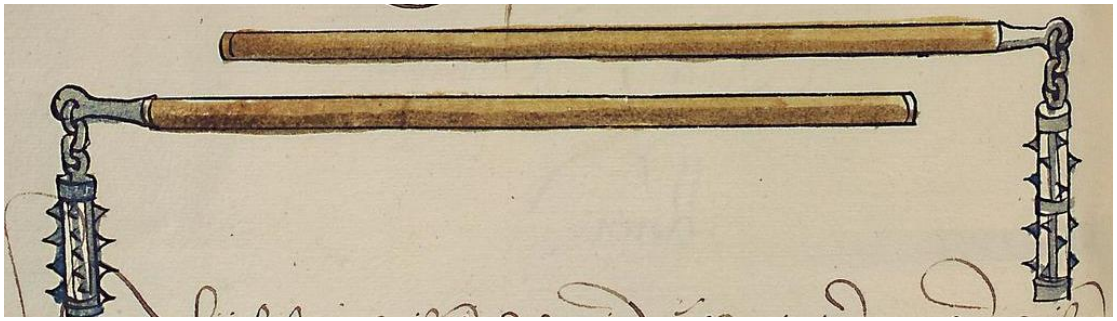

Figure 225. Heidelberg, Bibliotheca Palatina, MS Cod. Pal. germ. 130, 51v.

Figure 226. Lucas Cranach the Elder, *Ecce Homo*, 1509, woodcut, Staatliche Kunstammlungen, Dresden.

Figure 227. Dresden, Sächsische Landesbibliothek, MS Dresd.C.93, fol. 219^{v}, detail.

Figure 228. Leeds, Royal Armouries, VII.1367, Experimental flail.

Figure 229. Berlin, Deutsches Historisches Museum, W 59/251, Proto-bill.

Figure 230. Paolo Uccello, *Battle of San Romano*, *c.* 1435-1460, tempera and oil on panel, Uffizi, Florence, detail.

Figure 231. *The Beauchamp Pageant*, p. 82, detail.

Figure 232. *Der Weisskunig*, p. 198, detail.

Figure 233. Berlin, Deutsches Historisches Museum, W 32, Composite bill.

Figure 234. Berlin, Deutsches Historisches Museum, W 31, Composite bill.

Figure 235. Leeds, Royal Armouries, VII.937, Composite bill.

Figure 236. Chieri, *Crucifixion*, Baptistery of the Duomo, Turin, detail.

Figure 237. Giovanni Boccati, *Capture of Christ*, *c.* 1447, tempera on wood, Galleria, Perugia, detail.

Figure 238. *The Resurrection of Christ*, late C15th, tempera on wall, Chapel of St Sebastian, Lanslevillard, detail.

Figure 239. Beato Angelico, *The Humiliation of Christ*, *c.* 1440, fresco, Museo di San Marco, Florence, detail.

Figure 240. *The Beauchamp Pageant*, p. 70, detail.

Figure 241. *The Beauchamp Pageant*, p. 82, detail.

Figure 242. Luca Signorelli, *Episodes from the Life of St Benedict*, *c.* 1497-98, fresco, Abbazia di Monte Oliveto Maggiore, Siena, detail.

Figure 243. Paris, Bibliothèque nationale de France, MS Français 5091, fol. 10^{v}, detail.

Figure 244. Hans Holbein the Younger, *The Capture of Christ*, Kunstmuseum, Basel, detail.

Figure 245. Bernardino di Betti, *Enea Piccolomini Leaves for the Council of Basel*, *c.* 1502-08, fresco, Duomo, Siena, detail.

Figure 246. *The Martyrdom of St Leodegar*, 1515, painting on spruce, Germanisches National Museum, Nuremberg, detail.

Figure 247. *Der Weisskunig*, p. 144.

