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The Science of Arms

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ABSTRACT

This project for the Higgins Armory Museum created an instructional DVD detailing the history and techniques of single-handed swords, longswords, rapiers, staff weapons, and daggers. The project team researched modern and historical sources on the weapons, studying their cultural context as well as combat techniques; the team interviewed experts in the field of medieval weapons, and filmed sequences of costumed combat and modern training. The 45-minute DVD will assist teachers and students in the Armory's historic swordplay classes.

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INTRODUCTION

The goal of this project was to create a DVD that gives an overview of several types of European weapons in use from the 1300 to the 1700s, including their history and proper implementation. These weapons include single-handed swords, rapier, longsword and hand-and-a-half swords, and staff weapons, wrestling and daggers. The DVD has been created with the intent that it will be used by the Higgins Armory Museum as an introductory source of information for the instructors and students in its historical combat classes.

Higgins Armory Museum is the only arms and armor museum in the Western Hemisphere. It features collections from Medieval Europe, Middle East, India, Africa and Japan, and its historical combat classes allow students to learn combat arts from the European medieval and Renaissance periods. The museum is enrolled in the US National Register of Historic Places.

The historical combat classes at the Higgins Armory Museum comprise of two regular classes, the Salle d'Armes and Viking Training. The Salle d'Armes offers instruction for weapons such as the rapier, longsword, dueling sabre and staff. Students also learn classical forms of modern fencing weapons including foil and épée. The Viking Training class teaches combat skills practiced by Icelandic Vikings. There are also drop-in workshops that feature a variety of different themes, as well as courses to introduce children to swordplay. These included one hour workshops, multi-days classes, or open ended classes. Some examples of workshops include Robin Hood, Lord of the Rings, Shakespeare and Pirate workshops, among others.

These historical combat classes are important for several reasons. They are a fun way for people to learn while also allow them to actively engage in an important aspect of medieval and Renaissance culture. Studying historical martial arts lets people see how society was changing; the way warfare changed can be connected to developments in the sword. It also shows how technology evolved. For example, when metallurgy had progressed enough, the two-handed sword could be created because the technology to forge stronger blades became available.

Even though the art of swordplay is no longer a part of everyday life in the way that it once was, it still plays a role in pop culture. It is not unusual to see movies and video games that feature swordplay because people enjoy it. Sometimes, members of the Higgins Armory

Museum's Salle d'Armes class will put on demonstrations in the Great Hall during museum hours, and visitors will stay to watch. Clearly, there is still a popular interest in swordplay, so this DVD will have many applications and can be further developed.

Weapons were divided up into five categories in order to be more easily presented. One category of weapons researched was the single sword, which is a single-edged or double-edged weapon for single hand use. This is a widely used weapon in the military throughout European history. This kind of sword is mainly used for cut-and-thrust swordplay and is long and heavy enough to make deadly cutting attacks. The single sword has many branches including broadswords, the sax, Messer, cutlass, and saber. These branches also contributed to the development of many weapons such as the rapier, which is also a one-handed weapon, but uses mostly thrusting techniques rather than cutting. The single sword is widely used in Elizabethan England, Italy and Germany. Some experts that use this sword are Giacomo di Grassi from Italy and Johannes Lecküchner from Germany. This research document includes topics such as the differences between single-handed sword and rapier, experts and their techniques for using this sword, and its history. This portion of the research topics was used for our final video production.

The rapier is a one-handed sword used in Medieval and Renaissance Europe from roughly 1500– 1700. Various aspects of this weapon are explored, including how it developed and in what regions of Europe, its physical structure, and techniques for use from various experts of the time. The rapier developed from other one-handed swords, but used a technique of thrusting instead of slashing or cutting. It developed for the purposes of urban self-defense and private dueling and could be used in conjunction with other parrying devices. Many of the experts on the weapon come from Italy and Spain, but there were also others from European countries such as France, England, and Germany. The rapier fell out of use because it was getting replaced by the small-sword, which is essentially a smaller, lighter, less-cumbersome version of the rapier that uses similar techniques.

The Longsword is a medieval weapon consisting of a two edged blade and long hilt specifically for one or two handed use. It is also called the hand-and-a-half sword or bastard sword. This type of weapon was used as early as the 1300's and was used for hundreds of years until its use became mainly for sport in the late 1500's. It is capable of deadly thrusts and cuts and changed medieval warfare. The main sources and experts of the weapon from medieval time include Meyer, Talhoffer, Fiore, and Liechtenauer. This section of the paper researched the longsword in European history in a well-organized and explanatory manner. Topics such as history, demographics, techniques, uses, and historical sources are covered.

Staff weapons have existed in simple forms such as the quarterstaff and the battleaxe since before the year 1000, and after the 1300s, more complex forms, such as the pollaxe and the halberd. Most staff weapons were between 6 and 8 feet long, depending on their use. Due to the length of these weapons, as well as the weight of their heads, they were capable of delivering incredible blows at a longer range than most other weapons. Staff weapons were used widely in military combat, as a line of halberds or pikes could counter a cavalry charge, but were also used in close quarters combat between armored foes, as well as the less lethal types such as the quarterstaff being used for sport. Some of the most important sources on staff weapons are the Jeu de la Hache, Pedro Monte, and the Egenolff Fechtbuch.

Daggers and wrestling often quite literally go hand in hand in the martial arts of the middle ages. Wrestling was an integral part of a knight's repertoire of combat abilities, as armored duels would often be finished with wrestling and potentially a dagger. The combat styles of daggers and wrestling are also quite similar, and follow many of the same techniques. All of the dagger and wrestling styles could also be utilized by other weapons. Daggers and wrestling were not only used for armored knights, but also for civilian sport, and many men carried daggers on them routinely. Some of the primary experts on daggers and wrestling include Fiori dei Liberi, Pedro Monte, and Joachim Meyer.

We were able to capture about 5.5 hours of various types of footage. We filmed sword fighters performing drills and sparring with all of the different weapons studied using volunteers from the Higgins Armory Museum's Salle D'Armes class, swords and other artifacts on display and in storage at the Higgins Armory Museum, costumed fights and interviews with Professor Jeffrey L. Forgeng and Dr. Ken Mondshein.

WEAPON RESEARCH

SINGLE-HANDED SWORD BY HAOYANG ZHANG

1. SWORD HISTORY

The sword is a popular edged weapon for cutting and thrusting around the world. Basically the sword is considered to be a weapon with a long blade having one or two edges and a hilt. It has a long history, and evolved into different types.

The very first swords were developed during the Bronze Age. Before the Bronze Age, primitive men used flints to make bladed weapons. When flints are broken, they split into thin and sharp pieces that can kill animals for food. However, after the introduction of metal, humans found that metal blades are more efficient than flint blades. Besides, bronze alloys are easy to form into a specific shape. As a result, bronze daggers were made. The sword began as a longer version of the dagger. The hilt was invented to allow a firm grip and prevent the user from slipping onto the blade when using it. As a result, a weapon with long edges and a hilt, which is defined as sword, appeared in human history.

Swords received their reputation during the Iron Age, when people used iron-related materials to increase the length of the blade and the efficiency of cutting. The production of iron swords was easier because of the wide availability of the raw materials. The product was only slightly stronger than bronze ones, and could still bend during use. However, the possibility of mass production of swords made it possible to equip armies with swords. The sword started to become a major weapon in human societies.

Swords were popular not only for their usage for battle, but also for decoration. At first, making swords was hard and expensive, and swords could only be afforded by the rich and powerful. As a result, a good sword became a symbol of wealth and position. Gold, silver, precious stones and other expensive materials were used to decorate it. The sword was considered to be the “queen of weapons,” until the 19th century, when swords came to be sporting weapons for fencing, and objects for ceremonies.

2. PARTS OF THE SWORD

Basically, we only need a grip and a blade to make a sword that can kill someone, like a sax. However, swordmakers added more parts to the sword to make it more efficient to use. In the history of swords, we added pommels, cross-guards, finger rings and points to make it easier to use and provide more protection. Although these parts' styles change over time, their usage remains almost the same throughout history.

2.1 Blade

The blade is the part that cuts and thrusts at the target. It is impossible for several reasons to produce a chronology of the sword based on styles of blade. Old blades were often cut down and re-hilted years after they were made; blades broke and had to be replaced. Besides, some swords have suffered from the so-called 'vicissitudes of private ownership'. The owners sometimes replaced the original blade with a more decorative blade to produce a pleasing but composite sword. All these blade-replacing behaviors make it harder to categorize swords by blades. (An Introduction to European Swords by A.R.E. North)

We can categorize blades in different ways. We can either define a blade by number of edges, or by the straightness of the sword. For the purposes of this analysis, we will define a saber blade as a single-edged, curved blade, a backsword as a single-edged, straight blade, and a broadsword as a double-edged, straight blade.

Both Renaissance single-handed swords and rapiers came from the same root, and they have a similar shape. However, there are lots of differences between those weapons. The largest difference is the blade. Swords are used for cutting and thrusting, and concentrate more on cutting. The rapier, on the other side, is used for thrusting with minimal cutting functions. The rapier's blade is narrow and double-edged, while the sword's blade is broad and can be single or double edged.

There are some common decorations for the blades. For instance, lots of swords had the date they were made engraved and the sword maker's name on one side or both sides of the blade; lots of blades were gilded for both decoration and protection from rusting. Multiple patterns are engraved on some swords for pure decoration.

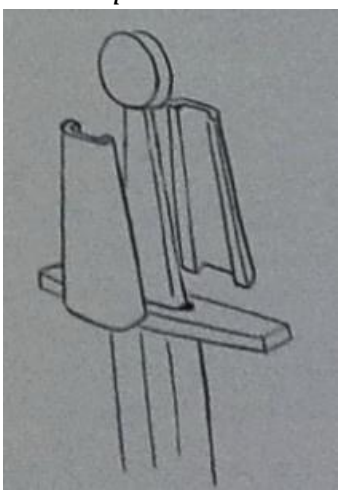
The decorative techniques used during the Renaissance were those also used in other areas of the arts: etching, engraving, nielloing, enameling, carving, chiseling, inlaying, damascening, encrustation, gilding, silvering, and casting in bronze, gold and silver. These swords and others bore witness not only to the high rank, but also to the connoisseurship of their owners. Some of the masters that we can name include Albrecht Durer, Hans Burgkmair, Urs Graf, Giulio Romano, Parmigianino and Hans Holbein. (The Renaissance Spirit by Donald J. LaRoca)

2.2 Hilt

2.2.1 General

The hilt is all of a sword except for the blade proper. In other words, the hilt is the part where we handle the sword. It mainly includes a guard, grip and pommel. The guard mainly contains a cross-guard. Sometimes the ricasso, the unsharpened length of blade just above the guard, may be present, but it rarely happens. A tassel may be attached to the pommel sometimes to make it more beautiful. When decorating the sword, we spend most of our time on hilts rather than on blades.

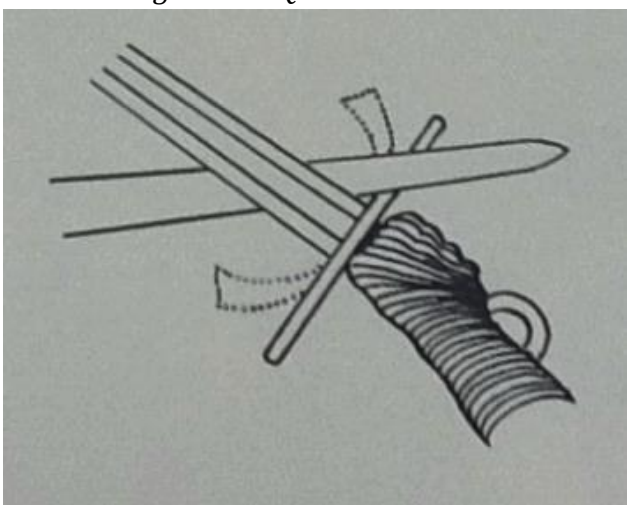
2.2.2 Grip



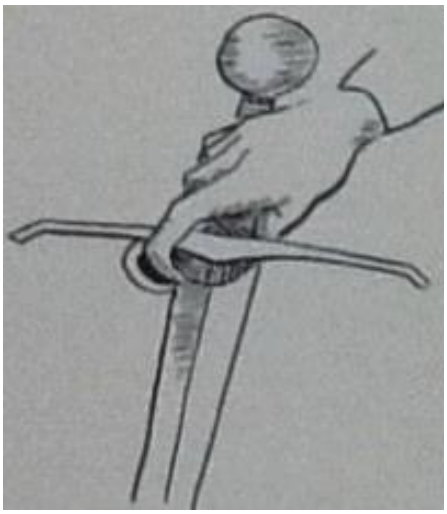
"Sandwich" method of forming the grip. From "The Sword in the Age of Chivalry" by Ewart Oakeshott

The grip is the handle of the sword. There is a basic manner of construction of the grip: the grip must consist of a hard core covered with some form of membrane or binding. The core is usually made of wood or horn. If the core is metal, we don't need to cover it. Such exceptions are common in the old Viking period and 18th century. However, this course was never a hard and fast rule. Instead, we used more efficient ways. For example, we can make the wooden core in two flat halves, making as it were the two halves of a mould of which the object to be moulded was the tang, which is the blade's back portion that is connected to the grip. (The Sword in the Age of Chivalry by Oakeshott, R. Ewart)

2.2.3 Cross-guard or Quillon



The purpose of the cross-guard in a sword.



Finger ring

The cross-guard is the part just above the grip and below the blade. It is used to prevent users from slipping their hands on to the blade, and to provide some protection in battle. It is often known as the "quillons". Sometimes a finger-ring is added below the guard either on one side or on both in the same plane as the blade. (The Sword in the Age of Chivalry by Oakeshott, R. Ewart)

In the past hundred years it has been assumed that the cross provides clear and reliable indication of date, but recent study show that it tells us nothing about the date of the sword. For example, a style that has always been taken confidently to be exclusive to the period 1380-1450 was found on an 8^{th}-9^{th} century Viking sword. (The Sword in the Age of Chivalry by Oakeshott, R. Ewart)

Most crosses are quite plain, but upon a few personal tastes have been exercised to vary detail. The extremities may be decorated with indentations, swellings and variously shaped knobs, the part where the blade is set on may be decorated with incised lines, fluting, engraving and so on, while the arm may be fluted, twisted and curved. (The Sword in the Age of Chivalry by Oakeshott, R. Ewart)

2.2.4 Pommel

The pommel is the enlarged part at the end of a sword's hilt. Originally it was used to prevent the sword slipping from the hand. From the 11th century, it was used to act as a counter-weight to balance the sword, which made the sword easier to use. Later it was used as a striking unit, depending on the sword design and swordsmanship style.

The pommel has 35 basic types, which were defined by Ewart Oakeshott in his The Sword in the Age of Chivalry (1964). The most influential and widely known one is type A – the Brazil-nut form. The brazil-nut pommel was the most widely used pommel during the three centuries between 950 and 1250. These pommels were rather flat and wide, with their end points even with the centerline of the pommel. From the second half of the 11th century, the Brazil-nut pommel was reaching its final form. It became thicker; its width increased, and its side points moved above the pommel's centerline. (The Sword in the Age of Chivalry by Oakeshott, R. Ewart)

Sword with Brazil-Nut Pommel
http://sbgswordforum.proboards.com/

Another kind of pommel, the "type B", "Mushroom" or "Tea-cosy" pommel, was developed with the brazil-nut pommel simultaneously in the early to middle 10th century. This kind of pommel looks likes a mushroom with a flat top. This kind of pommel developed before the brazil-nut form, but it is often misinterpreted as the father of the brazil-nut pommel. Both kinds of pommel have their own ancestor.

Dagger with Tea-cozy Pommel

Generally, the style of pommel evolved either for combat or for decoration. Pommels have appeared in a variety of shapes, including crescents, disks, wheels, flowers, fishtails and animal or bird heads. They are often engraved or inlayed with various designs and sometimes gilt and mounted with jewels.

3. TYPES OF SWORDS

I'm researching on single-handed sword, which is widely used in history for both warfare and hunting. I categorize it by the number of edges on the blade. Double-edged swords include the broadsword and basket-hilted sword. Single-edged swords include the sax, saber, hangers and Grosse Messer.

3.1 Double-edged swords

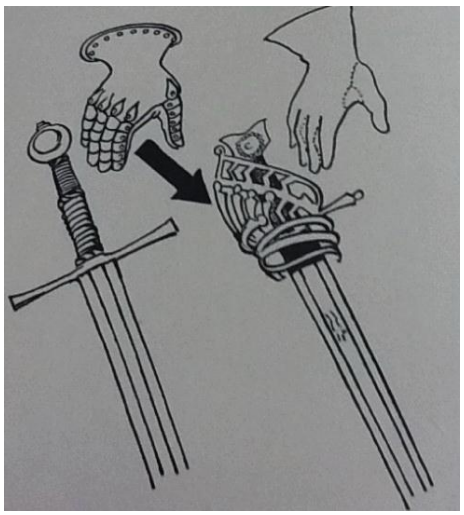
3.1.1 Broadsword

Broadsword (early 1300s)
Accession Number: 2428
Higgins Armory Museum

The broadsword is a cutting sword with broad blade and usually two cutting edges. Medieval knights used it as a close contact weapon. A broadsword has a 2-3 inches wide double-edged blade. The length of the sword ranged from 30-45 inches. The blade is so sharp that it can cut off the limbs or head of an enemy just by one stroke.

3.1.2 Basket-hilted sword

Basket-hilted Sword (1700s) ; Accession Number: 1829; Higgins Armory Museum



The complex basket takes the place of the metal glove.

The basket-hilted sword is the name of a group of early modern sword types characterized by basket-shaped guard that protects the hand. Its special hilt provides extra guards to certain types of cross-hilted sword. The basket-hilted sword can be considered as a type of Broadsword. This weapon was developed in the 16th century, and was at the height of its popularity from 17th century to 18th century. At the turn of the 17th century, many experimental forms of 'basket' hilt were being tried out in Germany. By the middle of the century, the hand was completely surrounded by a very complex arrangement of plates and bars lined with leather or fabric. The blades were almost invariably for cutting rather than thrusting.

A commonly used broadsword by English troops during 16th and 17th century is the mortuary sword. It has a special kind of hilt called a 'mortuary hilt'. The bowl-shaped guard extending back to the pommel suggests direct descent from the short hangers with double-shell guards and wide knuckle bows produced by the Hounslow factory in the 1630s. Such hilts vary through time. In the 17th century, mortuary hilts underwent minor changes, such as the addition of extra bars linking the bowl to the knuckle guard and the incorporation of small plates, which projected down the blade. A mortuary sword is fitted with a long single-edged, sometimes double-edged blade, for cutting and thrusting. This sword appeared in about 1630, and was the standard weapon during the Civil War. (Seventeenth-Century Europe by Anthony North)

3.2 Single-edged Swords

3.2.1 Sax

Sax (Around 600s); Accession Number: 576 Higgins Armory Museum

The sax or seax, which means knife in old English, is the sword used by Germanic peoples in the Early Middle Ages, especially the Saxons, whose tribal name derived from the weapon. From a particularly well-preserved weapon found in Denmark, it is clear that by the fifth century a new sword was beginning to evolve. The sword is the sax. The sax remained more or less unchanged throughout the centuries. It has a rather

straight, large single-edged blade and complex hilt that was sometimes complicated in construction. By 650, however, the sax had become a narrow single-edged weapon with the point set at a distinct angle to the blade. Early examples have grips formed of plates riveted through the tang, but later examples have grips that simply fit over the tang with a much stronger method of construction.

3.2.2 Falchion

The falchion grew quite naturally out of the Norse sax, which has a straight, broad single-edged blade. It combined weight and power of an axe with the versatility of sword. During the later Middle Ages, there were two basic forms of falchion. The first one's back was straight, and the cutting edge swelled roundly outward near the point. It looked like a butcher's cleaver. The second form had sometimes a straight and sometimes a concavely curved back and a curved cutting edge. The first form was rarely seen after 1370, while the second form appears in Italian paintings of the second half of the 15th century. The falchion seems to have gone out of favor by about 1560.

3.2.3 Messer

Messer was a term for the class of single-edge bladed weapons in Germany. Messer means knife in German. Its hilt included a straight cross-guard and Nagel: a nail-like protrusion that juts out from the right side of the cross-guard away from the flat of the blade, to protect the wielder's hands. The Messer was part of the curriculum of several fencing manuals in the 14th and 15th centuries, including Johannes Lecküchner.

Noble gentlemen out hunting often carried the Grosse Messer, which means great knife. Sometimes they are called 'hunting-swords'. Many of them are back-edged bastard swords. Characteristic is a long, sandwich-formed grip of wood or horn. (The most spectacular example is a pair of swords made in 1496 for the Emperor Maximilian. Now these swords are in the Kunsthistorisches Museum, Vienna.

3.2.4 Saber

It seems justifiable that the western European saber developed logically from the medieval falchion. The most notable and best-preserved one is the so-called "Sword of Charlemagne" in the Treasury in Vienna. A vast iron cauldron, which was found in Turkey and dated from 1170,

Hussar's Saber (1795-96)
Accession Number: 3563
Higgins Armory Museum

is decorated with figures of horsemen brandishing sabers of this kind, except that the false edge is quite short. The false edge extends nearly halfway up the back in the Charlemagne sword and many of the Hungarian ones. The same sort of blade was found in a Macedonian monastic painting of the early fourteenth century, and in pictures of Austrian and Hungarian hussars 400 years later. All these works of art showed quite clearly where the European sabre came from.

In late 15th century, the true saber blade began to appear in western and southern Europe. During the mid-fifteenth century, a variety of back-edged swords had been in fairly common use in the West. These swords have blades that are straight on the back and slightly curved on the edge. Through the middle Ages, a few back-edged swords were in use. Some of the Norwegian long saxes occasionally curved in the reverse direction from the customary saber blade's curve, that is with a convex back and a concave edge. From the La Tene period of the Iron Age, it had been customary to fit swords which have curved back-edge formed blades with grips of the form perpetuated in the modern military sword.

From the 1520s onward, we can trace a distinct line of development in the Swiss saber. Most Swiss sabers were of hand-and-a-half size, both as to the length of blade and of hilt. Blades were of true saber form, with a gentle curve and a back edge some 1/6 of the blade's total length. The hilts were similar to those fitted to the ordinary bastard sword.

The German Saber's line of development diverged from that of the Swiss, and in its turn split into two distinct patterns. One had a large literal scallop shell form shell added to the front of the quillons, curving up and back almost to the pommel to protect the back of the hand. It has a one-loop thumb-guard to protect the thumb. The other pattern of German saber had long quillons, and a large triangular plate fixed to the front of the quillons and curved back over the hand to the pommel.

3.2.5 Hanger

Infantry Hanger (1700s); Accession Number: 265.a; Higgins Armory Museum

The hanger is a very broad category that includes any kind of short sword or long knife that can be conveniently worn while hunting on horseback. They were traditionally used for self-defense from attacking beasts. These comparatively short and light swords were very popular for both civilian and military use throughout the 17th century for general purpose, close combat and defense. It is too light to use in combat, but many served as symbols of rank for both land and navy officers. Most of them are slightly curved with a single-edged blade. The number of hangers survived indicates that hanger was widely used, especially in England.

4. FENCING MASTERS ON SINGLE-HANDED SWORD

Throughout the Middle Age and the Renaissance, masters of arms enjoyed an equivocal position in European society.

4.1 Italian fencing masters

4.1.1. Achille Marozzo

Achille Marozzo was a 16th century Italian fencing master. As a teacher, Marozzo maintained a fencing school in Bologna near the Abbey of Saints Naborre and Felice. Marozzo is generally looked upon as the first writer of note on the art of fencing. It would be perhaps wiser to consider him as the greatest teacher of the old school. The famous masters Angelo Viggiani dal Montone and Joachim Meyer were also influenced by his teachings, though it is unclear if they actually studied in his school.

In1536, Marozzo authored a treatise on swordsmanship titles Opera Nova ("A New Work"). In this book, he introduced more effective ways to hold the sword, different uses of the false edge and the right edge, and innovative ideas for attacks and guards. This treatise seems to have become the dominant work in the Dardi or "Bolognese" school of swordsman ship, reprinted several times well into 17th century and translated into France in 1580. He died in 1553 and is buried in Bologna at the military hospital.

4.1.2. Giacomo di Grassi

Giacomo di Grassi was another 16th century Italian fencing master. His teachings were arguably designed for the side sword, or *spade la lato*, which is considered the direct descendant of the arming sword and the father of civilian rapier. Little is known about his life, but he seems to have been born in Modena, Italy and achieved his reputation as a fencing

master in his youth. He operated a fencing school in Trevino and traveled around Italy observing the teachings of other schools and masters. Finally di Grassi developed his own method and laid out in detail in his 1570 work “Ragione di adoprar sicuramente l’Arme”(DiGrassi, His True Art of Defense). (Wikitenauer)

4.1.3 Angelo Viggiani dal Montone

Angelo Viggiani dal Montone is another important Italian fencing master in the 16th century. Little is known about his life, but he was been Bolognese by birth and seems to have been an initiate of the tradition of Filippo di Bartolomeo Dardi, who was a fencing master 100 years before Viggiani was born. He might also have been connected to the court of Charles V, Holy Roman Emperor. (Wikitenauer)

In 1551, Viggiani completed a treatise on warfare, including fencing with the side sword. He applied the principles of “punta sopramano”(one of Maorozzo’s technique) to all attacks. He remains one of the followers of Marozzo, instead of being the founder of the modern school. He died shortly after he finished this treatise. His brother Battista preserved the treatise and recorded in this introduction that Viggiani had asked him not to release it for at least 15 years. The treatise was completed in 1567 as a gift for Maximilian II. Finally it was published in 1575 under the title “Lo Schermo d’Angelo Viggiani”.