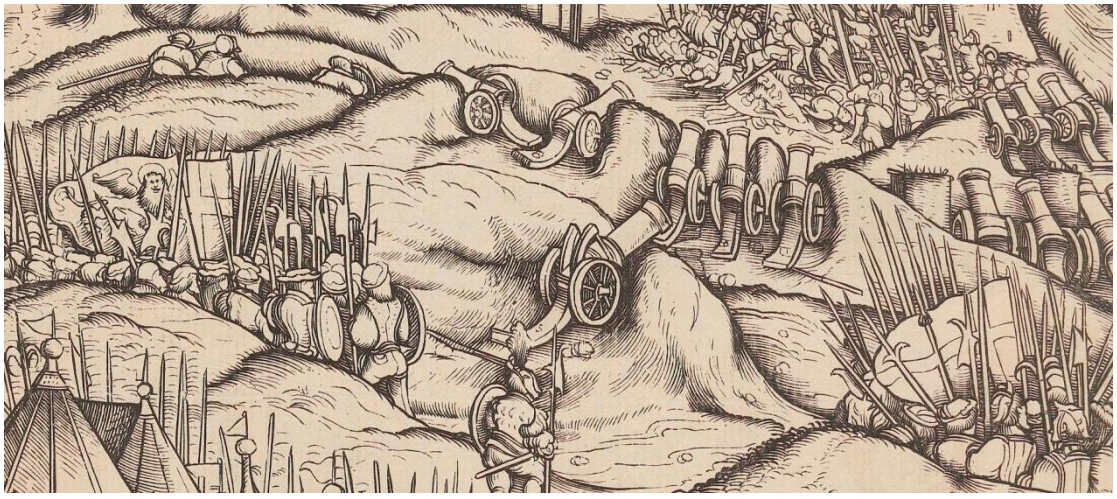

Figure 248. *Der Weisskunig*, p. 334, detail.

Figure 249. *Der Weisskunig*, p. 367, detail.

Figure 250. Jacopo Robusti Tintoretto, *Crucifixion*, 1568, oil on canvas, Chapel of St Casian, Venice, detail.

Figure 251. Berlin, Deutsches Historisches Museum, W 9, Standard bill.

Figure 252. Philadelphia, Philadelphia Museum of Art, 1977-167-451, Standard bill.

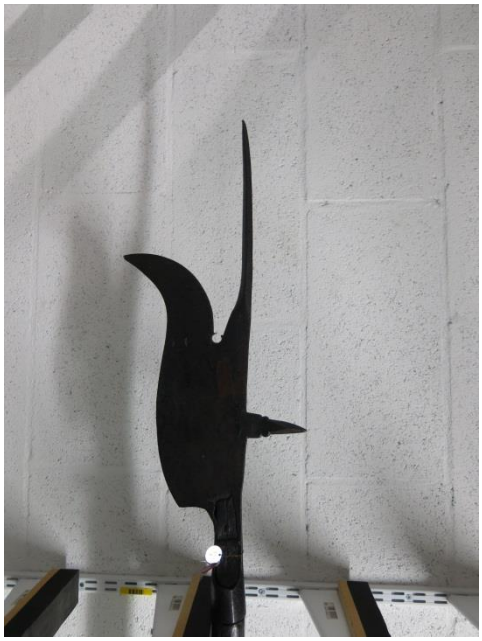

Figure 253. Leeds, Royal Armouries, VII.1966, Standard bill

Figure 254. Leeds, Royal Armouries, VII.1513, Standard bill.

Figure 255. London, The Wallace Collection, A929, Standard bill.

Figure 256. Philadelphia, Philadelphia Museum of Art, 1977-167-422, Standard bill.

Figure 257. Philadelphia, Philadelphia Museum of Art, 1977-167-430, Standard bill.

Figure 258. Philadelphia, Philadelphia Museum of Art, 1930-1-161, Standard bill.

Figure 259. Leeds, Royal Armouries, VII.1582, Standard bill.

Figure 260. Philadelphia, Philadelphia Museum of Art, 1977-167-433, Standard bill.

Figure 261. Philadelphia, Philadelphia Museum of Art, 1977-167-432, Standard bill.

Figure 262. New York, The Metropolitan Museum of Art, 36.25.2003, Standard bill.

Figure 263. Philadelphia, Philadelphia Museum of Art, 1977-167-435, Standard bill.

Figure 264. Philadelphia, Philadelphia Museum of Art, 1977.167.467, Scorpion bill.

Figure 265. New York, The Metropilitan Museum of Art, 14.25.360, Scorpion bill.

Figure 266. Leeds, Royal Armouries, VII.906, Scorpion bill.

Figure 267. Leeds, Royal Armouries, VII.948, Composite glaive, detail.

Figure 268. Philadelphia, Philadelphia Museum of Art, 1977-167-441, Spiked-scythe bill.

Figure 269. New York, The Metropolitan Museum of Art, 14.25.155, Spiked-scythe bill.

Figure 270. Philadelphia, Philadelphia Museum of Art, 1977-167-438, Spiked-scythe bill.

Figure 271. Giacomo Jaquerio, *Thamarys*, Castle of Manta, Cuneo.

Figure 272. Giacomo Jaquerio, *The Road to Calvary*, Church of St Anthony of Ranverso, Turin, detail.

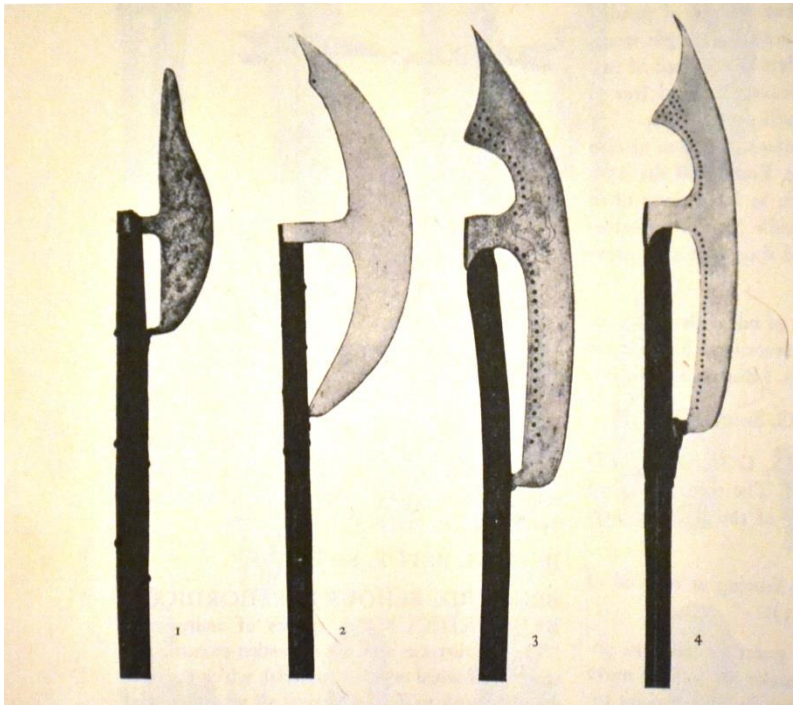

Figure 273. Stone, p. 110.