4.2 German Fencing Masters

4.2.1 Johannes Leckuchner

Johannes Leckuchner was a 15th century German cleric and fencing master. He was born in the Nuremberg area. He introduced many skills applying to

messer fencing, and he was considered to be one of the most important German fencing masters in history.

Some 19th century scholars had assumed that Leckuchner was a corruption of Johannes Liechtenauer, the grand master of the primary German longsword tradition. The reason may simply because they have some similar names, and live in the same time. However, biographical information from historical records thoroughly disproves this theory, but Leckuchner's system of messer fencing seem to be related in some ways of Liechtenauer's teaching. Leckuchner's teachings are organized in a similar fashion fashion using similar terminology. Brief notes by Andreas, a fencing master in 15th century, indicated that Leckuchner's teachings had been integrated into the Liechtnauer school of fencing.

Two manuscript copies of Leckuchner's treatise, entitled *Kunst des Messerfechtens* ("The Art of Messer Fencing"), are preserved. One of the copies is the Codex Palatine German 430 or CPG 430, which was produced in 1478; the other one is the Cgm 582, which was produced in 1482, the year of his death. The CPG 430 seems like to be the source for all later repetitions of his teachings. This manual is believed to be the rough draft of the Cgm 582. The Cgm 582 mentioned in the last paragraph that a previous draft had been produced, which is presumed to be a reference to the CPG 430. Unlike the CPG 430, the Cgm 582 is fully illustrated, and seems to have a significant amount of new and expanded content.

4.2.2 Joachim Meÿer

Joachim Meÿer was a 16th century German Freifechter and fencing master. He was a master of almost all kinds of weapons, including the longsword, rapier, side sword, dagger, pole

weapons and Dussack, which is a practice weapon for the single-handed sword. In his life he devised at least three distinct and quite extensive fencing manuals, and his writings clearly show that he stood in the tradition of the Johannes Liechtenauer. Meyer wrote his first manuscript in 1560. Its contents seem to be a series of lessons on training with longsword, dussack and side sword. In 1570, Meyer published *Gründtliche Beschreibung der Kunst des Fechtens* ("A Thorough Description of the Art of Combat") based on this manuscript. It is a complex, multiweapon treatise that represents a significant evolution of the art that Johannes Liechtenauer taught two centuries earlier. He died on 25 February.

5. Single-handed sword Fencing Techniques

5.1 Basic training stance

In Johannes Leckuchner's CPG 430, he talked about how to pose and behave when fencing with the messer at the very first. He said, "You shall fight with one hand in Messer fencing and have the other hand on your back. If you want to fight with the empty hand, like taking his Messer, grappling or trapping the arm, then turn the hand from the back to the chest to push it over his arm from the aside." This is the very basic training stance for almost all single-handed sword fencing – one hand for the sword, and the other for additional skills.

5.2 Guards

One of the most important elements of fencing is the stance. Good stances will keep you balanced, and ready for taking actions of both offense and defense. All principles and techniques of fighting all are employed in relation to these postures. Johannes introduces four kinds of stances for messer fencing.

5.2.1 Johannes Lecküchner's four guards

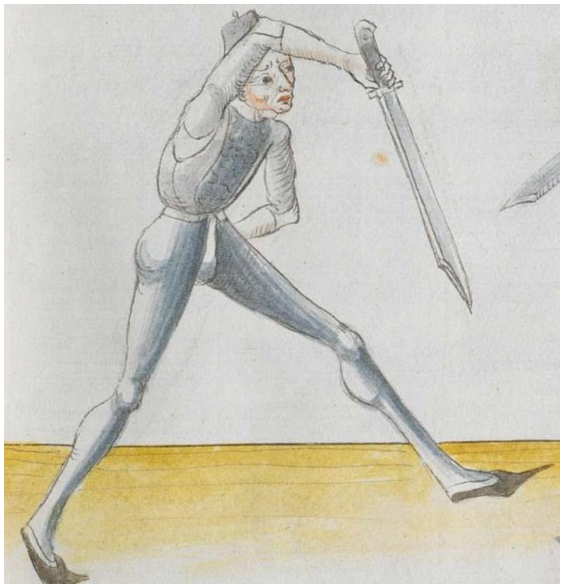
5.2.1.1 Pastei **or "Bastion":**

The first guard or stance is named Pastei. Hold it like this. Set your foot forward. Then hold your messer before you with a straight arm, with the point to the ground, so that the short or blunt edge stands above.

5.2.1.2 Luginsland or "look over the land":

Hold your messer with a straight arm high before your head with the long or sharp edge ahead. Then stand thus in the guard.

5.2.1.3 Stier or "Steer":

Stand with the left forward. Then hold your messer to the left with the hilt before the head, so that the short or blunt edge stands against you. Finally hold the point toward the opponent's face. The posture is essentially a gathered thrust from above. The Stier guard was introduced by both Lecküchner and Meyer.

5.2.1.4 Eber or "Boar":


Set you left foot, and hold your messer on your right side near your right leg with the hilt near the hip, so that the blunt edge stands above, and the point stands out before you and towards the opponent's face. This is also a guard introduced by both Lecküchner and Meyer.

5.2.2 Meyer's Guards

Except for the Steir and Boar I mentioned above, Joachim Meyer also introduced the Watch Guard, the Wrath Guard, the Middle Guard, and the Change.

5.2.2.1 The Watch or the Wacht

This High Guard is the beginning of the High Cut, and it is called the Watch because you attend with a prepared stroke, and hold watch, so that if the opponent opens himself before you by cutting, you can overreach him at once by cutting from above. For this guard, stand with your right foot forward, hold your dusack over your head, and let the blade hang down behind you.

5.2.2.2 The Wrath Guard

This posture is used on both sides; from it one delivers the most powerful cut, which is called the Father Stroke. It is similar to the Stier Guard. The only difference is that the Stier threatens the thrust, and the Wrath threathers the cut with wrathful comportment. From this posture you shall send away from you all strokes that are cut at you, and counter cut.

5.2.2.3 The Middle Guard

We call this the Middle Guard because it arises from the Middle Cut.

5.2.2.4 The Change

In this guard, position yourself thus: stand with your right foot forward, and hold your dusack beside you pointing to the side with extended arm, with the tip toward the ground, so that the short edge stands toward the opponent.

5.3 Strikes

5.3.1 Basic Cuts

In Meyer's fencing manual, he explained four basic cuts, from which all the other cuts have their origin and beginning. Students learned how to use these basic cuts by referencing to a chart show in the picture below. These cuts include the High Cut, Wrath Cut, Middle Cut and the Low Cut.

Firstly, the High Cut is made through the vertical line, which was called by Scalp Line (or Scheittellini), since it divides the combatant into left and right. Secondly, the Wrath Cut is made through the diagonal or hanging line. This line is called Wrath Line (Zornlini), or the Stroke Line (Strichlini). Thirdly, the Middle Cut is made through the Thwart or Middle Line. Finally, the Low Cut is made through the rising diagonal line. It shows the route for the Wrath Cut from the other side down from above, so that the Low Cut is sent upward through the same line through which the Wrath Cut is delivered diagonally from above.

5.3.2 Special cuts

3.3.2.1 Zornhau (Zorenhaw)

If the opponent strikes at your head from above his right side, strike at him at the same time from your right side with determination and without displacing. Immediately let your point dart to his face or chest and wind your against his face or chest, so that the long edge stands above. If he notices the point, wind the point to his face on the other side, letting the true edge face up. If he notices the point, pull up along his Messer, away from his Messer above his blade and strike to his head on the other side.

(Translated by Falko Fritz)

5.3.2.2 Wecker or "Waker"

Wecker is one of the four displacements against the four stances. It counters the guard Stier. When you come to the man with him holding his messer in front of his head in the guard Steir on his left side, set your foot in front and hold your messer to your right shoulder. Leap to your right side with the right foot and strike onto his messer with your true edge. Finally, turn the cutting into thrusting at the opponent's face.

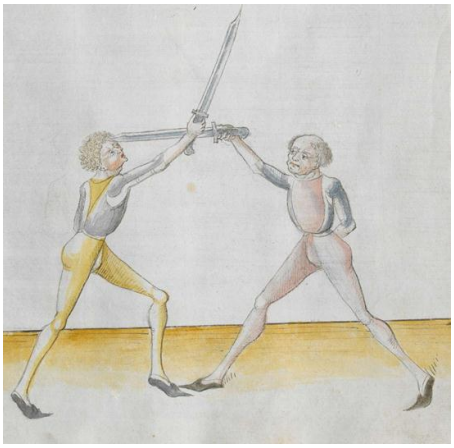
5.3.2.3 Entrusthau or "Shock Strike"

The Entrusthau counters all strikes that are hewn down from above. It is called "Shock" or "Anger" strike because it comes so suddenly and earnestly, and it counters the guard Luginsland. When he comes towards you and holds his Messer with an outstretched arm above his head and waits for you, place your left foot forward and hold your messer to the ground with the flat facing your right side. When he steps in your direction and attempts to strike at you, jump forward with your foot to your right side. Turn the Messer with the cross in front of your face while jumping, letting the thumb face down and strike to the upper opening on his left side with the back edge. If his strike is faster, jump to your right side out of his reach with the right foot and the same displacement. Strike at his head with an Entrusthau and an outstretched arm.

5.3.2.4 Zwinger or "Restraining Strike"


It counters the guard Eber. When you approach the enemy, set your left foot in front and hold your Messer with the point towards the ground and the thumb facing down. If the opponent strikes at your head from above, turn your Messer with the back edge against his blow and strike to his face with an outstretched arm above his Messer. If the opponent stays, then you also stay with the long edge before his face.

5.3.2.5 Geferhau or "Threat Strike"



It counters the guard Pastei. When you come to someone in the Zufechten and he stands in the guard Pastei, set your left foot in front and hold your Messer with an outstretched arm above your head in the guard Luginsland. Jump towards him with your right foot and strike above with the long edge at his face or chest, while he still has his Messer high. Keep your arm up and lower the point to his face or chest.

5.3.2.6 Winker or "Waver"

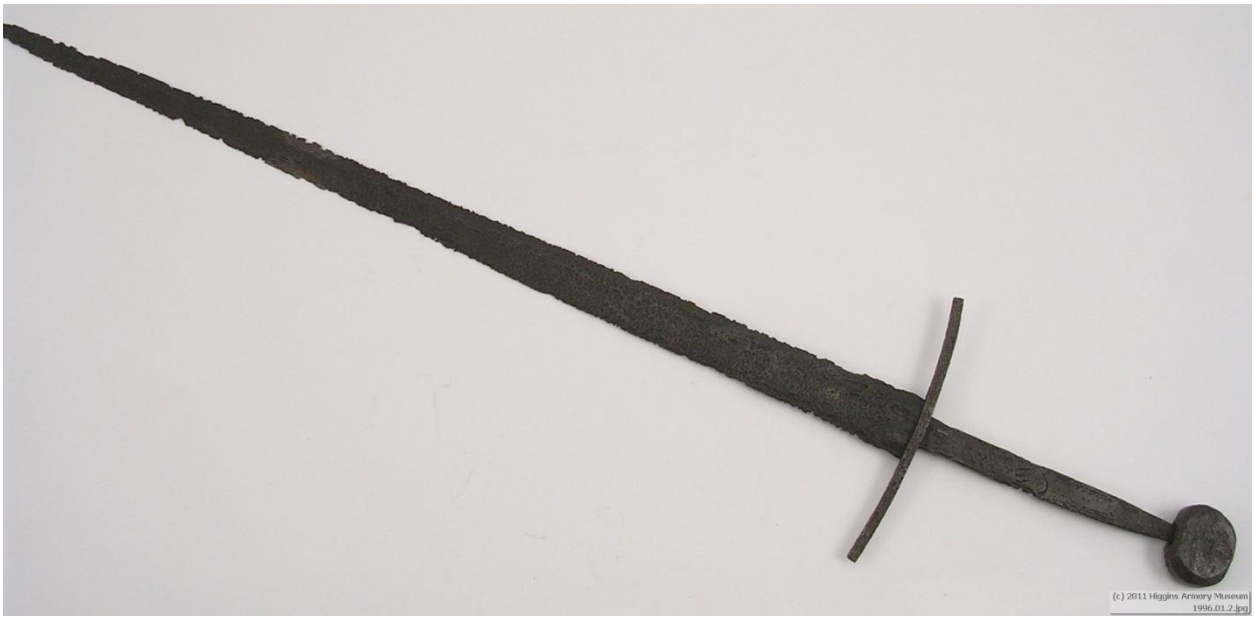
The Winker works well against those free fencers who displace readily. It is new strike in the Messer and it is uncommon and good. Stand with your left foot in front and hold your Messer at your right shoulder. If he stands in the guard Luginsland,

strike long at him with the true edge and an outstretched arm from your right shoulder. Wind against his Messer during the blow and strike at his head with the short edge.

LONGSWORD BY LOGAN HARRINGTON

1. *ARTIFACT AND HISTORY*

The longsword emerged in the late medieval period across Europe as one of the most important weapons a medieval knight could carry. The longsword is a distinct weapon, characterized as having a long, straight two-edged blade at about 40 to 50 inches long, a long cruciform grip or hilt of about 7 inches, and a typically large, rounded pommel (Forgeng, 2007, 309). The blade is composed of the forte and the foible. The forte is the top half of the blade from the hilt to the middle and is the stronger than the lower half, the foible. The sword can weigh between 2.5 and 5 pounds. The longsword is also called the bastard sword and hand-and-a-half sword because it could be used with either one hand or two, as opposed to swords of the previous centuries that were mainly designed and wielded with the use of only one hand (Oakeshott, 1964, 50). The longsword's use is more controlled due to the use of two hands. It was designed for a cut-and-thrust method of combat.



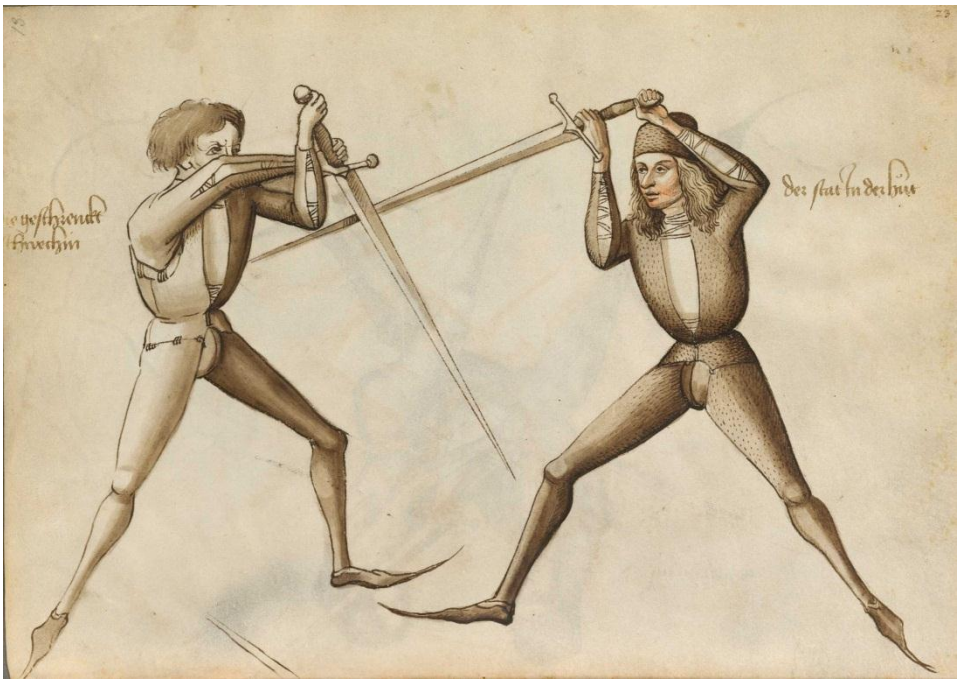
A longsword dating back to the late Middle Ages (1300-1500). Forged in steel and iron, this weapon weighs about three pounds (picture from the Higgins Armory database).

The longsword emerged during a time of changing technology where a different kind of sword was needed for combat. Since the replacement of chain mail armor to new plate armor, swords and their grips were lengthened to accommodate the change in armor technology (Forgeng and Kiermayer, 2007, 301). The longsword started to emerge as such an adaptation

around the fourteenth century. In comparison to previous sword types, the blade of the longsword was made narrower in order to thrust into the gaps of sophisticated plate armor. The ricasso (the upper 6 inches of the blade) was also blunted to allow for a grip for the left hand during close quarter combat associated with armored combat (Edge, 1988, 124). These changes allowed the sword to be used as more of a spear where two handed use was necessary for a precise thrust to a weak point in another knight's heavy armor (Oakeshott, 1964, 50-51).

This deadly weapon emerged in the fourteenth century across Europe until it was mainly used for sport in the sixteenth century and persisted as such until about the eighteenth century. This versatile weapon was used across Europe in countries such as England, Germany, France, Italy, Spain, Scotland, and Portugal during the time period between the fourteenth and sixteenth century. It became commonplace for any European knight to carry a longsword.

The use of the longsword was mainly for knightly combat through the fourteenth and fifteenth century and could be used in a wide range of methods and techniques. The longsword could be wielded in either armored or unarmored combat and became a crucially important weapon for a late-medieval knight to carry. Although the context of unarmored combat isn't fully understood, the longsword was mainly used in armored combat (Forgeng and Kiermayer, 2007, 160). The techniques and skills of both are very distinct and will be discussed later on. Its uses on the battlefield were versatile as its incorporation of physical skills reached a wide range of forms. The longsword could be handled as a sword, spear, or hammer and aside from the dagger, it is the medieval weapon most applied to the grappling and wrestling techniques (Forgeng and

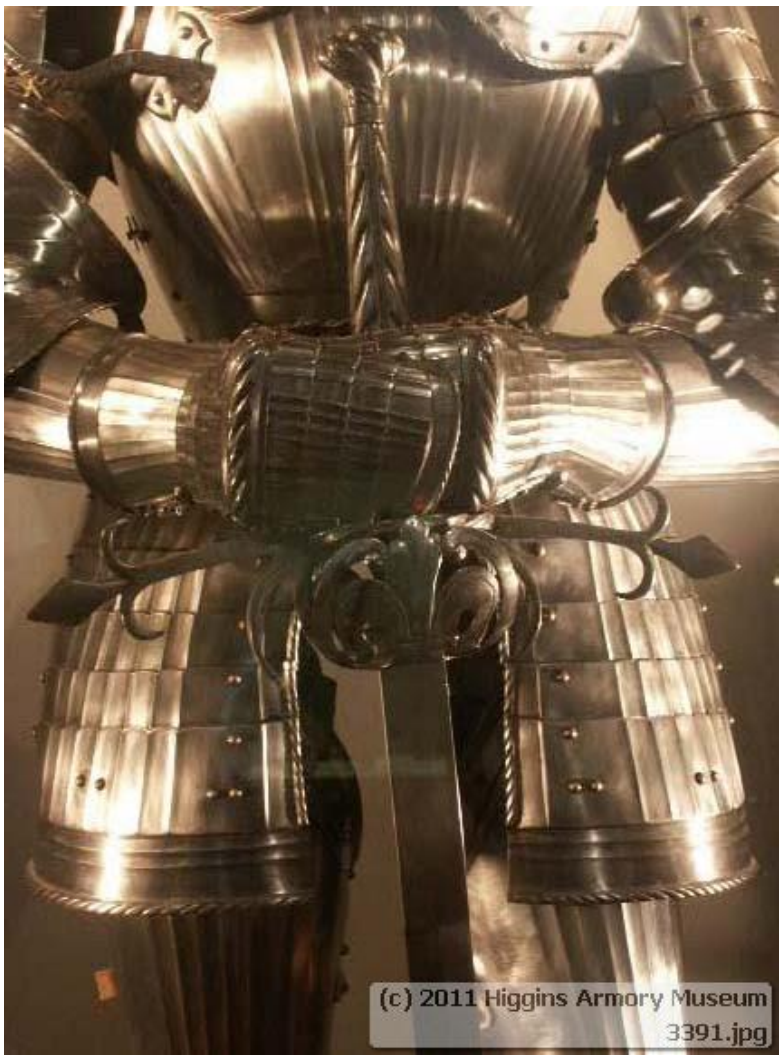


An illustration from Hans Talhoffer's manuscripts depicts longsword combat used for sport.

Kiermayer, 2007, 160). The longsword derived its importance during the late medieval period from this versatility in combat.

Outside of the battlefield, the longsword was used as a teaching tool for fencing and combat techniques. After about the sixteenth century, the longsword was used only in fencing and sport. Joachim Meyer, a German fencing master in the sixteenth century, used the longsword for only this purpose. He used this weapon in sport and for teaching combat principles (Forgeng and Kiermayer, 2007, 164). Other fencing masters across Europe taught the use of the longsword in fencing practice and in texts. In later centuries, fencing academies were being established in cities all over Europe such as the Italian cities of Venice, Milan, and Verona (Edge, 1988, 124).

Swords in the Renaissance and late medieval period were used for competitive sport in the form of tournaments. The tournament was introduced in the Middle Ages as a kind of training for war and remained popular during the Renaissance period. By the fifteenth and sixteenth century, it became more of a symbolic and ceremonial sport. Although no medieval tournament swords have survived, some evidence in the form of illustrations and wood etchings have survived and depict the weapons used in these tournaments. The longsword is one of the weapons used in these ceremonial tournaments. The illustrated evidence also shows that the tips of the swords were blunted, likely to prevent fatal injuries



(LaRocca, 1989, 52).

The longsword had another purpose other than knightly battle which took place in England during the sixteenth century. This type of specialized adaptation, known as the executioner's or headman's sword was used for executions in place of the axe. The blade was made wider and elliptical in section and the end of the blade was rounded or cut off due to the fact that the sword was only needed to cut with the edge of the blade. The larger hilts enabled the executioners to have a firm grip and the blades were appropriately etched with scenes of execution. This type of longsword was also carried in processions as symbols of office (Wilkinson, 1970, 32). Anne Boleyn, the second of Henry VIII's six wives, was executed by a practiced executioner from Saint-Omer with the headman's sword because she disdained the axe. This sword continued to be an instrument of execution until the early eighteenth century (LaRocca, 1989, 52).

The longsword was a significant weapon of its time. Allowing for powerful and deadly attacks to armor, the weapon leveled the playing field with heavily armored knights. Its versatility allowed it to be used in different circumstances and with different techniques such as armored or unarmored combat and its use with one hand or two. An essential weapon of the medieval period, the longsword tradition grew for hundreds of years until it was used mostly for sport fencing. Even today, the weapon's history and techniques are not forgotten through writings and manuscripts of the medieval period.

2. *Sources*

The teachings of the longsword by medieval masters and experts live on through manuscripts and texts written in the late medieval and early modern period. It is these sources that provide direct information about the longsword. A majority of these primary sources are fencing manuals and manuscripts that explain or depict the combat and fencing uses of the weapon. These sources are important to the study of the longsword because they are the written evidence from hundreds of years ago, giving the present day insight as to how the weapon was used. A majority of these sources came from Germany and many build off of the same longsword tradition.

Johannes Liechtenauer was one of the greatest German fencing masters of the medieval period. He lived in the early fourteenth century and set a tradition for other German masters to follow. Liechtenauer never wrote any manuscripts or manuals, what is known about him was passed through oral tradition from generation to generation and eventually written down by masters and scholars of the medieval period. But it is clear that his teachings influenced many generations and several refer to his teachings as a tradition. Such masters as Paulus Kal and Joachim Meyer referred to Liechtenauer in their own writings. His influence carried on for hundreds of years and to other masters of the medieval period. For this reason Liechtenauer can be seen as one of the most important fencing masters of the period.

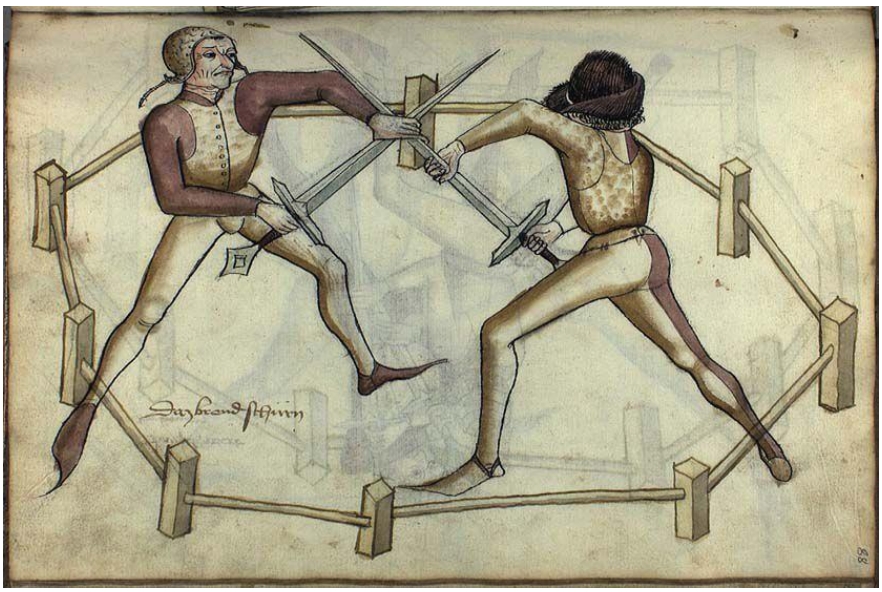
The Liechtenauer tradition is documented in manuscripts and texts through the late medieval period. The Peter von Danzig Fechtbuch is one of the finest text sources of the Liechtenauer tradition. Written in 1452, this source contains a complete rendering of Liechtenauer's teachings for the longsword's use on foot and on horseback, armored and unarmored combat, and contains commentaries from anonymous authors (Tobler, 2010, 83-84).