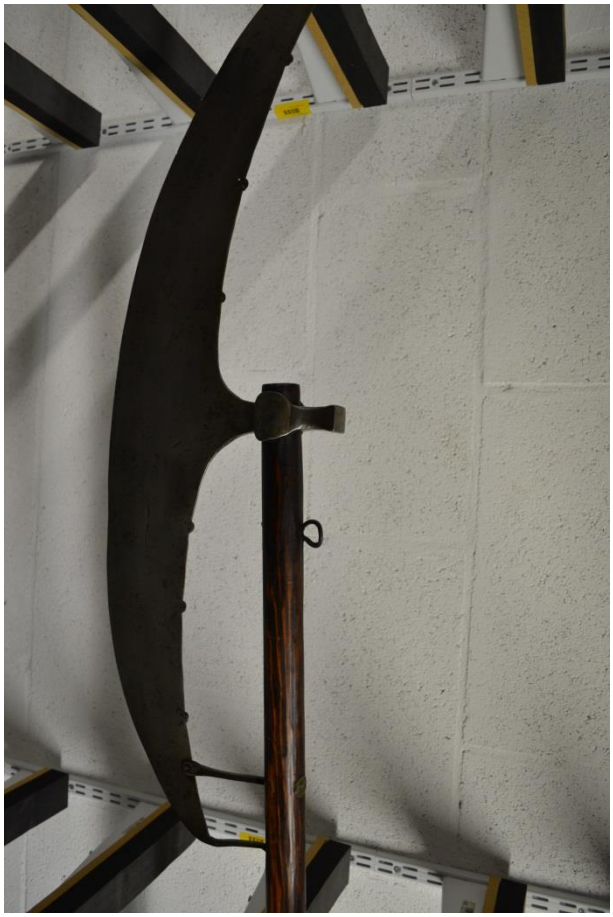

Figure 274. Leeds, Royal Armouries, VII.868, Bardiche.

Figure 275. Leeds, Royal Armouries, VII.867, Bardiche.

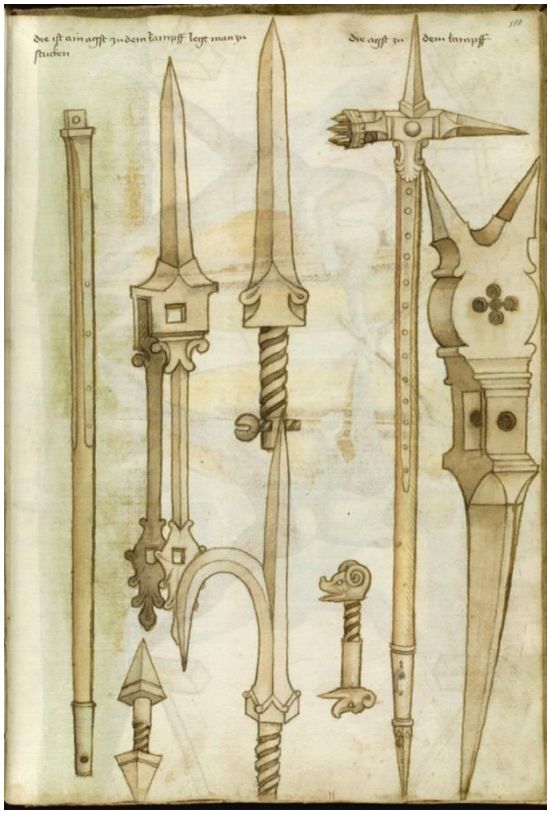

Figure 276. Copenhagen, Det Kongelige Bibliotek, MS Thott.290.2º, fol. 110ʳ.

Figure 277. London, British Library, MS 2278, fol. 63ʳ, detail.

Figure 278. London, The Wallace Collection, A925, Pollaxe.

Figure 279. New York, The Metropolitan Museum of Art, 14.25.302, Pollaxe.

Figure 280. London, The Wallace Collection, A926, Pollaxe.

Figure 281. Leeds, Royal Armouries, VII.1670, Pollaxe.

Figure 282. New York, The Metropolitan Museum of Art, 14.25.340, Pollaxe.

Figure 283. Philadelphia, Philadelphia Museum of Art, 1977-167-468, Pollaxe.

Figure 284. Leeds, Royal Armouries, VII.1542, Pollaxe.

Figure 285. London, The Wallace Collection, A927, Pollaxe.

Figure 286. London, British Library, MS. ADD 37421, fol. 1, detail.

Figure 287. Vienna, Kunsthistorisches Museum, MS KK5012, fol. 63^{r}.

Figure 288. Leeds, Royal Armouries, VII.876, Mordaxt.

Figure 289. Munich, Bayerische Staatsbibliothek, Cod.icon. 393, fol. 185[r].