Within the manuscript is Liechtenauer's epitome, which consists of verses set in rhyming couplets that summarize his teachings on the longsword. This includes the general teachings of the longsword consisting of the different strokes and cuts, the four guards, fighting on horseback, and other combat techniques (Tobler 2010). The anonymous commentaries on Liechtenauer's teachings included in the manuscript explain his longsword teachings, armored combat using the longsword, and mounted combat with the longsword. All of Liechtenauer's teachings are designed to kill the opponent. His combat is based on aggressiveness, extending the weapon towards the target, simultaneous defense and attack, and exploiting the opponent's reaction or pressure. The techniques of Liechtenauer serve for the swiftest possible conclusion to combat as opposed to other later sources that use the longsword only for sport (Forgeng and Kiermayer, 2007, 163).

Liechtenauer had a great influence on Paulus Kal, a fifteenth century fencing master born in Germany who created illustrated fencing manuals. Little is known about his life, however some useful information remains including which martial arts masters he studied under, the houses he served, and that he was involved in the military. Kal was an initiate into the Liechtenauer tradition and based his treatise on his teachings. Kal's most significant treatise is

composed of beautifully drawn and colored illustrations depicting combat techniques. Instead of creating a treatise in descriptive text, Kal's treatise is composed almost entirely of these illustrations. Dating to the late fifteenth century, his treatise was the first attempt to illustrate Liechtenauer's epitome. Within his treatise, Kal depicts the techniques of the longsword as well as other weapons including jousting and spear combat (Chidester 2012).

Hans Talhoffer was another German fencing master in the fifteenth century who created illustrated manuals to teach about medieval weaponry. Few facts are known about his life but his treatises indicate that he had taken influence from the Liechtenauer tradition. Talhoffer's *Fechtbücher* or fighting books, date back to the fifteenth century, and are some of the most influential and lavishly drawn fencing manuals of their time. At least six manuals were compiled under his name, covering a wide variety of armed and unarmed combat techniques (Talhoffer 1467). Talhoffer also included material on judicial dueling which included combat with large dueling shields and combat between a man and a woman (Forgeng and Kiermayer, 2007, 163).

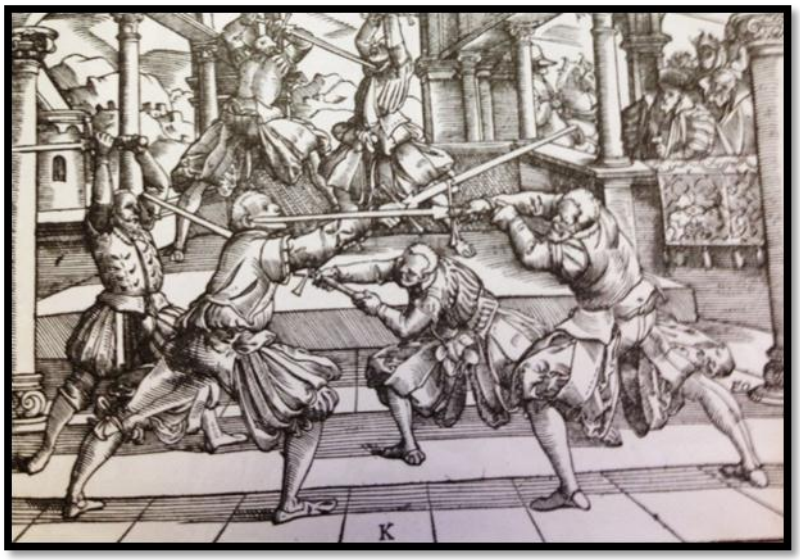


An image from one of Talhoffer's manuals showing the use of the longsword with two hands.

The treatises of Joachim Meyer are also influential sources of information from after the medieval period. Meyer lived in Germany in the late sixteenth century. In addition to being a fencing master, Meyer was a knife smith and a member of the middle class. He wrote several fencing manuals, which show clear reference to the fact that he followed the Liechtenauer tradition. However, Meyer wrote his manuals as instructions for fencing to be used in sport only. He transformed Liechtenauer's crucial thrust into an occasional jab to avoid serious injury. The

principles laid out by Liechtenauer remain the same but the focus of the techniques change from a thrust to a cut (Forgeng and Kiermayer, 2007, 163-164).

One of Meyer's fencing manuals, *Grundtliche Beschreibung der Kunst des Fechtens* ('Thorough Description of the Art of Combat') published in 1570, stands as one of the most important texts of the medieval German tradition. Meyer's manual is a comprehensive encyclopedia of traditional German martial arts. The manual covers a range of weapons including the longsword. Along with descriptive text, Meyer also included illustrations of fencing techniques, some of which were extremely intricate and detailed with imagery having nothing to do with fencing (Forgeng, 2005, 11).

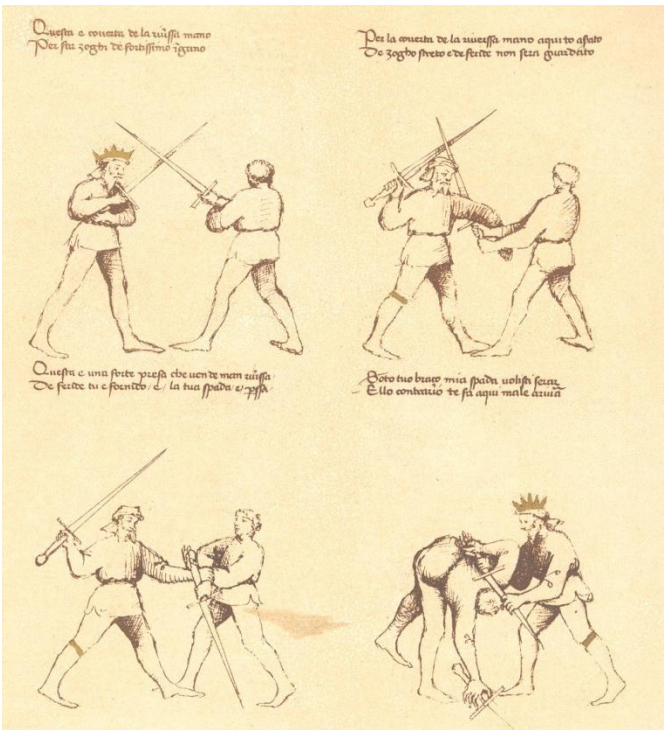


This is an example of one of Meyers illustrations from *Grundtliche Beschreibung der Kunst des Fechtens* ('Thorough Description of the Art of Combat').

Meyer's manual is broken up into three books, the first of which documents the longsword. This book includes the fundamentals of the longsword, fighting from the guards, and verse epitome and commentary. His book on the longsword starts off by explaining the divisions of the combatant and the divisions of the guard. He then moves into explaining the proper postures and the guards. The different types of cuts are described next followed by parrying. Meyer also explains withdrawing from an exchange and advice about stepping while wielding the longsword. These are considered basic elements of fencing with this weapon. After those elements are detailed, he goes on to teach how those elements are put together to be executed in fencing. Meyer's treatise was written in order to teach others what he knew, in this way his manual reads more like a modern instruction manual than treatises of other masters (Meyer 1570).

Not all important medieval manuscripts came from Germany; the Italian fencing master Fiore de'i Liberi produced an extremely influential treatise about medieval combat. Fiore was a fourteenth-century knight and fencing master who studied under countless masters, both Italian and German. During his career, he came into contact with several German masters and mentioned that on five separate occasions he was forced to fight duels for his honor against them. The duels were fought unarmed and with the longsword and he won each duel without injury (Fiore 1410). Fiore's teachings seemed to have an influence on other Italian masters who came after him. His teachings are also referenced in German manuscripts, giving clear evidence that his influence extended outside of Italy.

Fiore wrote an extremely influential martial arts treatise in the early fifteenth century which is now a primary source for Italian fighting arts, especially for the longsword. His treatise, *Fior di Battaglia* (The Flower of Battle) included descriptive text on the techniques of the longsword as well as the dagger and spear. He included the combat techniques for the longsword with one hand or two and armored or unarmored. Fiore also includes combat styles dueling against other weapons such the dagger and spear. In his treatise, he describes the basic longsword techniques as well as several ways to defeat the opponent in several techniques and situations. Usually one builds off of the other in a sequence. The intention of his teaching seemed to be to train knights to defeat their opponent in battle (Fiore 1410).



Descriptive illustrations from Fiore's manuals teaching the techniques of the longsword.

The primary sources of the longsword, coming mostly from Germany give the present day adequate insight into how the weapon was used in the late medieval period. From fencing manuals to lavishly drawn illustrations, these sources give sufficient understanding of the

weapons workings and uses. An understanding of the weapon would not be fully possible without them and scholars today continue to study these sources.

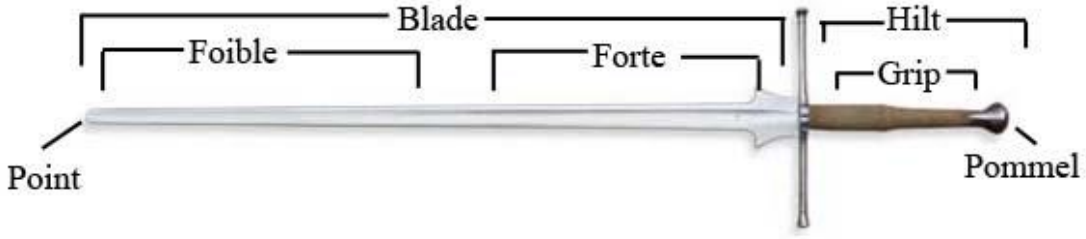
3. *Unarmored Techniques*

This section will teach the basic techniques of the longsword. There are many ways to wield the longsword, but the style covered will be unarmored and for sport. Meyer's teachings will be referenced in this section as his manuscript is the most clear and direct in teaching the basics of this weapon. This use of the longsword is practiced with both hands having a loose but firm grip on the hilt.

Meyer begins his teachings with the divisions of the combatant's body. The combatant or student in this case, is divided into four parts that consist of the upper, lower, left, and right. These are fairly self-explanatory as they divide up the body into sections where the upper is the scalp and lower is the cheek and neck.

The divisions or parts of the sword are also important to learn. These include the pommel, point, hilt, grip, and the blade. The blade has two main divisions which are first the forte and the foible and second is the short and long edge or front and back (Meyer, 1570, 55-56). The forte is the stronger section of the blade used for defense and the foible is the weaker section with less leverage but is used for attacks. The grip is where the hilt is to be held with either one hand or two. Pommels are typically for decorative purpose but can be used in combat to injure the opponent by delivering a quick thrust to the head with the pommel.

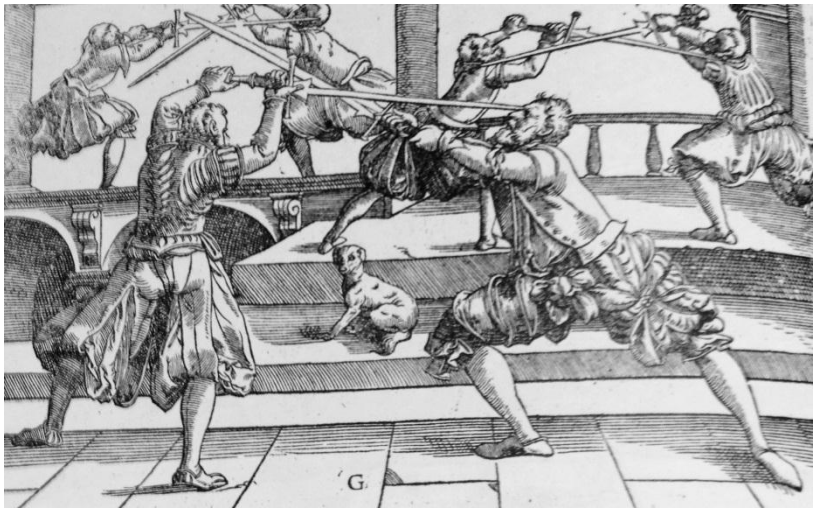
The postures and the guards are positions for the combatant to prepare themselves while out of range. They serve as a waypoint for decision making in the event of an encounter. The guards refer to the divisions of the combatant as there are four opening where they can be struck.



Like the openings, there are four main postures and guards which include the Ox, Plow, Day, and Fool. There are several others that derive from these postures but only the main four will be described.

The upper part of the body is protected by the Ox. The Ox is divided into the right and the left. For the right Ox, you stand with your left foot forward and hold the sword with the hilt up by your head on the right side and so that your point extends towards your opponents face. The left Ox is the opposite of this with your left foot forward and the hilt to your right (Meyer, 1570, 53).

The Plow protects the lower part of the combatant's body and is executed with either the right side or the left side. The Plow is merely setting up for a thrust from below. Stand with the right foot forward and hold the longsword with the hilt by your forward knee while aiming the tip at the opponent's face as if to engage in a thrust upwards into the face. This is the right Plow and the left is the same except using the opposite foot and side (Meyer, 1570, 53).



The Day guard, also called the High Guard, is called such because the sword is held high above the head. In order to execute this guard, stand with your left foot forward, and hold the sword well above your head so that the point extends right upwards. Any attack delivered from above is to come from the Day guard (Meyer, 1570, 53).

The last main type of guard is called the Fool guard. This guard is appropriately named because no proper stoke can be readily achieved, unless a new cut is attempted after the opponent's attack has been deflected. No proper fencer would allow another to strike him without a prepared counterstroke. To perform this guard, stand with your left foot forward and hold the sword with the point extended toward the ground in front of you before your extended foot such that the short edge lies above and the long edge below (Meyer, 1570, 53-54).

These are the four main guards to hold while facing against an opponent. It is important to not remain in one guard but to always be moving from one to the other in a constant and fluid manner. As soon as your opponent is within reach, an attack should be carried out. If you wait, you will find yourself constantly parrying your opponent's attacks, making it difficult to strike the opponent (Meyer, 1570, 55-56).

The cuts are the next lesson, which Meyer believes are the true chief element in combat. There are two distinct kinds of cuts: straight cuts and reverse cuts. Straight cuts are those that are delivered at the opponent with the long edge and extended arm. The four chief straight cuts are High, Wrath, Middle, and Low cut. The reverse cuts derive from the main straight cuts. One reverses the hand and sword in the cuts as to not hit the opponent with the long edge but with the short edge instead (Meyer, 1570, 56).

The first of the main straight cuts is the High Cut. It is a straight cut from above at the opponent's head towards the scalp. The second cut is the Wrath Cut. This cut is a diagonal cut from the right shoulder at your opponents left ear or through his face and chest. This is the strongest of the cuts as it embodies all the strength of the combatant. The Middle Cut, also called the Horizontal Cut, is similar to the Wrath Cut but is executed across the opponent instead of diagonally. The last main cut is the Low Cut. To perform a Low Cut, cut into the right Ox and as soon as you can reach your opponent, step and cut across from below his left arm, so that you come over your head with the hilt of the sword. Those are the main cuts that every longsword fencer should know (Meyer, 1570, 57).

Other important cuts that derive from the main cuts include the Crooked Cut and the Thwart Cut. To execute the crooked cut, stand in the Wrath Guard with your left foot forward. If your opponent attempts a strike towards you then step with your right foot

A depiction of the Crooked Cut from one of Paulus Hector Mair's manuals.

towards his left side to avoid the attack and cut with the long edge and crossed hands against his cut or across his hands between his head and blade. The Thwart Cut also starts in the Wrath Guard. Set your left foot forward and hold your sword on your right shoulder as if you intend to deliver a wrath cut. If your opponent strikes from the Day Guard then strike at the same time with the short edge across from below against his cut. Hold the hilt above your head in order to deflect the strike towards your scalp, and at the same time as the cut, step well into his left side. This will allow you to parry and strike at the same time (Meyer, 1570, 57-58).

The next lesson on the longsword is parrying. After the main cuts have been learned, it is important to learn how to defend against those cuts. Since the cuts are used to defend against the opponents stroke while injuring him, by learning the cuts you have also learned how to deflect them. There are two types of parrying. The first is when you deflect the opponent's stroke and then rush at his body with a cut. The second way to parry is when you parry your opponents cut and strike him at the same time with a single stroke. The second method is more fluid and is considered the proper way to engage an encounter (Meyer, 1570, 60-61).

The first way to parry, deflecting and then striking in a separate motion, utilizes the different types of postures and cuts to effectively parry the opponents attack. For instance, the High Cut suppresses all other cuts downward from above but it is useless against the Wrath or Horizontal Cut. The Low Cut also takes out the High Cut upward if done with enough strength (Meyer, 1570, 61).

The other basic lessons of the longsword consist of the handwork. Handwork includes the other techniques and movements involved in fencing to best your opponent. Such techniques as binding, chasing, slicing, running and other practices fall under the category of handwork. These are in addition to the basic cutting and parrying described before. Some types of handwork will be described for a further understanding.

Binding, also called remaining, is when the swords connect with one another. One kind of binding is when each sword is held against each other to see what tactic the opponent will use to strike. The other occurs when striking. The combatant acts as if they are setting up for a stroke but instead flick back around and comes back in with the short edge to trick the opponent. Binding is a way to understand the combat style of the opponent (Meyer, 1570, 62).

The High Guard and the Low Guard are depicted in this illustration by Mair.

Chasing is another skill of handwork and Meyer believes that it is characteristic of a master. During combat, if your opponent cuts too wide or too far up or down then you rush after him at the opening and prevent his cut from coming to a completion. If the opponent changes sides of an Ox, then a skillful and quick thrust to his opening can end the duel. This handwork utilizes the openings of the opponent and seizes every opportunity to reach them (Meyer, 1570, 62).

Slicing is also a core technique of handwork with the longsword. When an opponent rushes towards you with a quick strike, you can stop him with this technique. After the opponent's sword is caught in a bind, remain there to see whether or not he will withdraw or strike. As soon as he strikes around, pursue him with the long edge on his arm. Push him back from you and pursue with a cut to the nearest opening before he recovers. Slicing throws your opponent off balance, giving you enough time to deliver a strike while his openings are

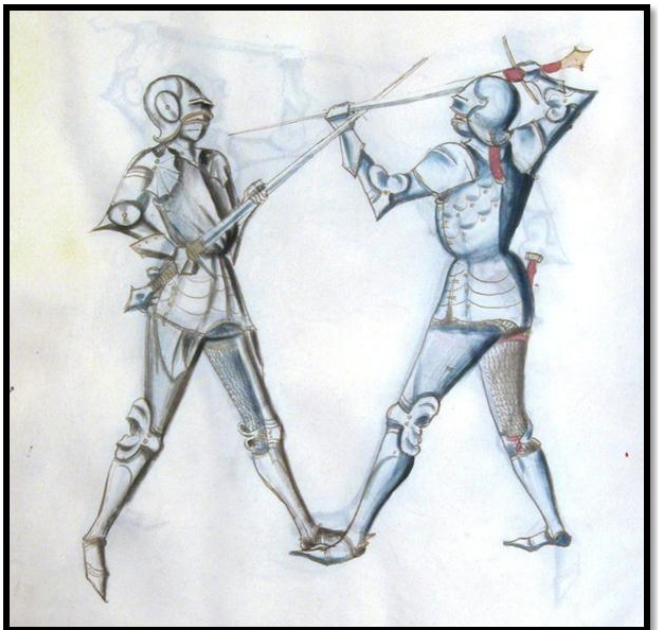
unprotected. Striking around, mentioned in the slice, occurs when you are bound from your right to his left and you go back out of that bind and strike around or flick to the other side (Meyer, 1570, 62-63).

Another example of handwork would be flitting. When you cut at you opponent's opening and he attempts to deflect the attack, then don't let his blade connect with yours. Instead, pull the stroke back in the air with a single fluid motion and attack another opening. This handwork is very useful against an opponent who is eager to chase your sword but not to harm you (Meyer, 1570, 63).

There are many more types of handwork that Meyer describes in his treatise. These handworks are meant for experienced students who have mastered the guards, cuts, and parries. These are the basic techniques of the unarmored longsword. There are many more techniques and skill sets involved with unarmored combat; however, it is only necessary that the basics be covered.

4. *Armored Techniques*

The longsword was traditionally used in armored combat by knights. Armored combat differs from unarmored combat in that its main outcome is to kill the opponent where fencing practices did not harm the opponent. The techniques in armored and unarmored combat have some similarities such as the guards. The teaching of Liechtenauer within the Von Danzig Fechtbuch manuscript will be used to describe the techniques of an armored knight using the longsword.



Two knights engage in combat. Illustration from Paulus Kal.

Wearing a full suit of armor changes the way battles are fought. In armored combat, the sword is held in a halfsword guard. The knight would hold his sword with his subordinate hand on the middle of

the blade and his dominant hand on the grip. This gives the knight more control over the weapon and uses it to deliver precise cuts and thrusts to weak points of the armor. Weighted down by a full suit of armor, the knight has less mobility and must conserve strength and stay on his feet while fighting. If a knight is knocked to the ground, he can't recover quickly. The armored combat styles reflect these changes and challenges.

Armored knights have fewer weak points and Liechtenauer describes where you should strike during an armored duel. The scarce weak points in a suit of armor include under the helmet into the face, under the armpits, in the palms of the hand, on the arms from behind into the gauntlet, into the hollows of the knee, and below on the soles of the feet, in the insides of the elbows, and between the legs. Striking these weak points will be more effective during a duel (Tobler, 2010, 148).

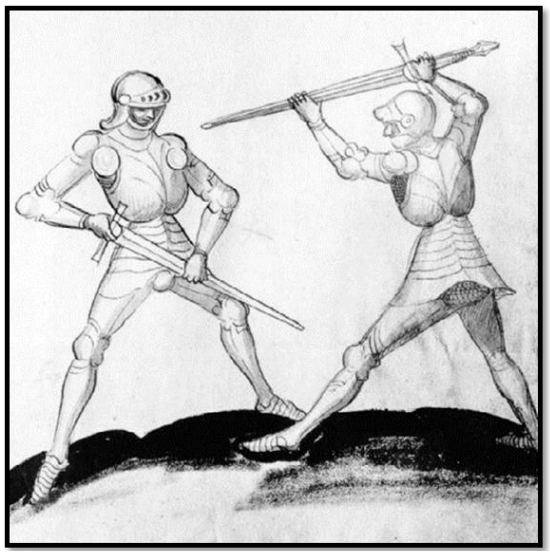
There are four guards to learn with the half sword, when the sword is held with one hand on the blade and the other on the hilt. With each of these guards you should always thrust strongly to the face. The first guard is executed by standing with your left foot forward and holding your sword with the right hand by the grip and with the left hand holding the middle of the blade. Hold it by your right side over your head and let the point hang in front of his face. There are many techniques to use in this guard. One such technique can be used when you stand in the High Guard against an opponent who is in the Low Guard and tries to thrust at you from below. Instead of parrying his attack, thrust to his face or strike his head. In this way he won't be able to reach you from below and you will have delivered a powerful attack (Tobler, 2012, 150-151)

The second guard in armored combat is accomplished by standing with your left foot forward and holding your sword with the right hand at the hilt and with the left grasping the middle of the blade. Hold the blade down by your side with the pommel toward your right knee so that the point stands upward against your opponent's face or chest. The first technique described with this guard is when you stand in the Low Guard and your enemy stands in the High Guard and thrusts to your face or attempts a strike from above. Thrust to his forward hand at the opening at the palm. Or set the point of the sword so that it is at the opening under his left armpit (Tobler, 2010, 152).

To execute the third guard with the half sword, stand with your left foot forward and hold your sword with your right hand at the handle and your left on the middle of the blade, and place it across your left knee. Like the other guards, there are several techniques and skills that can be learned in this guard. The first is when you have your sword over your left knee in the guard and he thrusts to your face from the High Guard. Set the thrust aside with your sword in front of your left hand to his right side. Go up into the High Guard and strike him from above (Tobler, 3020, 154-155).

The fourth and final guard for armored dueling occurs when you hold your sword by the handle with your right hand and with your left hand grasping the middle of the blade and hold it under your armpit, and set the pommel in front right on your chest while holding the point against your opponent. You should come into the fourth guard from all other guards as you attack your opponent. When you thrust at your opponent from one of the guards and manage to thrust your point into his harness, then wind your hilt quickly to your chest into the forth guard and press forward towards him. Don't let him escape from your point and he can't thrust or strike at you (Tobler, 2010, 155).

A depiction by Talhoffer illustrating two armored knights in combat.



An illustration by Talhaffer of a knight performing a thrust to his opponent's face

The teachings of Liechtenauer stresses the importance of the Before and After. He believes they are the foundation of the art of

combat. These concepts should be fully understood before anything else and the comprehension of them will make a good master of the sword. The concept of Before means that you should always get there before he does. When you come first with an attack your opponent must parry you and if you work nimbly at his parrying he can't counter attack. Striking first is important because it establishes control over the duel and gives you the advantage. The After is the counter-techniques against all other techniques and strokes against you. If your opponent attacks first and you are forced to parry, work instantly from the parry towards your opponents opening. This breaks his Before with your After. Stay in control of the duel and don't get trapped in a constant state of parrying (Tobler, 2010, 111-112).

The Murder Blow is an important and powerful strike for a knight and is important to know. To execute a Murder Blow, step in close as if you intent to thrust inside to the face. Instead, let go of the grip with your dominant hand and bring it to the other hand on the blade. Swing the sword from above with a strong strike to your opponent's head with the hilt and pommel. The motion should feel as if you are swinging an axe down from above your head. If this attack is successful, it is sure to end the duel (Tobler, 2010, 163).

There are other important techniques to know for armored combat. Such techniques include chasing, the concept of Feeling and Instantly, and wrestling. Chasing is a diverse tactic and should be done by striking and thrusting against opponents who have free and long strokes. Stand with your left foot forward in a guard and see what he is going to execute against you. If he strikes from above, don't wait for his sword to reach you but instead step forward with your right foot and strike above to his head before he can strike. Be sure to execute a thrust or attack before he has the chance (Tobler, 2010, 123).

An example of a wrestling technique is depicted. The combatant on the left is in perfect position to perform a throw on his opponent. The illustration is by Mair.

The concept of Feeling and the word Instantly were considered important aspects of combat. They are one concept together and refer to the feeling a

combatant gets about their opponent that will assist them in bested the other. For example, if your opponent binds on your sword, then as soon as your swords clash together you should sense whether or not your opponent is bound soft or hard at the sword. As soon as you have this feeling, you should instantly act upon it to counter your opponent. In order to master the sword, you must master this concept. Knowing the skills of your enemy and what he is going to do before he does it is an advantageous skill (Tobler, 2010, 124).

Wrestling is another important longsword skill to learn. Not the entire duel is fought only with the sword. Wrestling techniques give combatants an advantage if their opponents get too close. The Liechtenauer teachings describe wrestling of the body and wrestling of the arms. There are many ways to wrestle with your opponent. One technique of wrestling of the body occurs when your opponent is about to strike you from above. Hold your sword with your left hand by the pommel so that it hangs down your back and run towards his right so that your head is between his arms. Put your right foot behind his right foot and send your right arm to his left side in front around his body and clasp him to your right hip. From this position, you can throw him to the ground (Tobler 127).

If you do not have the control or position to wrestle with his body, you can wrestle with his arms to gain advantage. An example of this type of wrestling occurs when your opponent is rushing towards you with his hands low. When you see this advance, reverse your left hand and use it to grasp inside his right between his hands and pull him to your left side. Use your right hand to strike him with the sword on the head at the same time. Using this type of technique, you can pull your opponent off balance, turn his body away, or even take his sword from him (Tobler 127).

These are the basic lessons of armored combat with the longsword. There are many more skills involved with this type of combat but only the basics were covered. These teachings were the basis for the Liechtenauer tradition and can be observed from other masters.

RAPIER BY CECELIA FRANZINI

The rapier is a one-handed sword used in medieval and Renaissance Europe from roughly 1500 to 1700. We will explore various aspects of this weapon, including how it developed and in what regions of Europe, its physical structure, and techniques for use from various experts of the time. The rapier developed from other one-handed swords, but used a technique that emphasized thrusting instead of slashing or cutting. It developed for the purposes of urban self-defense and private dueling and could be used in conjunction with a parrying weapon in the secondary hand. Many of the experts on the weapon come from Italy and Spain, but there were also others from European countries such as France, England, and Germany. The rapier fell out of use because it was getting replaced by the small-sword, which is essentially a smaller, lighter, less-cumbersome version of the rapier that uses similar techniques.

1. *ARTIFACT AND HISTORY*

The rapier cannot be said to have appeared exactly at one point or place in time; it continually evolved while it was in use. As a result, it can be difficult to define exactly what a rapier is because it has many forms and was made in many places. Even after the rapier became widely used throughout Europe, there were still variations in parts of the sword. According to A.V.B Norman "The word rapier today is usually taken to refer to a type of sword with a long, narrow, straight blade designed purely for thrusting, or at the most, only of limited use for cutting."[1] Norman also explores possible etymologies of the word 'rapier.' It may have come from the German word 'rappen,' which is to tear out, or the Spanish 'raspar,' to scrape or scratch. The French word 'rapière' referred to extravagantly long and fashionable swords. Alternatively, the term could have come from the Spanish phrase 'espada ropera,' which means a sword worn with civilian dress. This phrase seems to be the origin of the French term 'épée rapière.'[2] For the purposes of this discussion, when the word 'rapier' is used, it will use Norman's definition.

The rapier was not used very much in the military; it was primarily for civilians. By the sixteenth century, it had become an accepted part of civilian dress and was often a fashion

[1] Norman, 19

[2] Norman, 20

accessory.[3] It was used for thrusting rather than cutting. The switch between techniques was due to the evolution of better plate armor, which was more resistant to cuts, but weaknesses in plate joints could be susceptible to accurate thrusts.[4] Rapiers were long and light, and so very fast.[5] They were not very good for use in the army however, because of these same properties. They were too long to use in close combat surrounded by other soldiers and could be too fragile to stand up to blows from heavier swords or against plate armor[6]. This is why rapiers were used by civilians who used them for defense in the streets or for dueling, oftentimes accompanied by a dagger, other blocking device such as a buckler or cloak, or in conjunction with some wrestling techniques.[7] Italians became particularly well known for their fencing, an art which eventually became routine in the education of young noblemen throughout Europe.

There are two major parts to a sword, the blade and the hilt, which is where the sword is held. The hilt and blade did not necessarily evolve together to become what has been defined as a rapier. Let us start by examining the hilt, which has a more complex development. For most of the Middle Ages, the predominant type of hilt involved only a cross-guard at the top of the grip, which is essentially a bar perpendicular to the sword.[8] Later, this bar extending from the guard came to be called a quillon, and is indicated by letter 'H' in the diagram shown in Figure 1.

This first type of guard was simple because soldiers would have a gauntlet to protect their hands. However, as swords were used more by those without armor, the hilts became more complex and protective. Several features were added to hilts beginning in the fourteenth century. One of the first was the forefinger hook, which was a small loop to protect the forefinger when it was wrapped over the quillon to steady the sword for a more accurate thrust.[9] A knuckleguard was next, which might have been as simple as bending a quillon parallel to the grip so that it would be above the knuckles. Throughout the fifteenth century, many developments were made by shaping the quillons different ways.[10] They were curved and recurved in different directions, including horizontally. Another finger ring was added, opposite the forefinger hook. The

[3] LaRocca, 48
[4] LaRocca, 44
[5] LaRocca, 48
[6] Norman, 23
[7] LaRocca, 56
[8] Norman, 32
[9] LaRocca, 45; Valentine, 9
[10] LaRocca, 46

knuckleguard became its own entity, rather than being formed from the quillon. Side rings also came into use, which are rings that protrude horizontally from the quillon to protect the back of the hand. Combinations and variants of these features at this time could be referred to as the developed hilt (Figure 1). However, this hilt was not used exclusively for rapiers; before the sixteenth century, the developed hilt was mounted on typical cut-and-thrust swords.

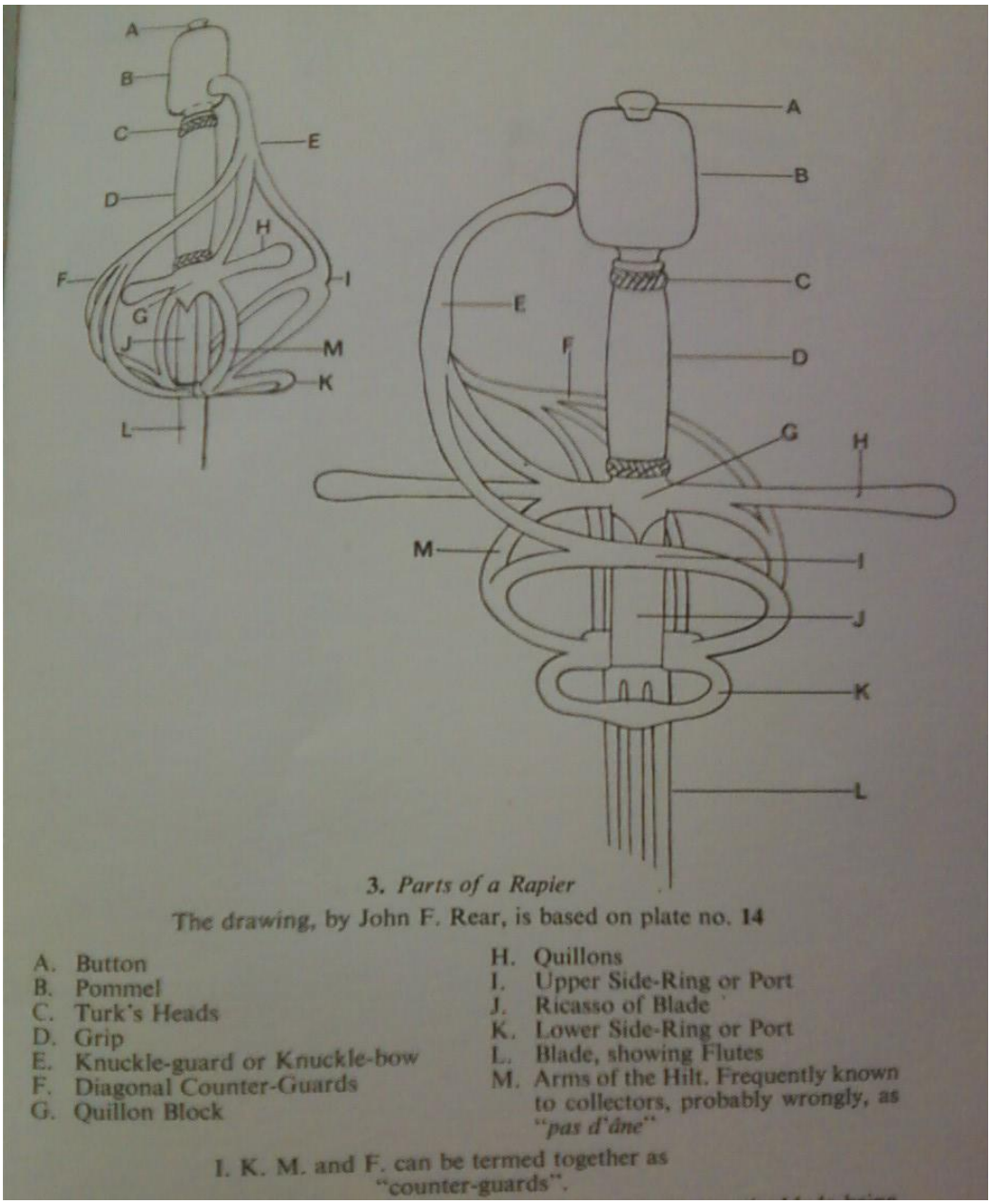


Figure 1. Parts of a Rapier by Eric Valentine

Throughout the sixteenth and seventeenth century, the rapier hilt continued to develop, and there are several particular types. One very fashionable type was the swept-hilt rapier, which is of the form seen in Figure 1.[11] There are several types of swept hilts, but they typically had several curved bars, inner and outer guards, one or two quillons and various other features.

Figure 2. Portrait of a man with rapier.

They were oftentimes decorated or colored, sometimes exquisitely for fashion purposes rather than combat (Figure 2). Swept hilts were used throughout Europe, but some countries had particular characteristics in their swords. Another type of sword that started to appear around 1610 was the cup-hilt rapier, most common in Spain and Spanish territory[12]. Cup hilts are much less complex than swept hilts; they are simply a solid cup that goes at the top of the grip, possibly accompanied by a knuckleguard and straight quillons (Figure 3).

[11] North, 58
[12] North, 62

Figure 3. Cup-hilt rapier from Spain around 1670[13]

By the seventeenth century, swept-hilt rapiers typically had long blades with an average length of 45 inches.[14] They were narrow, double-edged, had a thin channel down the middle, and because they were used only for thrusting, had a long ricasso, which is an unsharpened part of the blade at the hilt. This is where a swordsperson could hold in order to guide the blade better.[15] Because the blades were so long, they would be made thinner – around an inch in width, for example – to decrease their weight.[16] Sometimes broader blades were used with multiple channels which decreased the weight of the blade.[17]

Around the 1650s, light rapiers became fashionable; they were simply a lighter and shorter rapier that became known as 'scarf swords' because they would be worn in a sash or scarf[18]. Most of these light rapiers were fashion accessories, and they eventually continued to evolve into the even smaller and lighter smallsword.

[13] Higgins Armory Collection Accession Number 3035
[14] North, 66
[15] Valentine,11
[16] Valentine, 9
[17] North, 66
[18] North,65

Smallswords started to become very popular after 1660.[19] They had large fully developed hilts, typically with a double-shell guard, two arms, which are also known as the forefinger hook and ring, and a knuckleguard (Figure 4). Trade routes were becoming better established at the time, and sword hilts were a good example of this because different and sometimes unusual materials would be used.[20] Silver was a popular, but expensive, material. Gold, copper, brass, steel and other metals were used; even unique hilts made of ivory came from Ceylon through the Dutch. The more decorative swords were just that, but there were also plainer, sturdier swords that would be used for war – they did not have the same problems of excessive length as rapiers - or for self-defense while traveling in the early 1700s.

Figure 4. Typical smallsword hilt[21]

The first smallsword blades were simply rapier blades that were much shorter than usual.[22] A little later, in the late 1600s, a type of blade that was wide at the base and tapered to a narrow point came into use from Germany and was known as a colichemarde. Both blade styles were commonly used for the smallsword, as well as other variations.

[19] North, 66
[20] North, 68
[21] Higgins Armory Museum Collection Accession Number 1997.03.1
[22] North, 69-70

2. *RAPIER FENCING MASTERS*

Because swordplay became so widely taught throughout Europe in the sixteenth and seventeenth centuries, there were many experts who described their methods of fencing in works called treatises. We will begin with an overview of some of the important Italian masters, and then will proceed with some Spanish masters and one each from France, Germany and England.

Camillo Agrippa was one of the first masters to write a treatise on swordplay, and the focus of his work published in 1553 was the rapier. It was called *Trattato di Scientia d'Arme*, which translates to 'Treatise on the Science of Arms.[23] Agippa spent most of his life in Rome until his death around 1595, although it is thought that he was originally from Milan[24]. Very little is known about his life. He was not primarily a fencing instructor; he was an engineer who was also interested in hydraulics, astronomy, natural science, military science and navigation[25]. His treatise was very important because even though its subject was the commonly used weapon of the time, his techniques were innovative. He was writing for a specific context; his techniques were ideal for duels, not chaotic situations.[26] At the time, private duels of honor were part of Italian court life, and this was the setting in which Agrippa's techniques would work best. In this sort of duel, one person would challenge another over something that had threatened his honor. The defendant would be allowed to choose whatever weapon or armor he wanted, but typically only chose an offensive weapon, because it was considered the most honorable.[27] This is the situation which Agrippa describes for his intended audience, the student, which would likely be a member of an aristocratic family or guild.[28]

The first part of Agrippa's work describes four guards, or positions to hold the sword, from which all other moves would be based. These positions are meant to keep the point of the sword close to the opponent so that the thrust is the most efficient move because the shortest distance between two points is a straight line. Agrippa uses mathematical and geometrical

[23] Agrippa, XIII
[24] Agrippa, XVIII
[25] Agrippa, XXII
[26] Agrippa, XXXIII
[27] Agrippa, XL
[28] Agrippa, XLVII

proofs – presumably because of his engineering background – to show that the thrust is the best motion, and the pictures that illustrate the movements are usually on a Cartesian plane.[29]

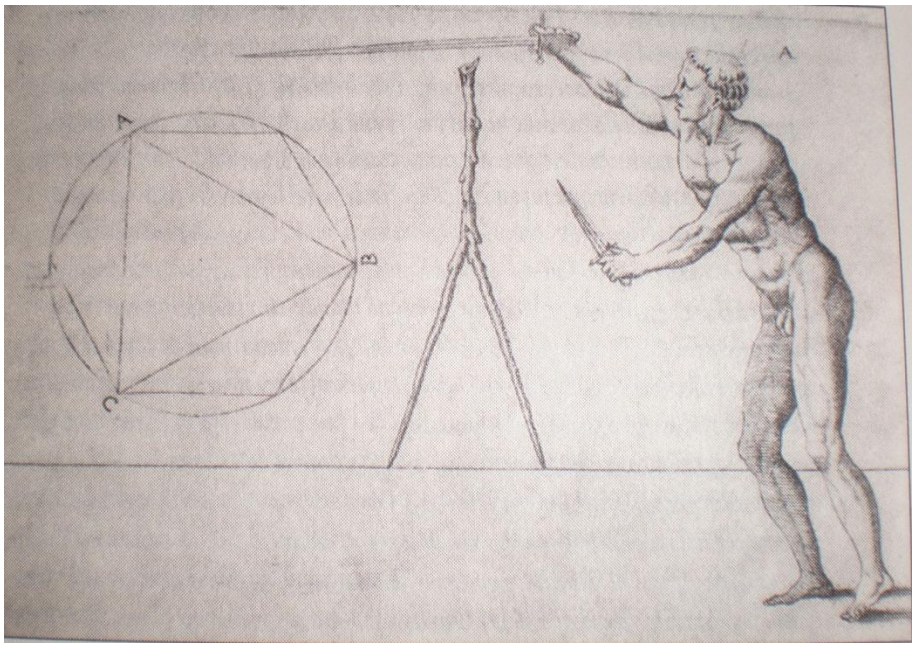


Figure 5. Illustration of First Guard from Agrippa[30]

The most important concept to Agrippa's style of fencing with the thrust is time.[31] He defines moves in terms of a tempo, which is "the interval it takes to perform a single, simple fencing action."[32] The major idea Agrippa presents is to take an action within the opponent's tempo; if you attack in the middle of his action, he will not be able to respond quickly enough to do anything about it. As a result, Agrippa's body positions are designed to give a fencer the ability to maximize the effectiveness of time and distance, for example, always keeping the dominant sword-side forwards.[33] In general, he prefers brains over brute strength, as many of his motions are meant to be lithe, smooth, and seemingly effortless.[34]

[29] Agrippa, LV
[30] Agrippa, 15
[31] Agrippa, LXV
[32] Agrippa, LXVI
[33] Agrippa, LXVIII
[34] Agrippa, LXXIV

Giacomo DiGrassi came after Agrippa, and published his treatise, *His True Arte of Defense* first in Italian in 1570, and then in English in 1594. He was considered one of the three premiere Elizabethan masters in England, although he had probably never been to England[35]. DiGrassi believed, like Agrippa, that the thrust was a superior technique in most cases, but does include some situations in which a cut would be a faster response.[36] He is the first author to come up with four lines in which the sword could be held: low, high, inside, or outside. However, he only describes three guards: high, low, and outside. DiGrassi also spends a significant portion of his treatise talking about how to use a dagger, cloak and buckler in conjunction with the sword. When using two objects together, it is possible to parry and attack at the same time, which is ideal because it does not take as long as parrying with the sword and then using it to strike. Using two rapiers together is another technique DiGrassi explores. While DiGrassi's work was not as revolutionary as that of Agrippa, it still was able to clearly explain his techniques, and was probably more influential in England because it was translated to English so soon after its original publication.

Figure 6. Illustration from DiGrassi

Nicoletto Giganti was a Venetian fencing master who published his treatise, *Teatro*, in 1606[37]. He was the first to explain the advantage of the lunge.[38] He only uses two guards, but acknowledges that there are others, and also uses lines and advocates the use of simple feints. Giganti explores the use of one sword as well as a sword and dagger, and also emphasizes the importance of timing.

[35] Wilson
[36] Castle, 69-72
[37] Giganti
[38] Castle, 154

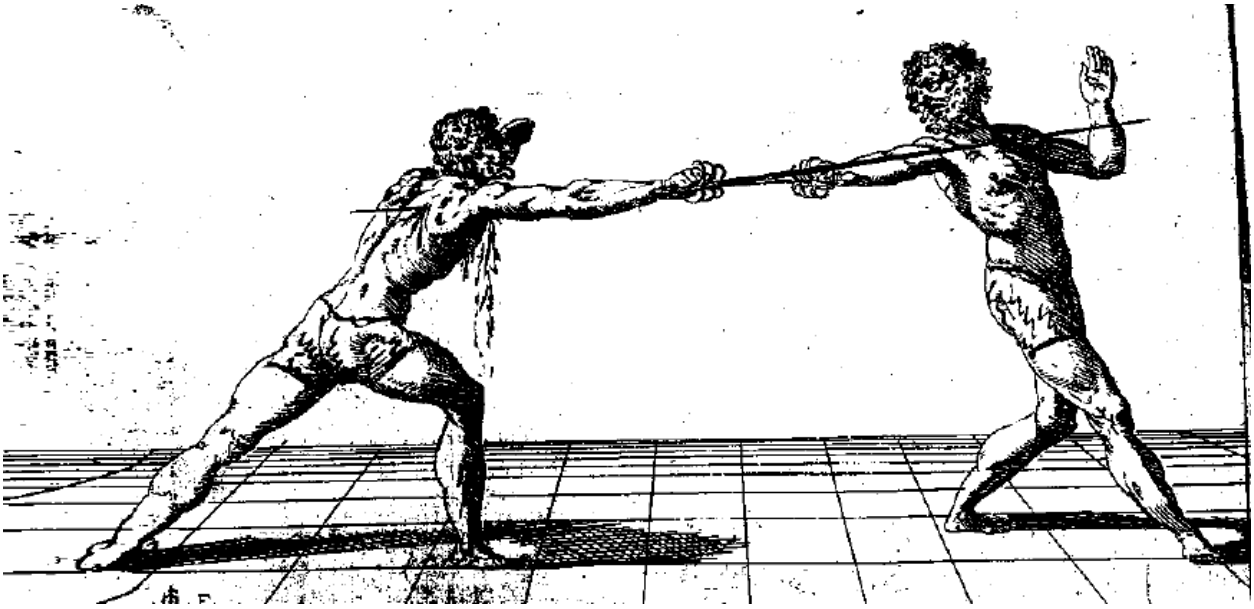


Figure 7. Illustration showing a lunge and counter-attack from Giganti[39]

Salvator Fabris also published his treatise in 1606, called *Sienz e Practica d'Arme.* He was born in 1544 in Bologna, but traveled throughout Europe to study the science of fencing. He is considered one of the greatest fencing masters of the age because he devoted all his time to the science of fencing and presented the best methods he could find to practice it.[40] He held several principles similar to those we have already seen, such as always keeping the point of the sword in front, use of the thrust, importance of timing, and always to attack while parrying. Fabris presented four principal guards from a position where one is bent at the waist so that the torso is nearly parallel to the ground, presumably to reduce the size of the opponent's target. The arms are out to keep the weapons as close to the opponent as possible. Fabris does not teach his students about the lunge; as we have seen from Giganti, this particular technique was first well explained at the same time as Fabris published his treatise. There are images to illustrate all of the different positions and movements, and Fabris also talks about the use of dagger against sword, cloak against sword or dagger, sword against pike or halberd, and disarming techniques. Fabris is considered one of the greatest fencing masters because, according to Egerton Castle, Fabris was "the first who proved the incontestable superiority of a system of fencing in which rapidity of action in seizing the time is the main object, over one which depends on elaborate

[39] Giganti
[40] Castle, 139 - 151

preliminaries to the attack."[41] His treatise was very successful throughout Europe, was translated into several languages and different adaptations were published throughout the seventeenth century.

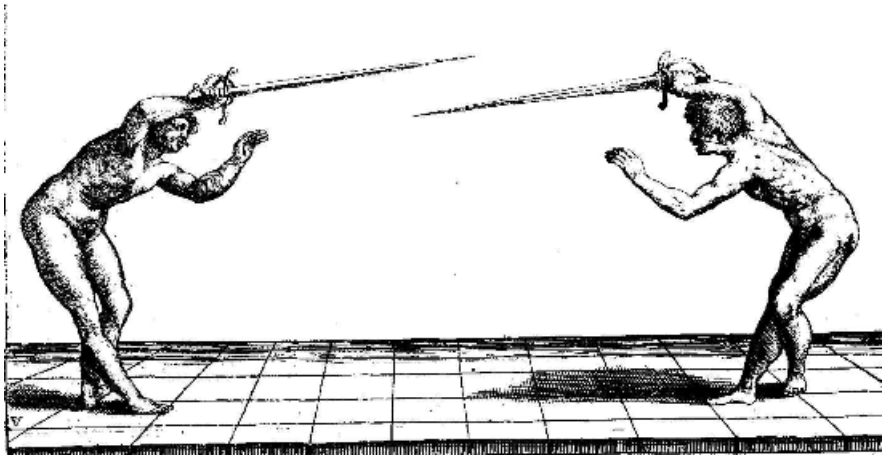


Figure 8. The first guard depicted in Fabris[42]

Ridolfo Capo Ferro is one of the last great Italian fencing masters who published his treatise, *Gran Simulacro dell'Arte e dell' uso della Scherma,* which translates to 'Great Presentation of the Art and Use of Fencing,' in 1610. This particular treatise is important because it is considered the clearest and most comprehensive record of Italian rapier techniques, but it is not revolutionary in its techniques; most of what Capo Ferro describes has already been presented in other treatises.[43] His work starts out talking about fencing in general before going into specific rapier techniques: discussing the tempo, body posture, defense and the guard, attacking, and using a dagger.[44] Capo Ferro advocates a body position like that described by Fabris, with the torso bent forward as much as possible. However, he uses the left arm as a counter balance to the right to help recovery, which was a new technique. He disagreed with the old habit of having a bent sword arm, and thought the direction of the palm – up or down depending on the opponent's weapon position – was very important when striking. Capo Ferro also prefers linear motion that always keeps the right foot in front; he does not care for passing steps, crossing legs, circling or stepping off the line. He also has a much more detailed definition

[41] Castle, 150
[42] Fabris
[43] Castle, 155 - 171
[44] Capo Ferro

of a guard than other previously published works, discourages cutting and feinting in most cases, and emphasizes the importance of attacking and parrying in the same motion.