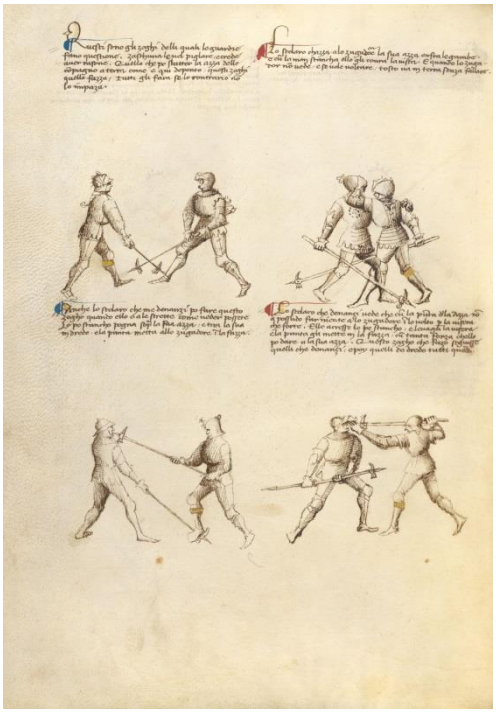

Figure 290. Los Angeles, J. Paul Getty Museum, MS Ludwig XV 13, fol. 36[v].

Figure 291. Giacomo Jaquerio, *Godfrey of Bouillon*, Castle of Manta, Cuneo, detail.

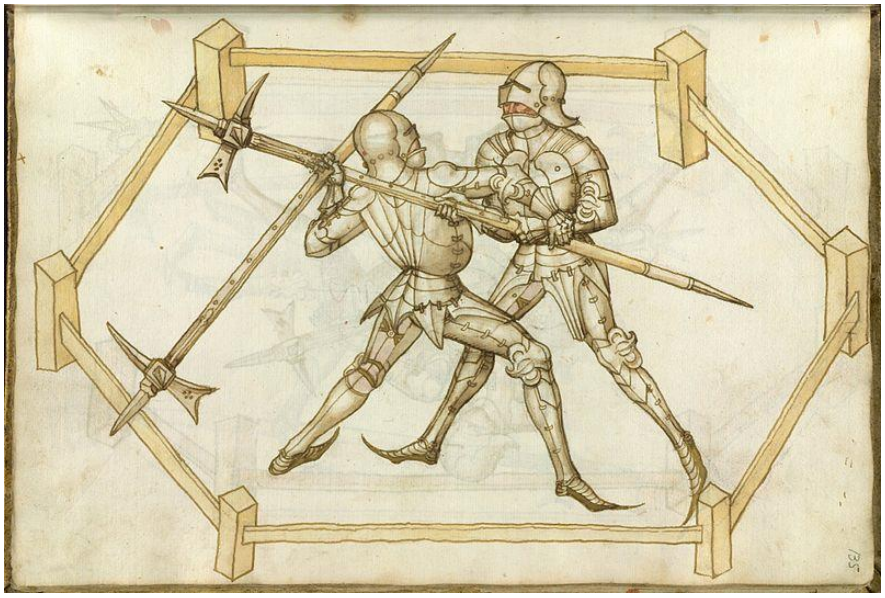

Figure 292. MS Thott.290.2º, fol. 135ʳ.

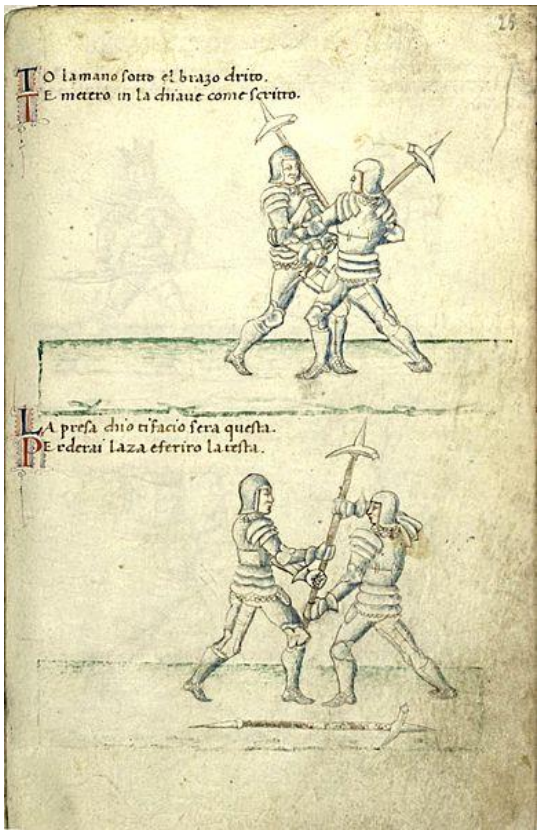

Figure 293. Rome, Biblioteca Nazionale Centrale di Roma, MS Vitt.Em.1324, fol. 25ʳ.