Figure 9. Capo Ferro's description of the lunge.[45]

Spanish rapier had techniques that were very different than those used by the Italians, and was explained in a more theoretical and less practical manner[46]. Jeronimo de Carranza, known as the "inventor of the science of arms," was the first Spanish fencing master to publish a treatise in 1569 called *De la Philosofia de las Armas.* In this work, the most important theory is that "a perfect theoretical knowledge must infallibly lead to victory, notwithstanding grievous physical disadvantage."[47] This is an idea that pervaded most Spanish schools of fence. Carranza explicitly defines the cut, but spends little time examining the thrust. He does however, still emphasize that a parry should always be a counterattack and the importance of timing like the Italians do. The treatise describes many attacks and situations – that include variables such as the opponent's physical build or ferocity of attack – that a fencer might find himself in, often employing Euclidean geometry in their descriptions. Carranza also encourages the fencer to move in circular motion around the opponent, not simply on a straight line, in order to gain the advantage over the opponent's blade. Essentially what Carranza did with his treatise was collect

[45] Capo Ferro
[46] Castle, 96 - 106
[47] Castle, 96

the most widely accepted techniques used by swordsmen at the time, and compile them into one document with extensive, technical and tedious descriptions. Luis Pacheco de Narvaez was Carranza's student, and his treatise, *Libro de las Grandezas de la Espada*, published in 1600, is very similar to Carranza's in method and description. It does explore the thrust more, and also many different combat scenarios. Despite the fact that Spanish fencing methods were mostly theoretical, Spaniards had a reputation of being dangerous, calculating fencers.

The French style of fencing was heavily influenced by the Italians, and there were not very many French fencing masters.[48] One exception is Girard Thibault d'Anvers, who learned from the Spanish school, which did not have much of an impact on French fencing otherwise. Thibault published his treatise, *Academie de l'Espee,* in 1628. It has very detailed, mathematical descriptions of fencing, and elaborate illustrations. Thibault used a "mysterious circle" to describe positions (Figure 10). However, this work was published as the Spanish school was falling out of favor in Europe, and shortly after Thibault's death. As a result, it did not aid the development of fencing; Castle says that it is nothing but "an artistic illustration of the Spanish system set forth at such length by Don Luis P. de Narvaez."[49]

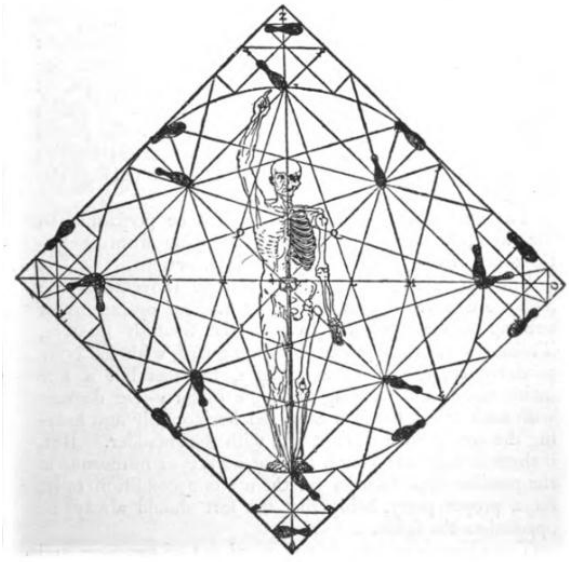


Figure 10. Thibault's mysterious Circle[50]

[48] Castle, 172 - 177
[49] Castle, 176
[50] Castle, 177

Joachim Meyer is a German fencing master, whose treatise covers a wide range of traditional German martial arts, including the rapier.[51] *The Art of Combat* was published in 1570 and was very significant to the development of fencing; not only did Meyer record German techniques, but also improved on them. The rapier was a relatively new weapon at the time Meyer was writing, so rapier techniques he employs are influenced by early Italian masters such as DiGrassi as well as traditional German ideas. He examines the rapier in a context of self-defense in everyday street situations. In addition to the rapier by itself, Meyer discusses its use with the dagger, cape, and staff weapons. He focuses especially on footwork, and uses cuts as well as thrusts.[52] He also divides opponents up into four types, and advises how to act toward each one, for example, if you were to run into attackers who "at once cut and thrust in with violence," and so are likely "violent and somewhat stupid, and as they say, cultivate frenzy,"[53] you should parry until you can take a back step to cause him to miss, at which time you can cut or thrust before he recovers.

[51] Meyer, 11 - 23
[52] Meyer, 173 - 218
[53] Meyer, 216

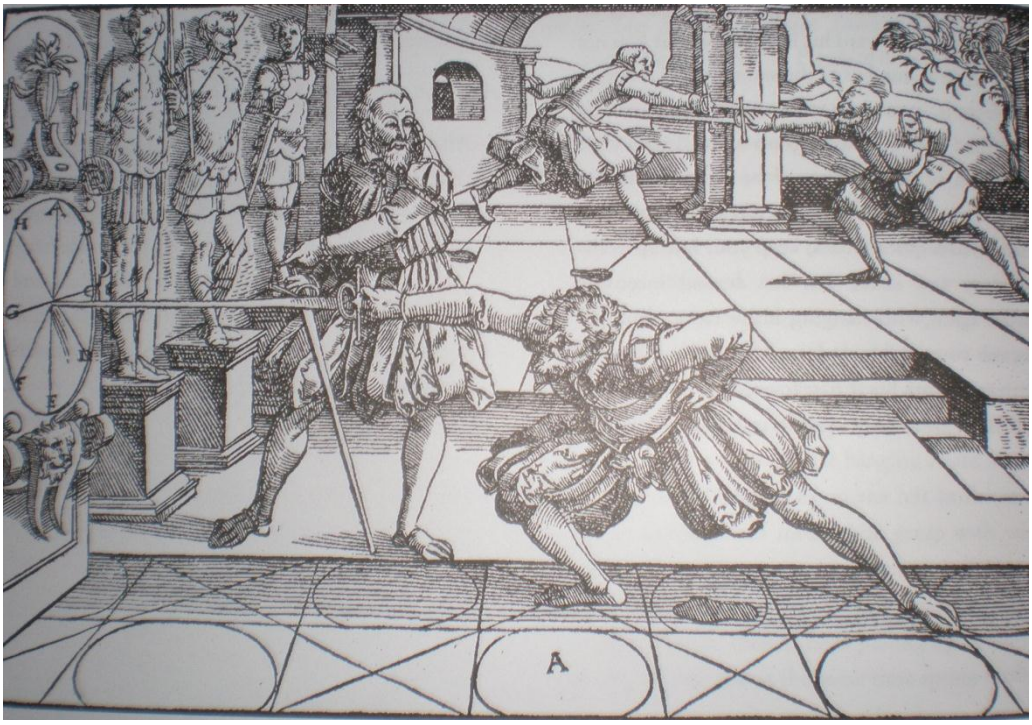


Figure 11. Example illustration from Meyer[54]

Joseph Swetnam was an English fencing master who published his treatise, *Schoole of the Noble and Worthy Science of Defense* in 1617[55]. He is influenced by Italian and traditional English techniques, and lists seven principle rules: "A good Guard, true observing of distance, to know the place, to take time, to keepe space, patience, often practice."[56] These are similar to ideas we have seen from other fencing masters. Swetnam includes discussion on feints, several types of guards, thrusts, and rapier and dagger. He does not talk about the lunge, and is unique in that he encourages only wounding the opponent, not killing him: "thou must marke which is the nearest part of thine enemie towards thee, and which lieth most unregarded, whether it be his dagger hand, his knee, or his leg, or where thous maist best hurt him at a large distance without danger to thy selfe, or **without killing of thine enemy.**"

[54] Meyer, 226
[55] Wilson
[56] Swetnam

3. *TECHNIQUES*

Now that we have discussed the physical aspects of the rapier, as well as several fencing masters who dedicated extensive amounts of time to analyzing and explaining this weapon, we will take a more detailed look at techniques that are typically attributed to rapier fencing. This will give a better idea of how a rapier fencing bout might proceed, and what principles are important to win an encounter.

First, we will discuss guards and what their purposes are. A guard is a stance that a fencer would choose to fight in, and he may decide to change it throughout an encounter. He will not typically keep the same guard for very long and in fact, guards are not so much positions that a fencer needs to think about returning to, but a natural ending point to most movements that he will end up in anyways. This allows the fencer to flow easily from one action to the next, and particular moves will work best from certain guards. Every fencing master describes different guards – there might be several principal guards and then variations on top of that – but they share some similarities. Capo Ferro's guards are shown in Figure 12 as examples. The dominant foot goes in front, feet are about shoulder-width apart, and the rapier is held by the hand on the same side which protects that side of the body. The sword is held by wrapping one or two fingers over the quillon to increase precision. The position of the body and direction of the palm varies – we have seen, for example, that Fabris advocates keeping the torso nearly horizontal, but not all masters advised positions so extreme. However, staying low and keeping the knees bent allows for quicker motions and longer lunges.

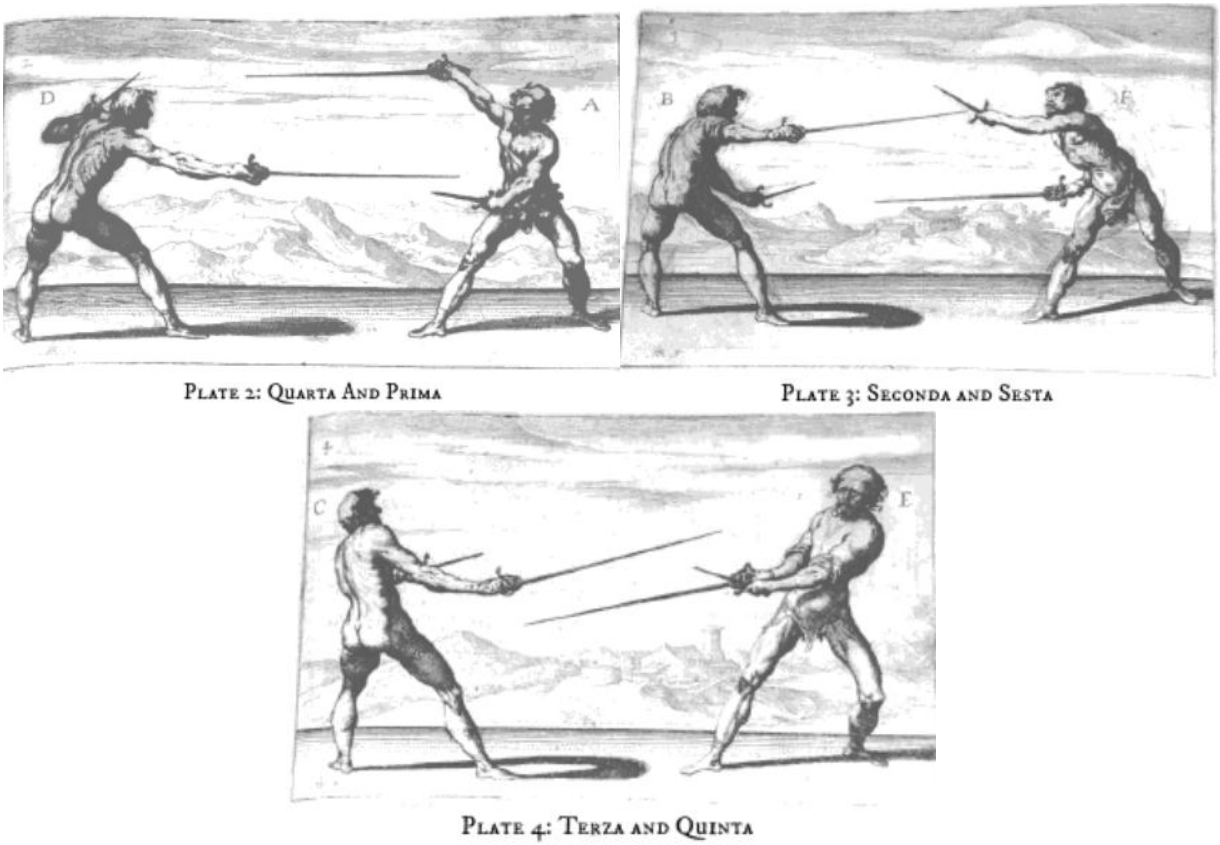


Figure 12. Capo Ferro's guards. From left to right on top are guards four, one, two, and six. On the bottom are three and five.

Timing, or a tempo, is one of the most important concepts when fencing. It can be defined as "the interval it takes to perform a single, simple fencing action."[57] It is not a discrete amount of time; it is a relative measurement because one movement may take longer than another. For example, a parry, a step forward, and a weight shift all take one tempo. The idea is to attack while your opponent is in the middle of a tempo, because then he will be unable to change his movement fast enough to defend against yours.

The difference between thrusting and cutting attacks has already been explored a bit previously, but we will look mostly at thrusts because that eventually became the dominant technique for rapier combat. The thrust is faster and more efficient than the cut – a fencer simply moves his sword toward his opponent in a straight line. The lunge is an extension of the thrust; it essentially elongates the movement allowing the fencer to attack from much farther away. To

[57] Agrippa, LXVI

perform a lunge well, Giganti says that the fencer must first extend the sword arm before stepping and once the arm is fully extended, he must launch a step straight forward by using power from the back leg, and incline the front knee as much as possible.[58] The reason for the arm extension is to prevent your opponent from attacking you; moving torso-first makes you a far easier target. There are many specific types of thrusts, but typically, a fencer will thrust either high or low, and then to the left or right. The location of the thrust should be where the opponent will have the most difficult time avoiding the attack.

Once attacked, a fencer must defend himself. Parrying is rather straightforward – you simply want to intercept the opponent's blade out of the way so that it does not hit you. Typically, the true edge of the blade, which is the same side as the knuckleguard , should be used for the parry. However, if the fencer just parries, he will find himself getting attacked again. A good way to avoid this is to riposte, which means to attack right after the parry. Usually, these two movements, the parry and riposte, are two tempi. However, when fencing with the rapier, the parry and attack, also called counterattack with opposition, is one tempo. This also applies if using a gloved hand, dagger, buckler or cloak to parry.

When attacking, a fencer knows that his opponent will likely parry and riposte. Because he knows what will happen, he should do something that will take this into account and allow him to gain the upper hand. This is where a feint might be useful. A feint consists of making the opponent think you are attacking one place, but then you attack another by switching your blade under your opponent's to get to the other side. This only works if the opponent is convinced you are making the original attack; if this is the case, he will not be able to change his movement quickly enough to respond to the feint. However, if the feint is not believable, he will be able to counterattack.

These are some of the fundamental techniques involved in rapier fencing, but there are a virtually infinite number of ways a fight could play out because of all the different combinations of moves and different fencing styles. It is a skill that takes years to master. A lot of these techniques are still implemented today; modern sport fencing in épée and foil are inspired by the rapier and smallsword style of fencing.

[58] Giganti, 2

STAFF WEAPONS BY JOHN TORDOFF

1. *ARTIFACT AND ITS HISTORY*

Staff weapons have existed throughout the ages, and were integral to any military force in the middle ages. Not widely used by civilians, staff weapons were used primarily for military activity as a staple for any large army. Staff weapons are important largely due to their versatility. Initially used as hunting weapons, their long reach enhanced the wielder's natural combat abilities with powerful piercing attacks. Later staff weapons evolved to the military use they have become known for, capable of stabbing, slashing, and crushing, with their length providing an advantage in large scale conflicts.

The first and simplest of staff weapons, the spear, has been used since prehistory as a weapon for hunting and for war. (Waldman 7) The spear's simple design allowed it to act as an extension of the arm, effectively increasing the wielder's range with powerful piercing attacks. One of the few early weapons, its initial use would have been primarily for hunting boar and other dangerous creatures, as it allowed the user to strike the beast while remaining out of the range of its dangerous tusks. Later, when mounted combat became prevalent, the spear and its counterpart, the long spear were essential to both allowing cavalry to reach ground targets as well as fighting against cavalry, as the range allowed an infantryman to strike his opponent's horse without being in range of a sword or lance strike. (Waldman 7) However, as armor evolved into the 1300s and 1400s, the basic spear could no longer pierce armor as effectively as it had originally, and new forms of staff weapons were needed. (Waldman 9) The rounded surfaces on the armor designed for deflecting incoming attacks required a more sophisticated weapon with the ability to cut and crush, not just pierce.

The tip of a standard spear

As early staff weapons evolved, so too did the materials they were made from. The earliest spears would have had stone heads which had obvious weaknesses in not only the durability but also the power of the weapon. Improvements in the acquisition of iron and production of steel allowed for better weapons to be created, increasing the quality of the heads

of the weapons and also the armor used by the armies of that time. (Waldman 14) As better metal was made, heavier armor became more common, and spears lost some of their effectiveness, leading to the more common use of axes and the invention of more complicated spear-like staff weapons, including halberds.

The axe is a staff weapon that, like the spear, has been around since before recorded history. The axe had been used less often for warfare throughout the ages, although some cultures were particularly fond of them, such as the Vikings and the Saxons, but its primary use was as a tool. (Waldman 155) The changes to armor and its resistance to piercing attacks, however, made axes a more appealing weapon. Their design needed to be changed, no longer was the axe head simply tied to the split end of a stick, the new design had a hole in the head through which the top of the axe shaft was inserted. This greatly increased the effectiveness of the weapon and affected the design of many other staff weapons. Having the wood split greatly decreases its strength; keeping the grain of the wood intact provides maximum durability and resistance to the stresses incurred in combat. As the strength of the shaft increased, the cutting head was able to be made larger, allowing for stronger blows.

A basic axe

The standard axe was not the only axe-like weapon to come out of the middle ages. Many other derivatives were created, the pollaxe certainly not the least of these. The pollaxe arose around the 1300-1400s and features a roughly 5 foot length, a convex axe blade for cutting as well as a top and back-spike for piercing. (Waldman 156) The pollaxe was typically a weapon used largely for duels and tournaments, and was an expensive weapon for the rich. Another weapon, the hache, was a hammer-like weapon with a rear beak and was often used for heavily armored duels that often caused little damage to the participants, unlike duels with pollaxes which were usually fatal. (Waldman 159)

A Lucerne Hammer

Not all axe-like weapons relied on a rear or top spike or beak for piercing power, some used their axe blade itself as a piercing tool. The guisarme and the bardiche are two types of axes with a built-in piercing capability. (Waldman 165) The two weapons, developed in central and eastern Europe, respectively, feature a very long blade that comes to a curved point, allowing for cutting and thrusting with the same blade.

A Swiss Bardiche

Another, perhaps the most well-known evolution of staff weapons, was the halberd. The halberd is a weapon that combines cutting and thrusting, through the use of an axe-like head with a pointed spike for piercing as well as the rest of the blade for cutting. (Waldman 17) Another major element of the halberd is the beak. The beak was located on the back side of the cutting head, and consisted of a curved point that was excellent at piercing armor. The halberd came much later than the simpler axe and spear, achieving its height around the 1500s, although early forms came into use around the 1300s. Writings throughout the 1200-1300s describe the effectiveness of halberds against armored opponents and their devastating effects on those early battles. (Waldman 22) Various illustrations show subtle changes in halberds throughout the years, often with the spike of the halberd moving farther back in comparison to the shaft. That being said, the halberd has an extremely large number of variations, with the placement of the eyes used to connect the head of the halberd to the shaft differing, as well as the size and shape of the blade and the length and placement of the spike and beak.

A Halberd: note the long spike and rear facing beak

Since the 13th century, halberds have changed considerably, with the length and positioning of the spike changing, and the shape of the blade changing from barely curved to a more rectangular form and also later, the crescent form that halberds are most known for. The beak of the halberd, which was initially separated from the head and located on the other side of the shaft, eventually becomes a part of the head and angles down to the base of the shaft in order to pierce armor more effectively. (Waldman 26)

Halberds were used often by groups of Swiss mercenaries who used a wedge formation for their halberdiers to devastating effect across Europe. (Waldman 103) Many of their groups of foot soldiers were loosely guided by a captain, and often made combat decisions based on instinct. Later armies, however, learned the value of closely organizing and strategically commanding their halberdiers. The ability of the halberd to cut as well as pierce armor (primarily using the beak) much more effectively than spears or axes turned the outcome of many wars throughout Europe before eventually becoming obsolete due to firearms.

In the late middle ages, the most popular staff weapon for the English was the bill. The bill is a weapon that is characterized by a forward facing hook and one or more spikes on the

back facing up or straight back. (Waldman 115) The bill is closely related to the glaive, a more Italian weapon that is a descendant of a Roman scythe. The glaive consists of a large blade with a second spike protruding from the back facing upwards. (Waldman 108) After 15th century, glaives were largely only for ceremonial use and their design shifted toward appearance rather than practicality. Regarding the bill, it had uses for both war and as a tool. Differences in the length and strength of the blades and the degree of the back spike determined its use and identified quite a few bills as designed to be used for lesser officers in England. Bills were considerably simpler to build than halberds, and so made an acceptable substitute for halberds, particularly in England where they were preferred. (Waldman 122)

An example of a Bill

The partizan (or partisan) is much like a spear, with a very long, triangular blade. The blade is also wide and often had wings at the bottom of the blade. (Waldman 125) The blades of a partizan were also often decorated with tassels and a shallow rib along the blade for ceremonial use by guards. (Waldman 130) The partizan in combat would serve much the same role as the spear, and as such also fell out of use when firearms arrived on the battlefield, but like many other polearms, it still had a place as a ceremonial weapon throughout Europe.

A Partizan from Italy in the 1500s

Staff weapons have existed throughout human history, from simple spears to the most complex of halberds and polearms. They have provided man with a way to extend his natural reach in combat and effectively fight mounted soldiers. When plate armor countered the power of spears, halberds and other more advanced staff weapons provided new methods of piercing armor. Although the power of staff weapons severely diminished and they fell out of use when firearms came to the front, they have retained a place as ceremonial weapons for guards and retainers.

2. *Sources and Techniques*

Staff weapons have existed as a staple for humans for both hunting and for war throughout the ages. As with any weapon, many people can use them, but only a few can truly master the art. Many of the greatest masters left behind manuscripts detailing their use. It is through these masters that we are able to see through the looking glass of time and observe our ancestors making war with these elegant weapons. It is surprising how often the martial arts of the middle ages are misrepresented when detailed instructions on their proper use are available from many masters with different fighting techniques. Some of these masters are well

documented, with at least some knowledge of their lives available and their names attached to their works, whereas others are known only by a single manuscript left behind. All, however, are equally important and will be remembered through the ages for their knowledge and expertise.

One of the earliest masters of staff weapons as well as many others was Fiore dei Liberi (full name: Fiore Furlano de'I Liberi de Cividale d'Austria). Fiore was an Italian master of medieval weapons and techniques and he wrote the *Flower of Battle*, the third oldest manual of medieval martial arts and also one of the most extensive yet discovered. Fiore lived in the late 14th century and was born in Cividale del Friuli, a town which is located in the region of Italy now known as Friuli. (Mondschein) Fiore was a member of the social class *milites liberi*, the lowest tier of nobility at that time, which had nearly vanished. Fiore became a master by traveling through Italy and Germany, studying under numerous masters and fighting dangerous duels with false masters that he encountered on his travels. He was a master of numerous weapons and wrote the *Flower of Battle,* his treatise on medieval combat of which four manuscripts currently exist. The *Flower of Battle* teaches combat with grappling, batons, daggers, longswords as well as spears and poleaxes.

A portrait, believed to represent Fiore

Fiore's *Flower of Battle* describes in detail and with illustrations many of the different stances for fighting with spears and poleaxes. He also describes actions and reactions that duelists would use to move from these stances into an offensive position to attack one's opponent or ways to counter incoming attacks. Fiore's art is simple but descriptive; the illustrations show only what they need to in order to properly describe the stances and forms that

he sought to teach. His illustrations typically display only two opponents, a scholar and the master. In the Paris version of his manuscript, the scholar wears a crown in some of the images, although in others it is the master who wears the crown. (Mondschein) The reason for the distinction between scholar and master in the illustrations is simple: he wrote the manuscript in first person. Many of the sequences he describes refer to things "he" (or the master in the illustrations) is doing to the scholar, allowing readers to understand which figure in the illustrations is performing the actions that Fiore described in the written parts of the manuscript.

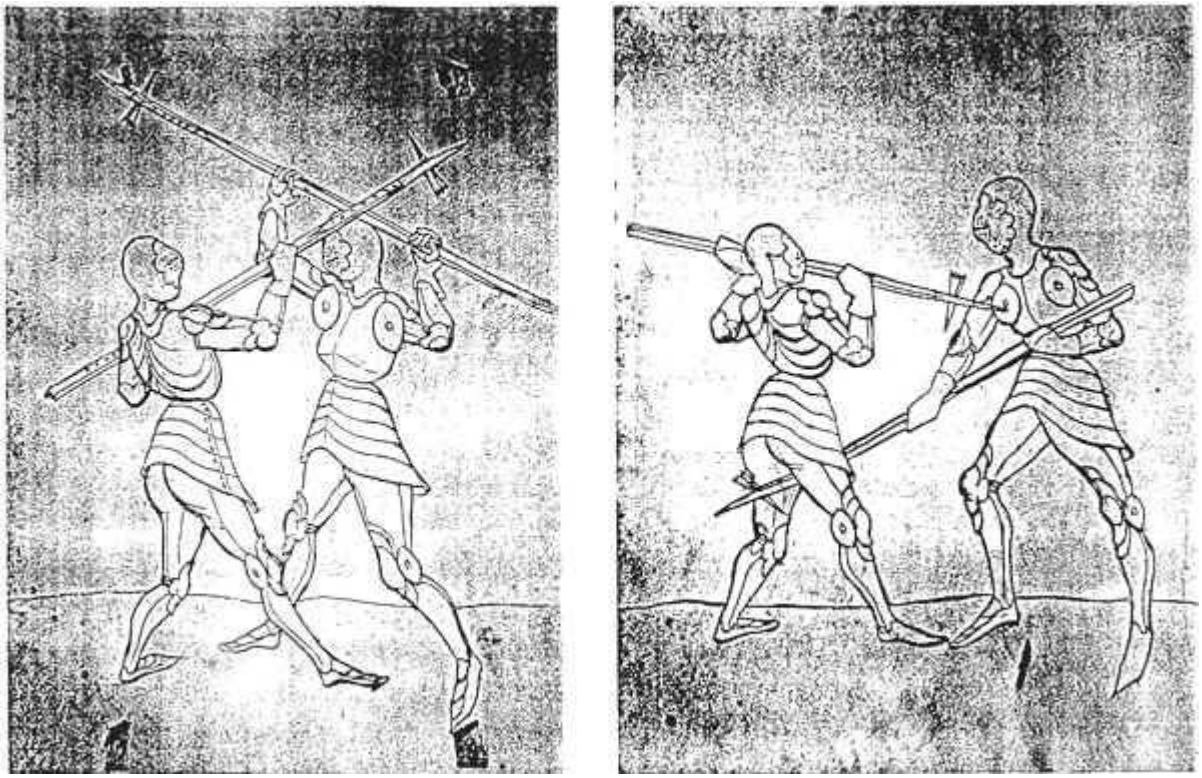
Not all great manuals on medieval combat have an author associated with them. One particular 15th century manuscript from Burgundy, *Le Jeu de la Hache*, describes fighting with the poleaxe in detail, but has an unknown author. Translated by Sydney Anglo, this manuscript offers a unique perspective on these weapons that were passed over by scholars throughout the ages in favor of other, more prominent weapons. The manuscript describes fighting with axes with many If-then statements, giving the reader an idea of what to do in any circumstance, based on positioning and what the opponent has recently done.

An illustration from Fiore's *Flower of Battle*

Another of the great masters of medieval combat is Giacomo di Grassi (DiGrassi), who was an Italian fencing master in the 16th century. In 1594, his manual *Ragione di adoprar*

sicuramente l'Arme, si da offesa come da difesa was published in English as *DiGrassi, His True Arte of Defence*. Little is known of his life, but he was one of the great fencing masters of his time and he left behind his teachings for those who followed him. His primary philosophy in his teachings is simple: he believed that the length of weapons primarily determined their use, and that thrusting is the most effective form of attacking. His length grouping method placed pikes and other extremely long weapons in one category, longswords and short spears in another, and the smallest included single swords and rapiers, creating three distinct fighting styles to teach. He considered the thrust to be the most effective attack as it is the fastest, the easiest way to pierce the enemy's body, and the one that puts the least stress on the attacker's body. (DiGrassi P-Q) In his teaching of staff weapons, DiGrassi groups halberds and bills together, and javelins and partisans together. He states this as he believes that it would be redundant to write separate treatises on each, and thus puts the weapons with the most similar fighting styles together.

DiGrassi seemed to have a particular appreciation for the pike. He considered it to be the most honorable and plain of all of the staff weapons, speaking on how it was well regarded by knights and lords, and giving it a completely separate section in his manual. (DiGrassi Q-R) He speaks on how the pike has the largest "passage" of any weapon, due to its length and the circle around the wielders arm that it covers. He makes a particular point on how the greater the circumference of that circle, the faster the weapon moves and the greater the blow is, thus making the pike capable of the greatest strikes.



Two Illustrations of Staff Weapon combat from Hans Talhoffer's manuscript

A later master of medieval combat was Joachim Meyer. Meyer was a German fencing master who lived in the 16th century and taught many medieval weapons, largely for sport. Among these weapons and techniques he taught are swords, short and long, rapiers, the dagger and wrestling, and staff weapons. His best known manuscript, *The Art of Combat*, originally published in 1570, contains many beautifully detailed illustrations on the use of staff weapons in a sporting or dueling fashion. Meyer was born in Basel, Germany and often traveled in his younger years. The writing of his book, however, left him in a significant amount of debt which forced him to seek work with the Duke of Schwerin, but he died shortly after arriving, possibly due to a disease caught in the harsh winter weather. (Meyer/Forgeng 12) Many of Meyer's techniques focused on outsmarting one's opponent, using feints, pulled thrusts, and false openings to create a positive outcome to any situation a fighter found himself in. (Meyer 249-276)

An illustration of a figure who appeared numerous times in Meyer's treatises and theorized to portray Meyer himself.

Although each of the masters discussed here have their own thoughts and unique styles to their teaching methods, they all share some things in common with their techniques for staff weapons. Staff weapons rely quite a lot on the stances used in preparation of battle and always being ready to react to an opponent's strike. The high guard, low guard, side/middle guard and rudder guard were the primary of the stances or guards. Also, jerking or swiping the opponents staff weapon to the side is often used as a way of opening up opportunities. Important to many types of medieval weaponry, faking attacks and pulling thrusts was a good way to psychologically defeat one's opponent and gain the upper hand. (Meyer/Forgeng) Successful use of staff weapons often requires a large amount of wrestling and feints to open up an opponent for a strike to the neck or other weak spots.

DAGGERS AND GRAPPLING BY JOHN TORDOFF

1. *ARTIFACT AND HISTORY*

Many weapons have gained fame throughout the ages, whether it is the gallant, oft romanticized sword, the brutal axe, or staff weapons, with their long reach and versatility. Many of these weapons, however, made use of another fighting style, one that was used alongside all of these, and was integral to the survival of any medieval warrior. The art of fighting with daggers and wrestling (or grappling) was extremely important to any battle, as the physical nature of combat made hand-to-hand combat a common occurrence. Daggers also made an excellent secondary weapon; when a fighter was disarmed, he could draw a dagger to continue the fight and use wrestling techniques to attempt to disarm his opponent and even the playing field. After the time of melee combat on the battlefield passed, grappling was still an integral self-defense technique until modern times.

The dagger, along with wrestling, has existed since humans have ever waged war or hunted for sustenance. Daggers, like many other early weapons, were derived from early tools. Sharpened pieces of rock or bone would become the earliest daggers, used for hunting and for cutting the meat off of a corpse. Some would also be used for fighting other humans, as tribal disputes were common. Wrestling was also used around those early times, as fights would be very common and engaging in fist fights or even hunting an animal with one's bare hands would occur if a hunter lacked weapons.

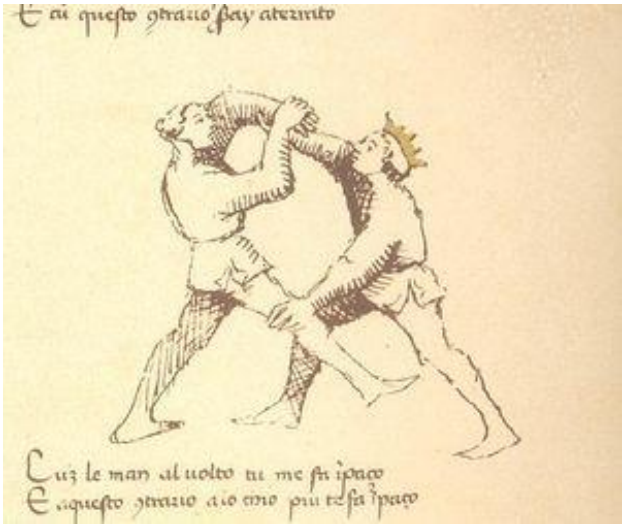
The term "dagger" only came into use in the later Middle Ages (around 1200), as in the earlier Middle Ages, knives were the typically used short-bladed weapon. By definition, daggers are a fighting weapon primarily focused on thrusting, or stabbing and have experienced military, civilian, and ceremonial use. The main feature of a dagger is its sharp point, as they are intended for thrusting rather than cutting. In military use, their primary purpose was to pierce the weak points in plate armor, but they were also effective against lightly armored targets. Many civilians, especially merchants, would carry a dagger for personal protection, and they were often used for ceremonial purposes, including grisly acts such as pagan sacrifices. In the Middle Ages many soldiers would carry daggers as their secondary weapon for extreme close-quarters combat, especially useful after being disarmed of their primary weapon.

The primary type of dagger used in the late Middle Ages was the rondel, or roundel dagger. The roundel featured a slim blade with a focus on the needle point. The name roundel means round, and the dagger got its name from the round cross-guard and typically discoid or spherical pommel. The roundel dagger typically had one or two sharpened edges on its triangular or diamond-shaped blade. Despite its sharpened edges, the primary use of the roundel dagger was for stabbing with either an under- or overarm style. The roundel dagger came into use in the 14th century, an evolution of the earliest daggers used by knights. (AEMMA) In the 15th century the roundel dagger was used often by the middle class for protection and for sporting.

A roundel dagger

One variant of the roundel dagger, the stiletto, was invented in Italy in the late 15th century. With no cutting edge and only a single spike, the stiletto was the epitome of the thrusting dagger, perfectly designed for piercing the weak points of plate armor, or even eye slits in a helmet. The stiletto was also useful in that it was extremely lethal to unarmored targets and caused less bleeding than a cutting weapon. The stiletto was often outlawed due to its common use by assassins, as its highly concealable design and lethal nature made it a popular weapon for such individuals.

The use of daggers was closely related to the fighting styles used for grappling, and fights with daggers between two skilled opponents would quickly turn to a grappling fight, as fighting in such close quarters often would. Knowing how to skillfully and effectively grapple would be an integral part of anyone who wanted to survive fights in the middle ages. Grappling in the middle ages was an extremely dangerous form of fighting, especially when combined with dagger techniques. Fiore dei Liberi, a prominent Italian fencing teacher of the 15th century, said that a master of grappling should make sure not to teach thugs, lest they use the deadly art without proper discretion. As Fiore largely taught his students weapon techniques for fencing purposes, it was expected that his students understood how and when it was appropriate to use his techniques, he held his students to a very high standard, and oft remarked that some of the "jealous masters" whom he beat in duels and refused to teach lacked the basic skill and manners that he would expect for one of his students. (Mondschein 20) In the middle ages, the focus was not on fighting on the ground; the goal of a medieval wrestler in a combat situation would be to get your opponent on the ground with little chance of getting back up.



A picture from Fiore's manuscript (Wiktenauer)

Self-defense was also an important part of wrestling in the Middle Ages, as it is today. Since most assassins or other would-be killers of the times would be striking with concealed short-range weapons, wrestling knowledge of self-defense would be integral to the survival of anyone who suspected an attempt on his/her life. Proper execution of self-defense techniques required the assailed to be aware of the most likely avenues of attack that a would-be assassin could take and ways in which to disarm and lock down the opponent without being armed himself. (Mondschein 30) Thankfully, the styles of daggers (rondel or stiletto) which would be commonly used for assassinations had a focus on stabbing, which allowed the side of the blade to be relatively safely grabbed and twisted away, usually in conjunction with some form of arm- or headlock.

Daggers and wrestling were an important part of survival and warfare in the middle ages. With the techniques for both being very similar, they go hand-in-hand throughout history, and they have their place on battlefields, cities, and fencing arenas. Knowing how to overpower and disarm one's opponent was and still is an invaluable tool.

2. *MASTERS*

As daggers and grappling have existed throughout the ages, so too have the individuals who took the time to become true masters of their fighting styles and left behind written documents, manuscripts and printed books, which detail many of their different techniques. Coming from a range of years, spanning centuries, these texts are the largest of the few windows through which we can observe fighting styles of the past and to see in which ways they have evolved before and since the middle ages. Many of these masters were well-versed in the art of combat with many weapons, but with all, the use of dagger and wrestling fighting styles were integral to anyone's success in those time periods. Not only could any fight easily end in wrestling or close quarters combat with a dagger, but a wise man always had to be prepared for a situation where he would be caught without his primary weapon and had to be able to defend himself without it.

Combat in the middle ages was sophisticated and skillful. Any man worth his salt in these times needed a strong understanding of the use of a variety of weapons and forms and the importance of the subtleties of combat, relying not on brute strength. (Mondschein 9) Of the many manuscripts or *Fechtbucher* left behind by the masters, Fiore dei Liberi's ca. 1410 *The Flower of Battle* is one of the earliest ones, as well as being the earliest surviving manuscript from Italy. (Mondschein 9) With Italy being the birthplace of the Renaissance, Fiore's instructions are even more important, displaying detailed information about the tutelage in arms in those times.

Fiore wrote his manuscript not as an instruction manual for those to follow, but instead as a device for his students to use as a sort of refresher on their techniques, as he and other great masters of the time taught their students in secret, to prevent those they deemed unworthy from acquiring knowledge they could use for ill purpose. (Mondschein 19) Some of his manuscripts feature captions that contain taunts instead of instructions and could be a way that Fiore intended to further confound those who attempted to learn his secrets without permission. Other manuscripts do contain the detailed instructions, implying that perhaps one of his students requested a more detailed version, especially as books became more popular as the Renaissance progressed. (Mondschein 19) Fiore largely wrote the manuscripts as a way of preserving his

legacy, and he succeeded. As the interest in medieval martial arts increases in modern times, the importance of his work only becomes greater.

Fiore describes wrestling first, with each section of the manuscript showing a "master" displaying *guardie (*guards or ready stances) and *poste* (positions). (Mondschein 24) *Guardie* are stances that a wrestler would use in preparation of a fight, each different guard protects the user from attacks in certain ways, but can leave them vulnerable in others, or make offense difficult if in a highly defensive guard. The positions are terms used by Fiore to describe some of the different fluid motions that one might partake in during a fight. Following the guards and positions, Fiore uses a series of illustrations showing a master indicated by a crown demonstrating ways to defend from certain attacks and how to counter the holds that an opponent might place upon the student. (Mondschein 25) Holds were very important to wrestling, as brute strength could easily be beaten by a skilled fighter with knowledge of the weaknesses of the human body and how they could be exploited in order to disable an opponent. He also displays how to counter a throw against a both right and left handed attack, an important aspect to wrestling, as being thrown to the ground gave a distinct advantage to one's opponent and could quickly lead to defeat (and all else included in such an outcome). (Mondschein 26) Fiore touched little on ground wrestling, as it was seen as both ungentlemanly and as doing so exposed you to attack from a third party. Fiore's techniques focused on eliminating the threat that your opponent faced as quickly as possible and getting him on the ground so that he could not get back up and pose a threat once more. (Mondschein 22)

An image from *Flower of Battle* showing a powerful throw with no good counter (Mondschein 29)

In the time of the late middle ages, one's safety could never be assured. Whether it was a professional assassin, or a slighted gentleman looking to avenge his honor, there was always a potential threat in every man who walked down the street. The masters of the age understood this, and Fiore was no exception. In the *Flower of Battle*, he delivered instructions regarding defense against surprise attacks. (Mondschein 30) He began by showing the different guards against opponents with daggers, displaying several and noting which would be most useful in armored or unarmored combat. Fiore shows the important targets for a dagger, knowledge useful not only for attacking with a dagger, but also to give insight into areas that your opponent could attack you, better facilitating defense. (Mondschein 34) Fiore gave readers four important things to remember regarding self-defense against daggers: The opponent must be disarmed, his arms broken or in a wrestling hold from which he can then be thrown to the ground. (Mondschein 35) This follows a warning he gives regarding facing an opponent with a blade: Destroy his ability to attack first, and then throw him to the ground. (Mondschein 34)

The act of disarming an opponent of their dagger, especially when unarmed, could be a daunting prospect. For those who wished to eliminate the threat of an opponent's dagger, several factors came into play to allow them to safely wrestle their opponent into submission. The most

common dagger of the time, the roundel dagger, had little or no edge, allowing a defender to grasp the wrist of their opponent or even block the dagger by sweeping it to one side using their arm, which would suffer little or no injury due to the lack of an edge. (Mondschein 37) Once an opponent's dagger hand was seized, the defender could either manipulate the wrist to force an opponent to drop the dagger or could put them in an arm or joint lock. (Mondschein 39)

One thing that Fiore does not cover much is the act of wrestling or dagger fighting while in armor, largely due to the fact that many of the important targets for a dagger are the same as the weak points of a suit of armor. One 15th century German manuscript, the MS KK5013, contained in a collection of manuscripts known as the Gladiatoria Group, contains a particularly large amount of relevant information regarding armored dagger combat nonetheless. This Gladiatoria manuscript features beautiful, colorfully illustrated demonstrations of wrestling and daggers while in full plate armor. (Gladiatoria 31-56v) The manuscript displays many techniques of the dagger, starting with ways to counter an opponent's thrust by either blocking or disarming him. As both fighters are wearing full plate armor, it limits the targets that a dagger can have, making it easier to predict an opponent's next strike. The manuscript also shows methods of parrying an attack first with your dagger and then seizing the opponent's wrist to force him into a hold or on the ground.

An image from one of the Gladiatoria manuscripts showing armored dagger combat

Unlike Fiore, the Gladiatoria manuscripts teach ground fighting, or pinning as it is referred to in the manuscripts. (Gladiatoria 53r) The methods for ground wrestling involve pinning the opponent's legs with one of your own, and then using one arm to control his upper body and arms while using your free hand to threaten his weak points with your dagger, often focusing on the areas around the neck: the clavicles and the bottom of the visor. (Gladiatoria 56)

Another important master of daggers and grappling was Joachim Meyer, a German fencing master from the 16th century. His 1570 treatise on German martial arts *The Art of Combat* contains detailed techniques of long and short swords, rapiers, daggers, wrestling, and staff weapons. Meyer was a great master, both of more structural weapon techniques and also techniques exploiting the weaknesses of one's opponent. Many of Meyer's techniques start by describing an action that your opponent could take or an opening they could leave and ways to counter their action or exploit the opening. He often describes deceitful techniques to use and ways to counter them should they be used against you. (Meyer 235-246)

A page from MS KK5013 showing ground wrestling

Fighting with daggers and wrestling was a brutal sport, but to those who truly mastered it, these two forms of combat became a work of art. Brute strength did not win encounters, but finesse and skill determined the victor. Different guards gave fighters a position to fight from,

and the holds and throws exploiting their opponent's anatomy allowed one fighter to triumph over the other. Whether it was for life and death or for a sporting pastime, these fighting forms taught to us throughout the centuries by the manuscripts of the masters have had an undeniable effect on our world.

CONCLUSION

The outcome of this project was to benefit the instructors of the workshops of the Higgins Armory Museum. Our hard work and dedication can clearly be seen in the quality of work. The project met our expectations and we are satisfied with the outcome. We worked hard on each portion of our project and believe it will sufficiently serve the purpose it was created for.

The IQP project team was selected through an application and interview process by the advisor Jeffrey Forgeng. Each member had different skills and knowledge essential to the project and each team member took on certain responsibilities. These responsibilities included management, writing documents, filming, video editing, creating animations, making graphics and visuals, voice recording and editing.

The project was organized and broken up by term; each term held different responsibilities and tasks. The first term of our project was mainly researching our individual subjects and writing our research papers. Our project template was also created during this term as well as drafts of our final project paper. We created a trailer to advertise our video as a way to gain some experience editing and finding visuals. The second term was dedicated to all the filming needed for the video. We spent several hours over the course of the term with instructors and fencers at the museum to help us film the footage we needed. The storyboards for each of our video sections were also created during this term. The third and final term was putting the video together in computer software. This involved voice recording and editing, video editing, the creation of graphics and animations and the final video production. The final project paper was also completed during the last term. This approach and organization of the project proved to be very effective. We were able to stay on schedule for the most part and completed each task in a timely manner.

For future projects for the Higgins Armory Museum, content can be added to our video to cover other weapons and possible content for specific workshops. We advise that future teams stay organized and divide the work up in an equal manner that utilizes the skills of each member. It is important to create a schedule by term and meet deadlines. It is also important to keep in contact with your project team and meet on a regular basis. It would be beneficial for the team to critique each others work and provide advice and suggestions. The dynamics of our team did not

form until the end of the year because the first two terms were primarily individual work that was not critiqued by other members. Our project team should have viewed and offered opinions about each other's work more and given insight for the documents or visuals we were working on. However, toward the end of the project, more specialized skills were needed that were possessed by individual team members. It was at this point that our team started to become more interdependent and communicate the most. Teamwork is the most important aspect of a project like this and good team working will go a long way and produce a better outcome.

We learned a lot about filming, audio recording and editing throughout the course of this project. During filming, we found that it was important to have good light, and that it is often more interesting and practical to have more than one angle of a shot. Having a handheld camera as well as one on a tripod is also useful and produces more interesting angles and shots. As for audio recording, it is necessary to speak clearly and much more slowly than you would think. The audio was then edited in Audacity to make sure each recording was clear, audible and that no unnecessary sounds were accidently captured. Video editing itself was not very difficult; we used Adobe Premier Pro, which is very user friendly. It allowed us to insert titles, animations and motion across our visuals. The trick was rendering the videos at the correct settings for optimal quality. What was difficult was finding interesting visuals and mixing them up enough to stay engaging. We had still images from manuscripts, video clips of book readings, footage of fencing and weapon usage, and pieces of interviews.

Our project proved to be challenging at times but was well worth the outcome. The project went as expected for the most part but certain tasks such as the video editing proved to be a little more difficult than others. This project was a very valuable experience for the team. It is something that will directly help the instructors of the museum, was a wonderful and memorable learning experience, and challenged our skills in a constructive way. We are very pleased with our project and hope it will be used to benefit others for as long as the instructional workshops run.

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Tobler, Christian Henry. *In Service of the Duke: The 15th-Century Fighting Treatise of Paulus Kal*. Highland City TX: Chivalry Bookshelf, 2007. Richly illustrated manuscript on

combat arts, offering visuals that correspond to much of the material in the Starhemberg manuscript.

Tobler, Christian Henry. *In Saint George's Name: An Anthology of Medieval German Fighting Arts*. Wheaton IL: Freelance Academy Press, 2010. Includes a translation of the "Starhemberg" manuscript, one of the most important medieval German sources on martial arts, with extensive material on armored combat, daggers, and wrestling.

Vienna "Gladiatoria" (c. 1430). "Fechtbuch." Vienna, Kunsthistorisches Museum P 5013. Refs: Hils #46 (p. 119). armored wrestling pages 38, 39, 47, 59, 64, 66, 67, 70-73, 87, 99 Retrieved from wiktenauer.com/wiki/Gladiatoria_(MS_KK5013) on 8 September 2012.

Waldman, John (2005). *Hafted Weapons in Medieval and Renaissance Europe The Evolution of European Staff Weapons Between 1200 and 1650* Boston: Brill USA, Inc. Gordon Library U872.W35. Information regarding hafted/staff weapons in Medieval and Renaissance Europe and how they've evolved.

APPENDIX A

STORYBOARDS

SINGLE-HANDED SWORD

1. The History of the Sword	
The sword is an edged weapon for cutting and thrusting, with versions found around the world. The sword can be considered to be any long bladed weapon having one or two edges and a short hilt. The first swords were developed during the Bronze Age. Ancient craftsmen combined copper with tin to make bronze. Bronze blades were more efficient than stone blades and much easier to form into a specific shape. This led to the first bronze daggers. As bronzeworking technology improved, it became possible to make longer blades, and daggers evolved into the first swords.	    Abb. 40. Kurzes griechisches Hiebschwert, wahrscheinlich kopís oder máchaira. Apollon bestraft den Giganten Tityos, Ausschnitt aus einer rotfigurigen Schale um 470 v. Chr.  Abb. 39. Kurzes griechisches Hiebschwert, wahrscheinlich kopís oder máchaira. Kampf des Herakles gegen die Amazonen, Ausschnitt aus einem rotfigurigen Krater um 500 v. Chr.  Abb. 43. Griechisches Schwert, wahrscheinlich xíphos. Kampfgewühl der Eroberung von Troja, Ausschnitt aus einer rotfigurigen Schale, etwa 490–480 v. Chr.