Figure 294. *The Beauchamp Pageant*, p. 78, detail.

Figure 295. Hans Baldung Grien, *The Martyrdom of St Lawrence*, The Metropolitan Museum of Art, New York.

Figure 296. *The Battle of Pavia*, Royal Armouries, Leeds, detail.

Figure 297. Worcester, Worcester Art Museum, 1014.165, Bec-de-corbin.

Figure 298. Leeds Royal Armouries, VII.1578, Bec-de-corbin.

Figure 299. Leeds, Royal Armouries, VII.881, Bec-de-corbin.

Figure300. Leeds, Royal Armouries, VII.883, Bec-de-corbin.

Figure 301. Leeds, Royal Armouries, VII.4106, Bec-de-corbin.

Figure 302. Philadephia, Philadelphia Museum of Art, 1977-167-466, Lucerne hammer.

Figure 303. Leeds, Royal Armouries, VII.1661, Lucerne hammer.

Figure 304. Leeds, Royal Armouries, VII.1407, Lucerne hammer.

Figure 305. Leeds, Royal Armouries, VII.2430, Mordaxt.

Figure 306. *Der Weisskunig*, p. 352, detail.

Figure 307. Philadelphia, Philadelphia Museum of Art, 1977-167-462, Ahlspiess.

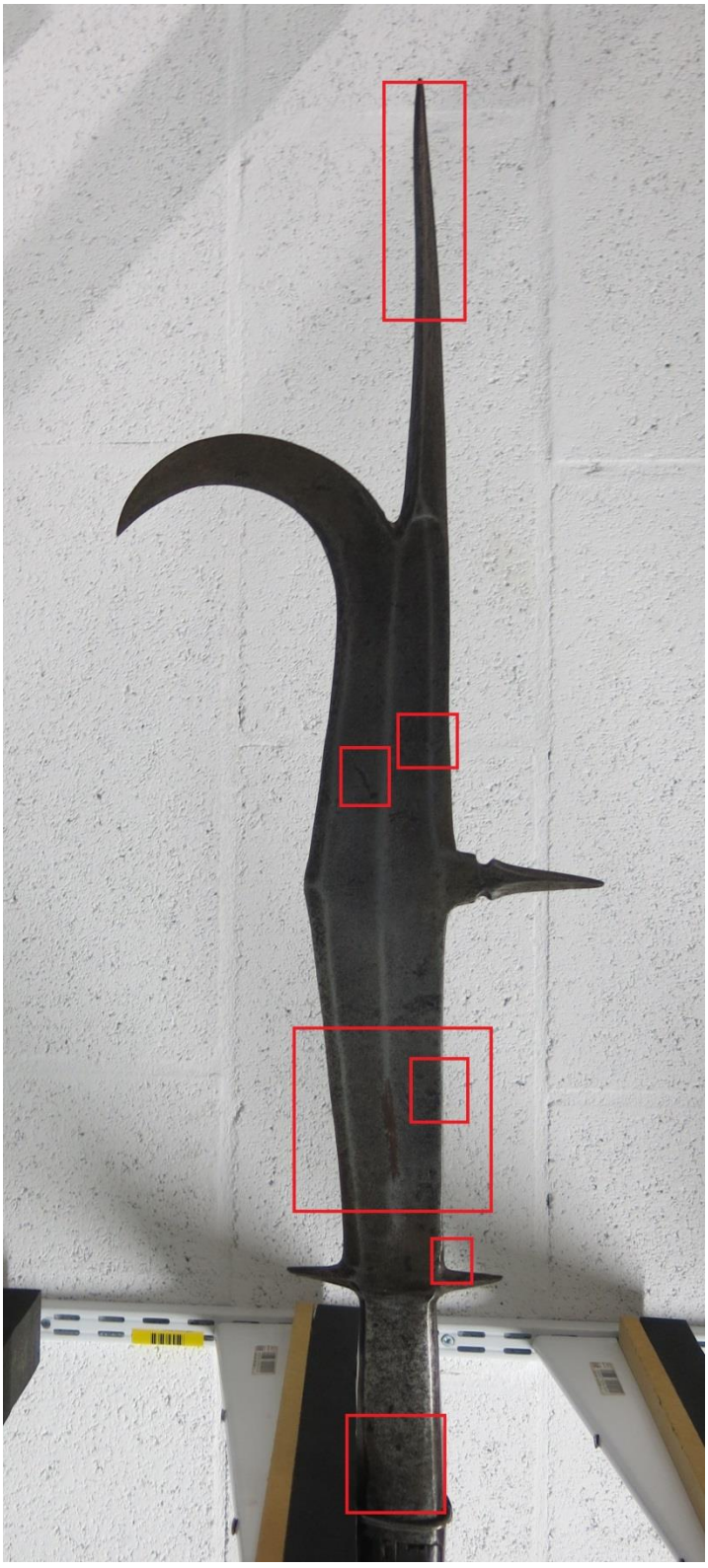

Figure 308. Leeds, Royal Armouries, VII.1582, Standard bill.

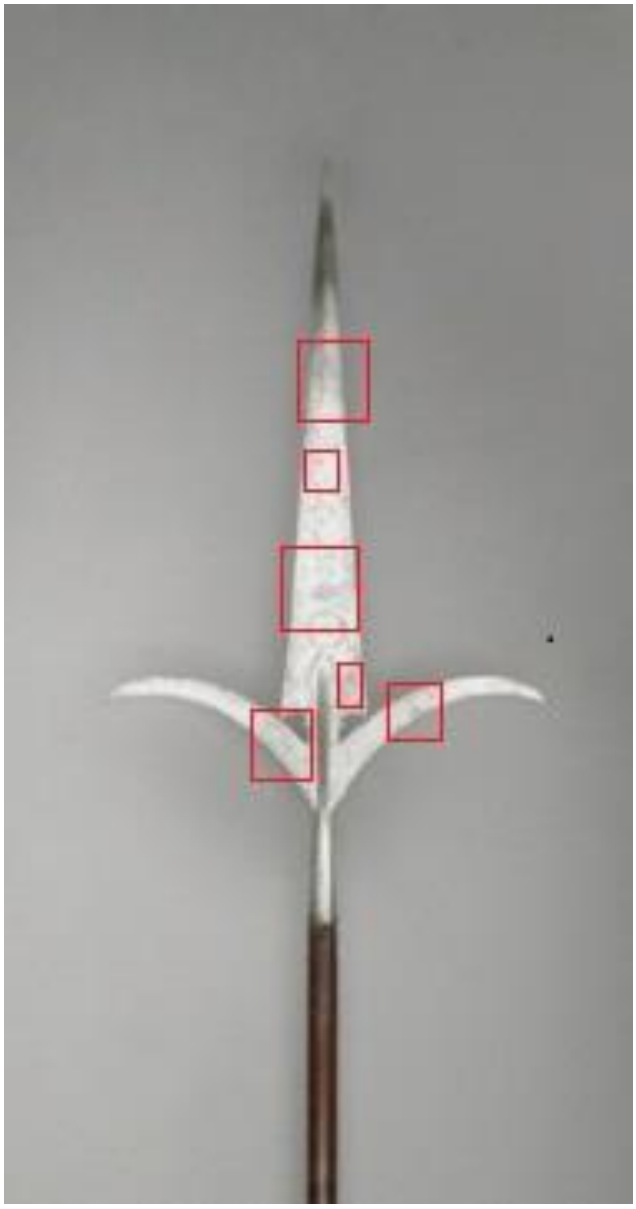

Figure 309. London, The Wallace Collection, A1014, Corseke.

Figure 310. Leeds, Royal Armouries, VII.881, Bec-du-corbin.