Swords gained new importance during the Iron Age. Iron was less expensive than bronze because of the wide availability of the raw materials. Iron is also tougher, so iron swords could be made longer and lighter than bronze ones. The invention of steel, an alloy of iron, allowed swords to be made even stronger. The sword became a symbol of status as well as a powerful and versatile weapon on the battlefield.


L: http://www.historyfiles.co.uk/KingListsBritain/BritainCatuvellauni.; R: Iron Age Celtic Swords from Britain, c. 300-50 BCE, British Museum

2. The Single Handed Sword

Until the 1200s, all swords were single-handed swords, and even with the development of longer swords, single-handed swords remained the most common type throughout the weapon's history.

The sword was not only a weapon for troops, but also for civilians, and it was not only used for fighting, but also for hunting, ceremony and display. At first, making swords was difficult and expensive, and swords could only be afforded by the rich and powerful. Even when swords become more common, a good sword remained a symbol of wealth and position.	
Single-handed swords and rapiers came from the same root, and they have a similar shape. However, there are important differences between them. The largest difference is the blade. Swords are used for both cutting and thrusting, and may concentrate more on cutting. The rapier was used more for thrusting, with reduced cutting functions. The rapier's blade is narrow, straight and double-edged, while the sword's blade is broad and can be straight or curved, single or	[Showing video of sword fighting and rapier fighting.]

double edged.	
3. Categories of Single-Handed Sword	
We can categorize single-handed swords by the type of blades. One can be called the Broadsword, and the other can be called the Backsword.	
The Broadsword is a cutting and thrusting sword with a double-edged straight blade. Medieval broadswords usually had a simple cross hilt. As armor fell out of use in the 1500s and 1600s, broadswords were often equipped with more protective basket-hilts.	 
(Video introducing the basket-hilted sword)	 
The backsword has a single-edged blade that can be either straight or curved. It is often more of a cutting than a thrusting	

weapon. It has many variants including the sax, the saber, the messer, the cutlass and the falchion.	
The sax is one of the first backsword recorded in history. It was used by Germanic peoples in the Early Middle Ages, especially the Saxons.	 
(Showing video introducing the blade of the sax)	
Messer was a term for the class of single-edge bladed weapons in Germany. *Messer* means 'knife' in German. The *Messer* was part of the curriculum of several fencing manuals in the 1400s and 1500s centuries, including Johannes Lecküchner.	
(Showing the video introducing the "Langes Messer")	

The saber is a sword with a blade that has a curved forward edge. The back edge may be curved or straight. In the late 1500s, the true saber blade began to appear in eastern Europe. By the 1600s, sabers were coming into use in Western Europe. By the 1800s they had become the most common type of sword.	
4. Masters of Single-Handed Sword	
The most important surviving medieval source on single-hand sword is Johannes Lecküchner, a 15th century German cleric and fencing master. His treatise focuses on the *Messer*, although his techniques can be found in many other types of sword fighting. Lecküchner's system of swordfighting is rooted in the Liechtenauer tradition of the 1300s and parallels the techniques of the longsword.	 

There are two surviving original copies of Leckuchner's treatise, entitled *Kunst des Messerfechtens* ("The Art of Messer Fencing"). One is in the Heidelberg University Library, and was produced in 1478; the other one is in the Munich State Library, and was produced in 1482, the year of Lecküchner's death. The Munich manuscript is fully illustrated, and introduces a huge amount of new and expanded content compared to the earlier version.

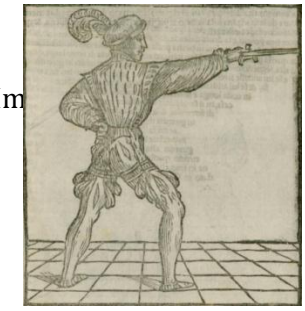
Abb. 7: München, BSB, Cgm 582, Bl. 91ᵛ: Darstellung von Überlegenheit

Abb. 9: München, BSB, Cgm 582, Bl. 4ᵛ: Der Zornhau

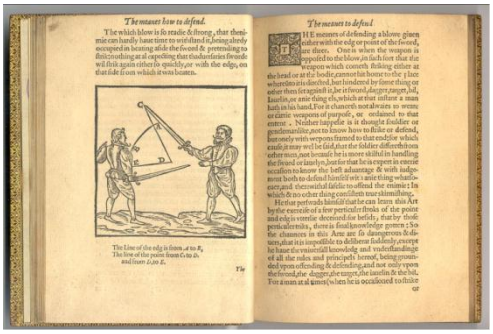
Joachim Meÿer was a 16th century German fencing master. He was a master of almost all kinds of weapons. In 1570, Meyer published *Gründtliche Beschreibung der Kunst des Fechtens* ("A Thorough Description of the Art of Combat"). This book is a complex, multiweapon treatise that represents a significant evolution of the art that Johannes Liechtenauer taught two

centuries earlier. In this treatise, Meyer includes a section on sword fighting skills for the Dussack, a practice weapon for single-handed swords. In this section, he includes techniques, drills and illustrations from very basic cuts to advanced disarming and finishing skills. The Higgins Armory Museum has an original copy of this treatise.

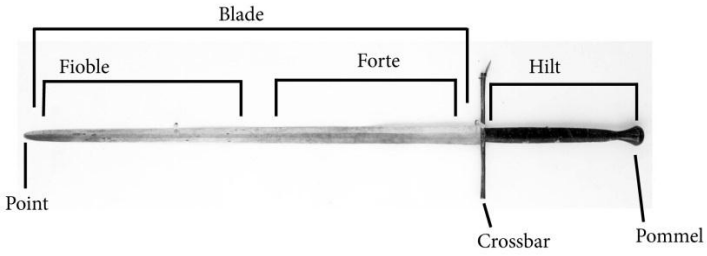
[Im



The 1500s also saw the publication of important Italian treatises on the cut-and-thrust sword. Achille Marozzo was an Italian fencing master in the early part of the century who was widely regarded as the greatest teacher of the old school. He maintained a fencing school in Bologna. In 1536, Marozzo authored a treatise on swordsmanship titled *Opera Nova*. It was reprinted several times during the century, and translated to French in 1580.

Traces of Marozzo's cut-and-thrust swordplay can still be found as late as Giacomo di Grassi's treatise of 1570, although di Grassi preferred thrusting over cutting, so his work is generally treated as a rapier fencing manual rather than a single-handed sword manual. The Higgins Armory Museum has an original copy of his treatise.	 
5. Techniques	
Cuts	(Showing videos took from the first Saturday)
Thumb Grip Cuts	
Guards	
Steps and Stances	
Drills	
Pratice Exercises	
Cycling sequence	

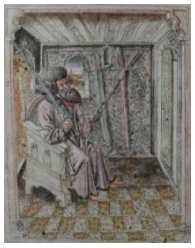
LONGSWORD

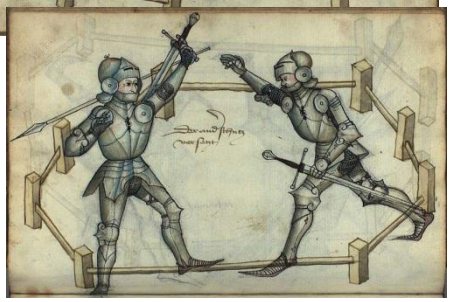
Introduction and Characteristics (30-45 seconds, 5-10 secs per image)      [Include artifact footage]	The longsword is a two-handed weapon used in the late medieval period across Europe. It is also called hand-and-a-half sword and bastard sword. It has a long, straight two-edged blade measuring about 40 to 50 inches long. The sword has a hilt of about 7 inches and a large rounded pommel at the end of the hilt. It can weigh between 2.5 and 5 pounds. A key characteristic of this weapon is its versatility. It can be wielded with either one hand or two and can be used in armored or unarmored combat. The longsword could also either be used on foot or on horseback. 

History of the Weapon (30 secs, 5 secs per image)     [Possible interveiw footage or artifact footage] 	This weapon emerged in the 1300s across Europe. It was mainly used in knightly combat. The longsword came into being at a time when mail armor was giving way to plate armor, although the exact reason why the weapon was created is still unknown. [Possible interview footage to explain further]. By the 1500s, it was only used for sport, and continued in sport until about 1700.

Liechtenauer

(30-45 secs, 5 secs per image)

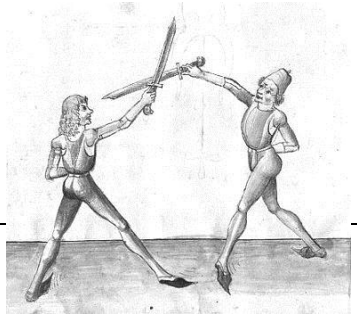




There were a number of important masters of the longsword during the Middle Ages, many of whom originated from Germany. Johannes Liechtenauer was one of the greatest German fencing masters, active during the 1300s. He established a tradition of fighting techniques that carried on for centuries. Liechtenauer never wrote any manuscripts or manuals, but he composed verses about his teachings that were written down and interpreted after his death. The Starhemberg manuscript is one of the most important documents in the Liechtenauer tradition. Written in 1452, this source contains a complete rendering of Liechtenauer's teachings for the longsword's use on foot and on horseback and in armored and unarmored combat.

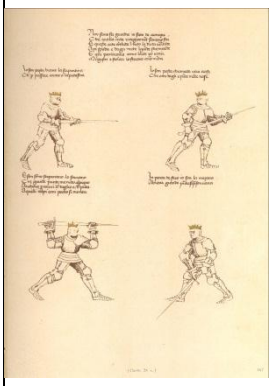
Leckuchner

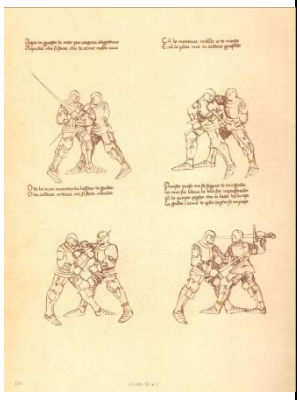
(25 secs, 5 per image)



Liechtenauer's teachings also influenced Johannes Leckuchner, a 15th century German cleric and fencing master. Although Leckuchner's treatise of 1482 focused on the single-handed sword, the techniques are largely the same as the longsword, so Leckuchner is one of the most important sources on Liechtenauer's style of sword

	fighting.
Joachim Meyer (30-40 secs, 7-10 secs per image)   	The last major German author on the longsword was Joachim Meyer. Meyer was a fencing master in the late 1500s, at a time when the longsword was only used for sport. Still, his *Art of Combat* , published in 1570 remains in the Liechtenauer tradition. Meyer's manual is a comprehensive encyclopedia of traditional German martial arts. However, perhaps thanks to Italian influence, Meyer provides a much more detailed and systematic explanation of the longsword combat than the earlier German sources, and his work stands as one of the most important texts of the medieval German tradition.
	Not all major masters of the longsword originated from Germany. Fiore de'i Liberi was an Italian fencing master in the late 1300s. He wrote *Fior di Battaglia* (The Flower of Battle), was an influential combat treatise that contained descriptive text and images for longsword techniques. Fiore's teachings were copied by other Italian





masters and even appear in German manuscripts, giving clear evidence that his influence extended outside of Italy. Fiore's teachings can still be seen in the Italian treatises of the early 1500's, though by the mid-1500s this medieval weapon had fallen out of fashion in Italy.

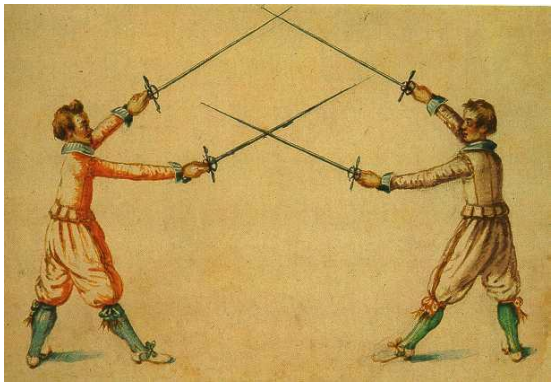
Longsword Techniques

(20 secs for narrative, 5 per image)

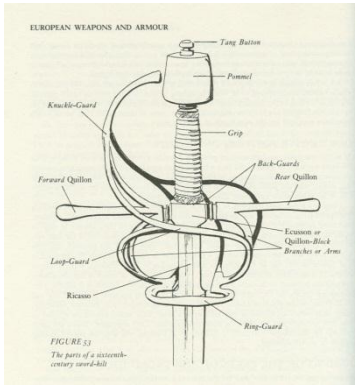
The basic techniques of the longsword can be broken down into cutting, thrusting, and grappling. Although the methods of armored and unarmored combat have differences, the basic principles are the same. You will be able to see these techniques in the reenactment footage.

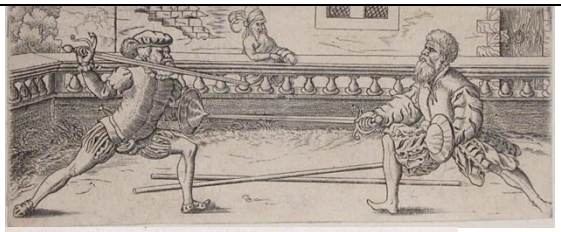

IMITATIO PRÆCEDENTIS EX SVPERIORI
ET LOCO INFERIORI
35

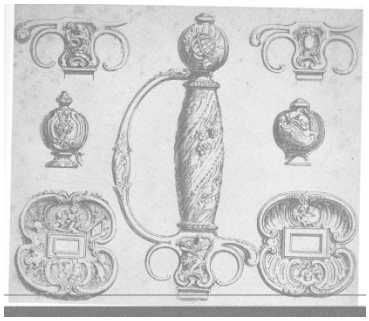
RAPIER

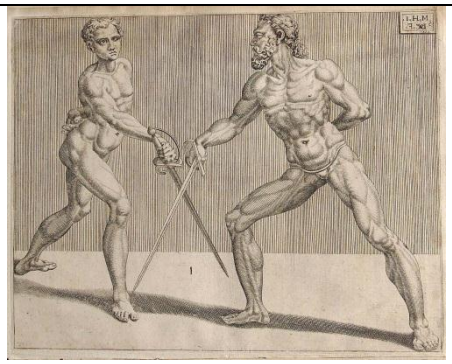
<u>The Rapier</u>	
The rapier is a one-handed civilian sword used in Renaissance Europe from roughly 1500 to 1700. The rapier cannot be said to have appeared exactly at one place or point in time; it continually evolved while it was in use. As a result, it can be difficult to define exactly what a rapier is because it had many forms and was made in many places. Generally, it is a one-handed sword oriented toward thrusting, but having some cutting capacity.	
Before the 1400s, swords were not normally worn by civilians, though a traveler might carry a military-style sword for self-defense on the road. During the 1400s, the sword became fashionable in Spain and Italy as an element of civilian dress and specialized swords evolved for civilian use, giving rise to the rapier.	 

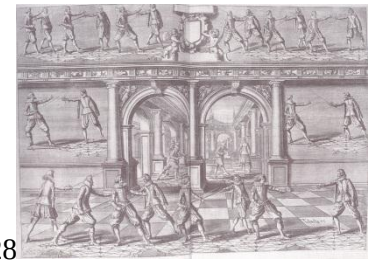
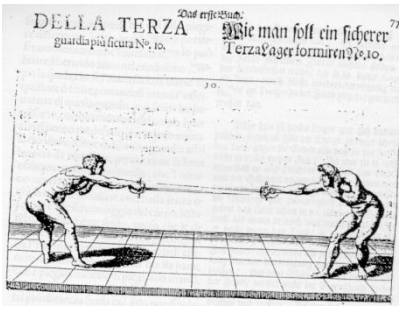
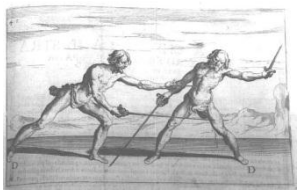
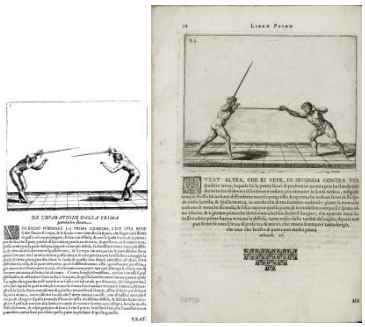
	 
Because these swords were used only for unarmored combat, the blades became longer and thinner. A rapier would never come in contact with steel armor, so it could afford to be lighter.	Artifact Filmig 02/00010 1:34-1:40 - maybe slow down a little
The sword hilt in the Middle Ages had a simple cross-guard at the top of the grip. However, as the technique of thrusting was used more, swordfighters would wrap a finger over the cross-guard. Because this finger would then be susceptible to injury, a ring was added to protect it.	 

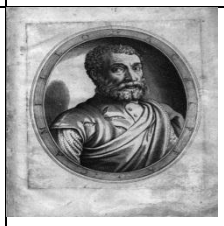
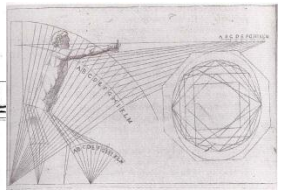
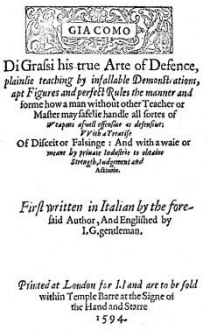
	
During the 1500s, The hilt continued to develop to protect the unarmored hand. One example is this swept-hilt rapier from the late 1500s or early 1600s. It weighs 2 lbs 9oz, and has a blade length of 40."	  1785.2 *Maybe use footage instead of photos 
A slightly later type of hilt was the cup hilt, which was seen most commonly in Spain. This particular sword is from Spain around 1670, weighs 1 lbs 14oz, and has a blade length of 40 1/2."	Artifacts Filming 02/00011 0:35-0:36 Artifacts Filming 02/00008 0:22 – 0:36
The rapier could be used with parrying devices such as a cloak or small shield. The cloak was especially useful in defense while traveling. If a person needed to engage in combat, he could simply slip his cloak off his shoulders and wrap it around his arm while	

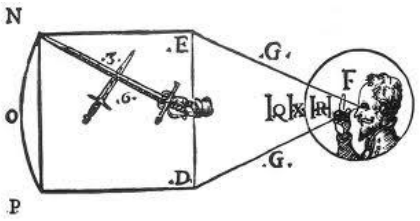
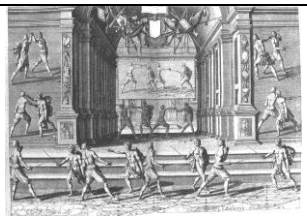
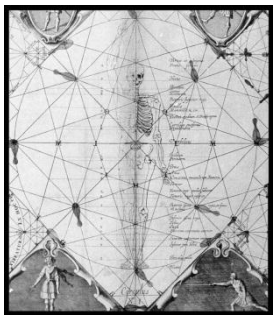
drawing his sword.	 
Daggers were also often used in conjunction with the rapier for parrying. It was fashionable for Renaissance gentlemen to wear a stylishly matched rapier and dagger set.	Filming_Rapier/Handheld/00002 0:22-0:27 

	
By the 1660's, the rapier was starting to fall out of use. It was replaced by the smallsword, which was essentially a lighter, thinner, and shorter rapier with little or no cutting capacity. Smallswords were often elaborately-decorated and followed current trends in male fashion.	 

	 
The smallsword would eventually give rise to the modern day sport epee and foil.	Filming rapier/Tripod/00005 0:12 to 0:20 depending on voice clip length
One of the most common uses for the rapier was for dueling to settle disputes. One example of this in literature can be found in Shakespeare's "Romeo and Juliet," where all of the duels are with rapiers.	Clip from Romeo and Juliet (1968) by Franco Zeffirelli Something in 15:27-16:54
Major schools and masters of fence	
For dueling, self-defense and sport, Renaissance gentlemen trained with fencing masters to learn the art of the sword. Every master had his own style, and some of their names are still familiar in pop culture today.	

The Princess Bride by William Goldman is a popular novel in which one of the main characters, Inigo Montoya, is a master swordsman with the rapier. As Goldman describes Inigo's duel with the Dread Pirate Roberts at the top of the Cliffs of Insanity, "Inigo repeated the Thibault move and again it didn't work. He switched to Capo Ferro, he tried Bonetti, he went to Fabris; in desperation he began a move used only twice, by Sainct." (p.132)	Girard Thibault d'Anvers  *Academie de l'Espee,* 1628 Ridolfo Capo Ferro *Gran Simulacro dell'Arte e dell' uso della Scherma,* 1610   Salvator Fabris *Sienz e Practica d'Arme,* 1606 
Three of the masters mentioned in the Princess Bride were from Italy, and indeed Italians were the pioneers of	

rapier fencing.	
Camillo Agrippa was published a treatise on rapier fencing in 1553, and classical rapier technique may be said to begin with him. He was an engineer, and he used mathematics and geometry to describe movements and positions. Agrippa is the first master in history known to rely almost exclusively on thrusting, and his pioneering work has been published in translation by Higgins Academy instructor Dr. Ken Mondschein.	  
Giacomo DiGrassi's treatise of 1570 echoes the scientific spirit of Agrippa. His work became influential in England because it was translated to English in 1594. The Higgins Armory Museum has an original copy of DiGrassi's Italian text of 1570.	  Footage of text. 

Although the most famous masters came from Italy, some came from other countries. The Spanish school was more theoretical and less practical than Italian styles. Jeronimo de Carranza was known as the "inventor of the science of arms" published his treatise in 1569. Like many rapier masters, he considered swordplay to be a science: in his words, "a perfect theoretical knowledge must infallibly lead to victory, notwithstanding grievous physical disadvantage."	  
Girard Thibault was one of the few major French fencing masters and was heavily influenced by the Spanish style. His treatise, *Academie de l'Espee,* was published in 1628. Thibault's Spanish influences can be seen in his detailed, mathematical descriptions of fencing, and elaborate illustrations.	  

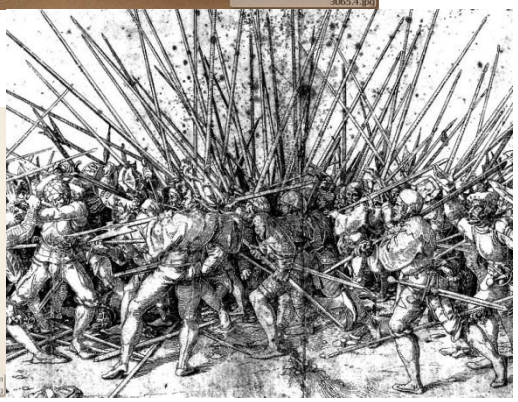
Joachim Meyer was a German fencing master, who published his treatise in 1570. His rapier techniques are influenced by both Italian fencing styles and traditional German swordfighting. The Higgins Armory also has an original copy of his text, and a translation has been published by Higgins curator Jeffrey L. Forgeng.	 