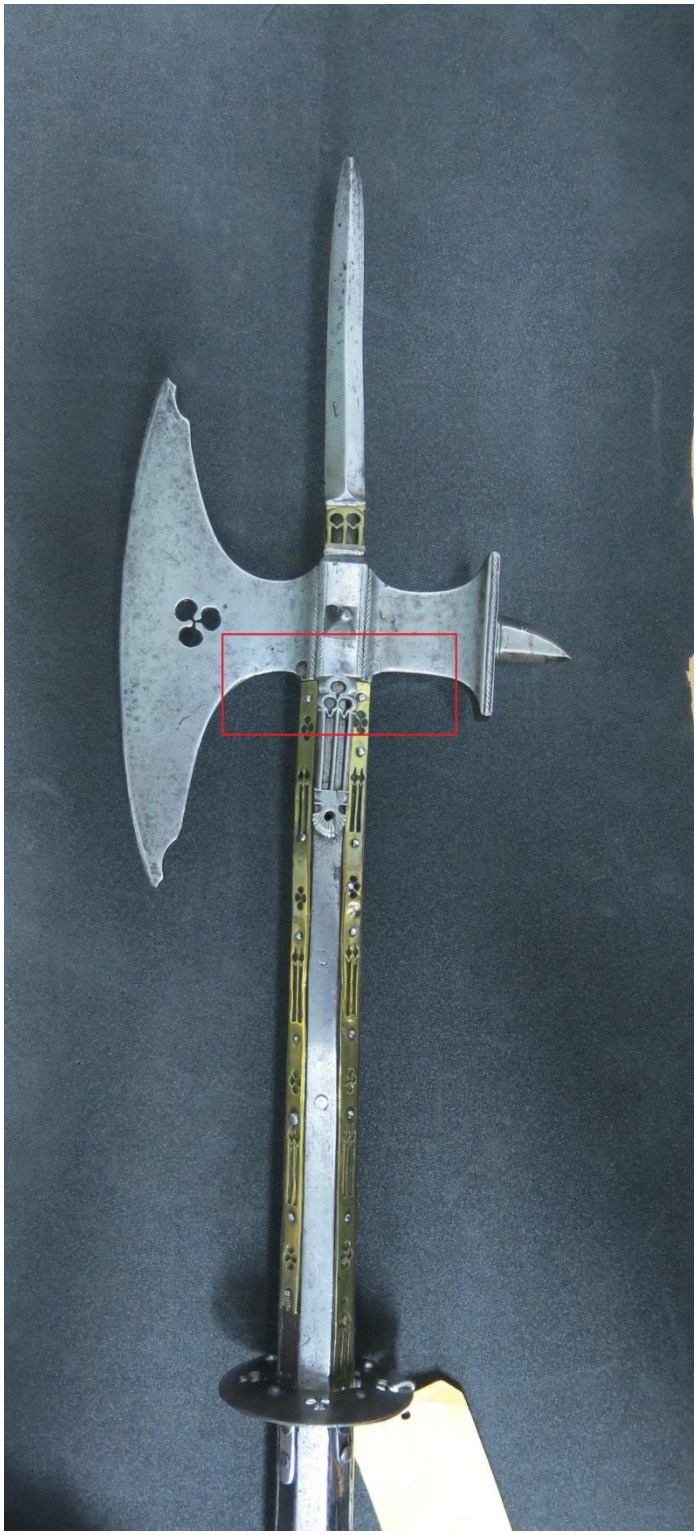

Figure 311. Leeds, Royal Armouries, VII.1542, Pollaxe.

Figure 312. Leeds, Royal Armouries, VII.876, Mordaxt.

Figure 313. Leeds, Royal Armouries, VII.1657, Proto-halberd, detail.

Figure 314. Leeds, Royal Armouries, VII.4156, Proto-halberd.

Figure 315. Martin Schongauer, *Christ Taken Captive*, *c.* 1470-1482, engraving, Vassar College, New York, detail.

Figure 316. Urs Graf, *Horrors of War*, 1521, print, Kunstmuseum Kupferstichkabinett, Basel, detail.