Techniques/Exercises	
Stance The heels of the feet should be shoulder width apart with the dominant foot in front and toes pointing toward the opponent. The rear foot is turned out at 90 degrees, and the knees should be bent for better flexibility and balance. Your sword hand is extended forward with the point of the sword pointing between your opponent's eyebrows. The secondary hand is placed in front of the torso to be used for emergency saves.	IQP Filming/Filming_Rapier/Tripod/00009 0:19-1:09
Stepping The modern fencing step is used where the leading foot goes first, followed by the rear first. To move back, the rear foot moves first followed by the leading foot.	IQP Filming/Filming_Rapier/Handheld/00009 1:30-1:42
Guard You can guard either the right or left side of the	IQP Filming/Filming_Rapier/Tripod/00009 2:00-3:04

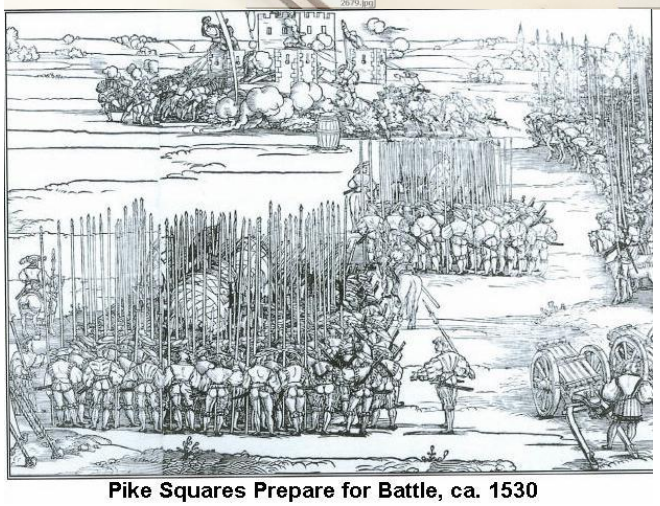
body. When guarding the right side, the sword is held to the right so the opponent has no target on that side. To guard the left side, the sword is simply moved to the other side keeping the point in the middle.	
Stepping/Guard Drill This drill is for practicing maintaining distance and changing guards. There is one person leading the footwork and guards and the others mirror him. When he steps forwards, the others step back and vice versa. When he changes guards, so do they.	IQP Filming/Filming_Rapier/Handheld/00010 1:07-1:22
Maintain Distance Drill This drill is for a pair of swordfighters within lunge distance to practice maintaining distance, similar to the previous drill. One person leads the footwork, and the other steps to keep the distance between them the same.	IQP Filming/Filming_Rapier/Handheld/00011 0:40-1:00
Beat/Extend Drill In this drill, one swordfighter will beat the other's sword, which means to hit it off the line, or out of the way, with his own sword. He then extends his sword arm in preparation for a thrust. Then, footwork can be added and the drill repeated.	IQP Filming/Filming_Rapier/Handheld/00012 0:25-0:32; 0:52-1:04 IQP Filming/Filming_Rapier/Tripod/00012 1:00-1:05
Lunge Drill The lunge is when one swordfighter extends his sword and takes a large step forward by propelling himself with the back leg hitting the opponent squarely in the chest.	IQP Filming/Filming_Rapier/Tripod/00012 1:46-1:52 IQP Filming/Filming_Rapier/Handheld/00012 1:45 – 1:48
Beat/Extend/Lunge Drill Now, you can practice the beat and extend with a lunge, first stationary and then with person being hit leading the footwork.	IQP Filming/Filming_Rapier/Handheld/00012 2:08-2:11 IQP Filming/Filming_Rapier/Tripod/00012 2:18-2:20

	IQP Filming/Filming_Rapier/Handheld/00012 2:29-2:49
<u>Beat/Extend/Lunge/Parry Drill</u> To defend against the beat, extend, lunge, the defending swordfighter can parry by moving her sword across her body to close the line. The point of the sword stays toward the opponent and the hand turns so that the true edge of the sword makes contact with the opponent's. This should be done stationary, and then with footwork.	IQP Filming/Filming_Rapier/Tripod/00012 3:29-3:32 IQP Filming/Filming_Rapier/Handheld/00012 3:17-3:24 IQP Filming/Filming_Rapier/Tripod/00012 4:04-4:11 IQP Filming/Filming_Rapier/Handheld/00012 3:57-4:04
<u>Beat/Extend/Lunge/Parry/Counter Attack Drill</u> After successfully avoiding the opponent's attack with a parry, the defending swordfighter should extend her sword in a counter attack. Because the opponent is within range, he receives a blow to the face. This should be done first stationary, then with footwork.	IQP Filming/Filming_Rapier/Tripod/00013 0:31-0:34 IQP Filming/Filming_Rapier/Handheld/00013 0:31-0:34, 0:37-0:40 1:06-1:15 IQP Filming/Filming_Rapier/Tripod/00013 1:12 – 1:17
<u>Beat/Extend/Lunge/Parry/Extend Drill</u> One way for the first swordfighter to get around the defender's parry is to disengage, which means he brings his sword under the defender's and lunges, hitting her in the chest. This is first practiced stationary and then with footwork.	IQP Filming/Filming_Rapier/Tripod/00013 2:57-3:07 IQP Filming/Filming_Rapier/Handheld/00013 3:10-3:13 IQP Filming/Filming_Rapier/Tripod/00013 4:07-4:13 IQP Filming/Filming_Rapier/Handheld/00013 4:07-4:13

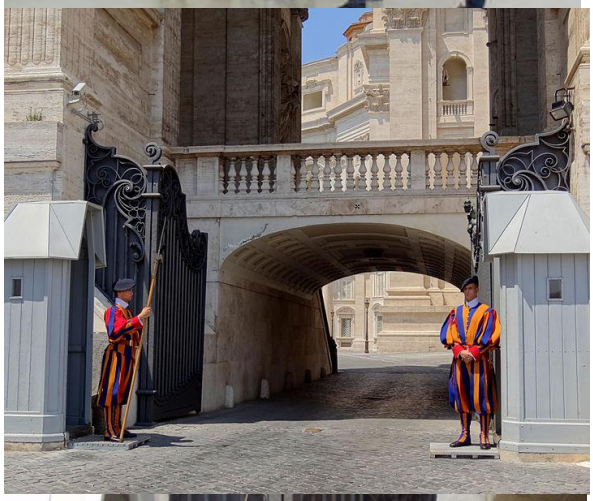
STAFF WEAPONS/DAGGERS STORYBOARD

Staff Weapons are a central part of the history of medieval weaponry. They played various roles in warfare and civilian life, and were a common sight throughout medieval and renaissance Europe.	  
Staff weapons have had a long and varied history, starting with the spear, one of the earliest weapons, which has been used since at least 200,000 years ago. The spear was used for hunting as well as early warfare, and was one of the first human tools used exclusively for violence, unlike the knife and axe which also had utilitarian purposes.	  

By the Middle Ages, staff weapons had evolved into diverse and complex weapons of war, including the simple quarterstaff, the devastating halberd, with its ability to cut, thrust, and pierce, and the pollaxe, featuring the powerful war hammer head. These staff weapons were used not only as weapons of war, but also for duels, as well as for ceremony and display. It would not be uncommon to see soldiers standing guard with staff weapons, or in a parade or other event holding highly decorated ceremonial staff weapons. One of the best examples of ceremonial staff weapons are the elite Swiss mercenaries who were highly sought after as royal guards for numerous European courts! Today the Pope still maintains a Swiss guard armed



Pike Squares Prepare for Battle, ca. 1530

with ceremonial halberds.	  

The many different kinds of staff weapons share certain features. Staff weapons are composed of several major parts, beginning with the wooden haft and the metallic head.	 
The Haft is the long wooden part of a staff weapon, comprising the majority of its length. For most staff weapons, the haft was typically around 7 feet, but some were no taller than a man, while the pike could be as long as 20 feet. The haft can be further divided into three areas: The butt, or the bottom of the haft, could be used to strike an opponent and was sometimes shod with an iron cap or spike. The midstaff was the middle of the haft, between the wielder's hands and could be used to block strikes. The forepart was the section of the haft closest to the head.	Footage of Jeffrey showing parts of the haft of the staff weapons.
The Head of the staff weapon was its tip, and main point of difference between	Footage of showing how the heads of staff weapons may differ and are attached to the haft.

different kinds of staff weapons. Different staff weapons featured varying combinations of spikes, blades, or hammer-heads. The head would have a socket for the haft and "eyes", holes in the head that were used to secure it in place. Some also had languets, strips of metal that extended from the head down the haft. The languets were nailed in place to prevent the head being chopped off in combat.	 
Staff weapons were complex devices of war, and so too were the men who studied them and became masters of their use. Through their knowledge left behind in manuscripts, we can learn today how these historical figures used these beautiful, yet brutal weapons. Compared to other medieval weapons, very little documentation of staff weapon use has been left behind, making the few masters who did write about them extremely important.	 

	 
Fiore dei Liberi, the earliest master to document the use of staff weapons, was an Italian fencing master who included a section on staff weapons in his 15th century treatise "The Flower of Battle".	

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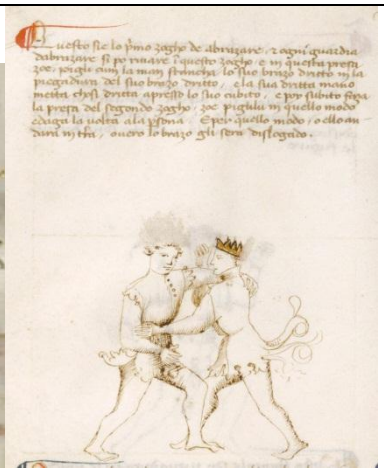
<td>   </td>
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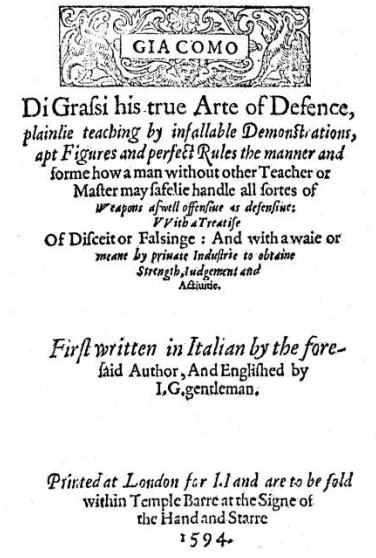
<td>Nearly 200 years later, another Italian, Giacomo Di Grassi, included staff weapons in his book “Arte of Defence”, placing great emphasis on the value of thrusting attacks and the idea that the length of a weapon determines its use relative to other weapons</td>
<td> 
GIACOMO
Di Graſsi his true Arte of Defence,
plainlie teaching by infallable Demonſtrations, apt Figures and perfect Rules the manner and
forme how a man without other Teacher or Maſter may ſafelie handle all ſortes of
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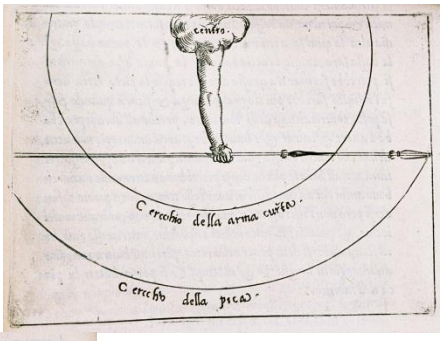

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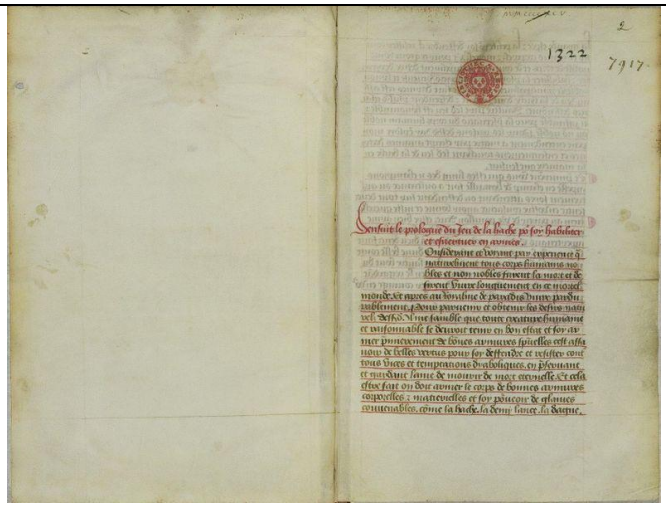
After Fiore, the next oldest medieval treatise on staff weapons is *Le Jeu de la Hache*, a Burgundian manuscript written by an unknown master detailing the use of the pollaxe in knightly combat.	
Most other sources on staff weapons come from Germany. One of the most important is Joachim Meyer, a major fencing master of the 1500s who wrote on medieval weaponry as tools for sport, as opposed to battlefield use. His well-illustrated, detailed treatise "The Art of Combat", includes sections on the use of quarterstaves, halberds, and pikes.	 


Fechten mit dem langen Spieß. XLII
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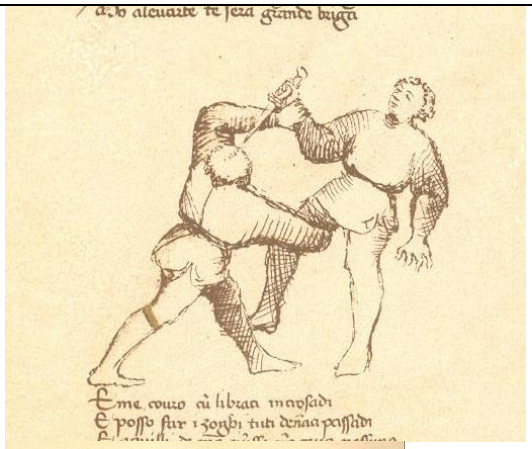
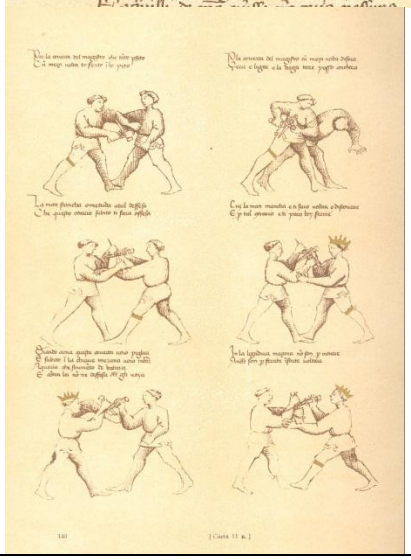
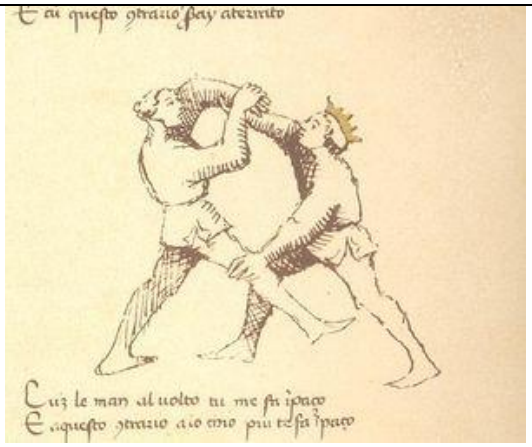
DAGGERS AND Wrestling

In the Middle Ages, daggers were not merely the weapons of assassins or ruffians, but were an integral part of any knight's fighting skills. Many fights would end in close combat, with daggers and wrestling techniques being used to finish off an opponent. It is important to note that the techniques for the use of daggers and wrestling go hand-in-hand: because the dagger is such a short weapon, a dagger fighter always had to be a good wrestler.	
Daggers evolved from the earliest of tools: the knife. Not simply the tool of soldiers, daggers were also often present in civilian use, either by men who wore them for duels, or those who kept them for self-defense or for offensive use, or even as a utilitarian tool.	
The dagger is composed of the hilt and the blade. The most common knightly dagger, the roundel, had little or no edge, focusing largely on the point for piercing the weak spots of an opponent's armor. Civilian daggers also tended to emphasize the point over the edge.	

The art of fighting with daggers or wrestling involved finesse, speed, and strength, and many combat masters regarded dagger and wrestling techniques as a foundation for all fighting arts.	
One of these masters was Fiore dei Liberi, who began his 1409 treatise with wrestling and dagger drills.	 

	
The most influential German master on wrestling techniques was Master Ott, a converted Jew who became wrestling master to the Prince of Austria. His treatise was probably composed in the early 1400s and continued to be copied and adapted well into the 1500s	
One of the Germans influenced by Ott was Joachim Meyer, a fencing master who covered many aspects of medieval weapons, including dagger and wrestling combat. His detailed illustrations show many different guards, holds, and throws for use with daggers and wrestling, although his illustrations show combat with blunted dagger used for sport and training.	

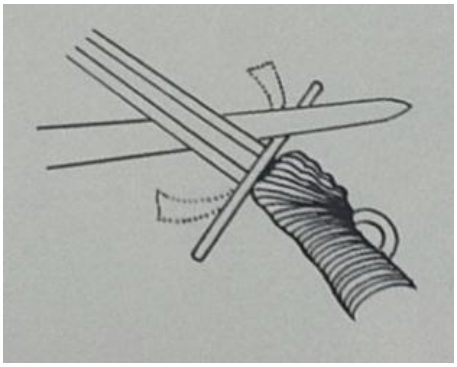
Staff Weapon Techniques The wide variety of staff weapons may seem daunting at first to someone seeking to master their use, but it may come as a relief that all of the different kinds of staff weapons use the same combat style. If you learn to use one staff weapon, you can use them all. They may have different specialties, but the grip, stance, and basic cuts and thrusts are all the same.	
Staff weapons have a very different structure than other medieval weapons. The long haft or staff means that the wielder's hands must be much further apart than they would be on a longsword, and the length and weight of the weapon ensures that it must always be held in two hands. The two hands are typically spread out, not too close to the butt of the staff, but not too close to the head either. This gives the wielder a grip that allows them offensive or defensive leverage.	Jeffrey displaying grips/stances

GENERAL PRINCIPLES

BLOOD is a mnemonic to help you remember four important principles of fencing: balance, line, eye contact and distance.	Graphic that spells BLOOD and highlights each letter as the word that it stands for is mentioned.
Balance is important for swordfighters so that they can move and respond quickly. The best way to maintain balance is to keep the head and torso upright and the knees bent to lower the center of gravity.	**B**LOOD footage (Random fencing stuff)
Line represents the geometry of the fight. For example, any cut with a sword comes in along a specific line of attack. The defender must position their sword correctly in order to intercept this line of attack with an effective line of defense - this action is sometimes called "closing the line."	B**L**OOD 2D graphic
Swordfighters should never look directly at the opponent's weapon. For training purposes, a good option is to maintain eye contact to help train the eyes to rely on peripheral vision. At advanced levels, a swordfighter typically uses a	BL**OO**D Eye contact animation

"thousand-yard stare" through the opponent's sternum.	
Different techniques work at different distances - you can't swing a sword at someone if there is no room, and you can't wrestle if you can't reach your opponent. It is essential to be at the appropriate distance for the implementation of the desired technique.	BLOO**D**
Parts of the sword	
The blade of the sword is used for both attacking and defending. It has a forward edge, also known as the true edge, and a back edge, also known as the false edge. The forward edge has a longer reach and more power than the back edge. The forte is the part of the blade closer to the hilt, and has greater leverage. The foible is the end closer to the point of the blade, and has less leverage, but more attacking power than the forte, since it travels at greater speed than the forte.	Footage of Jeffrey/animation showing speed of forte vs. foible. (Single-Handed Sword) Filming/Filming_Longsword_SingleSword/00001: 0:58-1:30(False/True Edge); 1:30-2:50 (Forte vs Foible) (Longword) Filming/Filming_Longsword_SingleSword/00002: 1:18-2:33 (Forte vs Foible) 2:33-3:34 (Long/Short Edge)

	Sword animation
The hilt is where the sword is held and is made up of three parts.	 (Single-Handed Sword) Filming/Filming_Longsword_SingleSword/00001: 2:50-3:50
The grip is the handle. It is typically made of wood and wrapped with materials that may include cord, leather or wire.	Footage of Jeffrey describing parts, "animated" diagram (Longword) Filming/Filming_Longsword_SingleSword/00002: 3:34-3:56

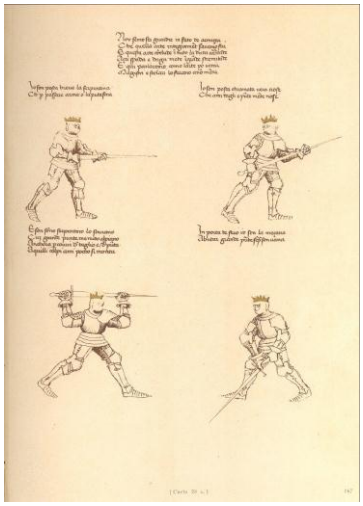
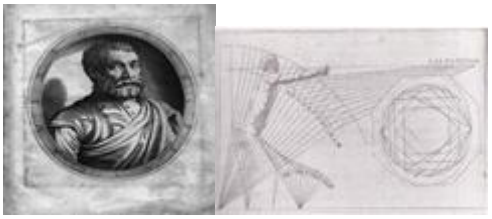
The cross-guard, also known as the quillon, is the part above the grip that is used to protect the hand.	 Filming/artifact_swords_02/00007.MTS 1:24-2:11
The pommel is the enlarged part at the end of the hilt, which is used to counterbalance the weight of the blade. It adds to the overall weight of the sword, but makes the blade seem lighter. The pommel can also be used offensively in combat.	Part of animation using the longsword  (Brazil-Nut pommel) (Single-Handed Sword) Filming/Filming_Longsword_SingleSword/0003:22-3:50 Filming/Filming_Longsword_SingleSword/00002:3:56-4:23
Guards	

A guard is a position a swordfighter stands in or passes through during an encounter. Every combat system has its characteristic guards, and each one is a position from which a swordfighter can execute different moves. Often, moves will end in a way that leaves the swordfighter in a guard, allowing them to flow smoothly to the next movement. Practicing the transitions between guards is a good way to learn how the body and weapons move together.	2D animation
Stepping	
Stepping and footwork is important for a swordfighter because it allows them to change distance and line without losing balance.	
There are several different steps a fencer can use to move around, each of which has a different purpose. There is the passing step, where one foot comes in front of the other in order to cover ground faster.	Stepping footage IQP Filming/Filming_Longsword_SingleSword/00003 0:17-0:39
The sliding step is where the lead foot takes a	Footage

step forward and then is followed by the trailing foot, keeping the relative position between them the same. This step covers less ground.	Filming/Filming_Longsword_SingleSword/00003 1:12-1:28
The gather step is similar, but the trailing foot moves first followed by the lead foot, which is a little less stable, but allows for quicker turns.	Footage Filming/Filming_Longsword_SingleSword/00003 1:40-2:00
The triangle step is a way to maintain distance, but switch the forward leg. The back leg comes forward and to the side, and then the front leg goes back to the same point where the back leg started. When stepping like this, you can imagine positioning your feet on the points of a triangle.	Footage Triangle diagram Filming/Filming_Longsword_SingleSword/00004 0:54-1:03
The back step is when the trailing foot moves to the side so that the swordfighter evade the opponent's line of attack.	Filming/Filming_Longsword_SingleSword/00004 1:06-1:17
Tempo	
Timing is crucial in making successful attacks. A tempo can be defined as the time it takes to complete one movement. If you can attack your	Fencing footage

opponent in the middle of their tempo, they will be unable to respond quickly enough to block your attack.	
Moving weapon-first	Animation/footage.
It is important to always extend the sword first before moving toward your opponent, otherwise your body will be an easy target for them to attack.	
Masters	
The Higgins Armory Academy of the Sword bases its work on a world-class program to study and interpret surviving combat treatises of the Middle Ages and Renaissance. Most of these treatises were written in Germany and Italy. The earliest of these are the German treatises, which go back as far as the 1300s. Many of the German treatises are ultimately based on the teachings of Johannes Liechtenauer.	

Liechtenauer was a German fencing master in the 1300s who established a tradition of fighting techniques that carried on for centuries and influenced other fencers and masters.	
One important follower of Liechtenauer was Johannes Lecküchner, a 15th century German cleric and fencing master. His combat treatise for the single-handed sword is detailed and richly illustrated, and is the most thorough documentation not only of Liechtenauer's style of swordfighting, but of medieval swordfighting in general. A translation of Lechuchner's treatise is being published by Higgins curator Jeffrey L. Forgeng.	
Joachim Meyerwas was another of Liechtenauer's followers. His treatise, *Art of Combat*, published in 1570 is a comprehensive encyclopedia of German martial arts. Within his treatise, he covers the longsword, dussack, rapier, dagger, and staff weapons. His work stands as	

one of the most important texts of the medieval German tradition. The Higgins Armory Museum has an original copy of this text.	Footage of book
The earliest Italian treatise is the work of Fiore de'i Liberi who wrote *Fior di Battaglia* (The Flower of Battle) in the early 1400s. Fiore's treatise, which covers the longsword,spear, and dagger is being published by Academy of the Sword instructor Dr. Ken Mondschein.	
Camillo Agrippa published his treatise on rapier fencing in 1553 and his techniques are today considered to a classical example of rapier combat. Agrippa used mathematics and geometry to describe movements and positions, and advocated a style of combat that relied almost entirely on thrusting. Dr. Ken Mondschein has published a translation of Agrippa's crucial text.	

One of the later Italian masters is Giacomo Digrassi who published his treatise in 1570. An English translation of his treatise was published in London in 1594. Like Agrippa, DiGrassi had a scientific mind, and describes fencing concepts and moves in terms of mathematics and geometrical diagrams. The Higgins Armory owns an original copy of his treatise, with handwritten notes by a Renaissance reader.	 

APPENDIX B

HIGGINS ARMORY MUSEUM DROP-IN WORKSHOPS:

- Celtic Day
    - Spear
    - Single-handed sword
- Lord of the Rings
    - Longsword
- Robin Hood
    - Longsword
- Pirate
    - Cutlass
    - Dagger & wrestling
- Shakespeare
    - Rapier & dagger

About the Authors

From left to right: Haoyang Zhang, Cecelia Franzini, Logan Harrington and John Tordoff

Cecelia Franzini is currently a junior pursuing Electrical and Computer Engineering at WPI. When she can get away from her academic building on campus, she enjoys dancing, especially Argentine Tango. Cecelia learned to dance from the Social Dance Club on campus, of which she is now president. She also took up swordfighting about a year ago, and particularly enjoys rapier and dagger. Other hobbies include reading fantasy novels, cooking and drinking tea with friends.

I am Logan Harrington. I'm studying Interactive Media and Game Development with a concentration in art at WPI. I am originally from Marlborough MA and came to WPI in 2010. I enjoy making games and creating art. I also enjoy photography and working on the school newspaper. I someday hope to work for a large company either making games or creating computer graphics for films.

John Tordoff is a junior at Worcester Polytechnic University. He is pursuing a Bachelor of Science in Interactive Media and Game Development, with a focus on sound design, level design, storytelling, and interesting game mechanics. He is from Gorham, Maine and enjoys reading, immersive fantasy gaming experiences, and fantasy movies. He researched and composed the sections of this project on staff weapons as well as daggers and wrestling.

Haoyang Zhang (or Lance) is currently an international student at Worcester Polytechnic Institute, double majoring in Computer Science and Interactive Media & Game Development. Although this project doesn't require any programming skills, he still implements the final product with his skills on Multimedia software. As an advanced user of Adobe Premiere, he took the responsibility of all editing jobs. During the project he wrote storyboard for introducing single-handed sword. Now he becomes the vice-president of the Japanese Culture Club of WPI and does his best to show Asian culture to the US community.