

**Ancient Influences on Anglo-Saxon and Viking weapons**



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**Abstract**

The following research investigation examines the links between particular weapons from armies preceding the Viking age. The origins behind the weapons of the Vikings and Anglo-Saxons are a subject of debate for scholars. The overall aim of this research was to prove that Viking weapons are the results of evolution from previous weapons. One of the main problems with researching this topic was the lack of valid sources from the dark ages. This is due to the fact that the sources we have on Viking warriors were written hundreds of years after they occurred and became embellished. Other sources on the Vikings were written by their enemies whom are more bias towards their portrayal. The investigation follows three steps. The description of the Viking weapon is determined through archaeology to establish its appearance and design. Archaeology is essential to the next section of research as the weapons design corroborates the ancient sources to show the weapons use. This includes the weapons effects. The third section establishes how the weapon was obtained by the Vikings. This includes how certain changing metals and forging techniques influenced its development. The same method of study is used for the predecessor weapon to determine the similarities and differences. Therefore, a connection is established. One of the main trends is that some Viking and Anglo-Saxon weapons originate from the Roman army. Such weapons include the Viking sword and the Angon. Another trend discovered is the argument that the changed method of forging sword blades was essential. However, some of the major discoveries from this investigation come from the Franks. Both the throwing axe as well as the Winged spear are Frankish. Another major finding showed that the Vikings mainly obtained their swords from the Franks. The following investigation will show these findings and demonstrate their connection in greater detail.

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**Ancient influences on Anglo-Saxon and Viking weaponry**

**Chapter 1 – Introduction**

This dissertation explores the influences and developments that led to the creation of the weapons used by the warriors of the Anglo-Saxon and Viking periods. Weapons are often the result of developments influenced by external sources such as different tribal migrations or civilisations.[[1]](#footnote-1) This dissertation argues that this also applies to the weapons used by Anglo-Saxon and Viking warriors and that most of their weapons were the result of over five hundred years of development from previous civilisations.[[2]](#footnote-2) Such civilisations include the Roman Empire as well as the late Germanic tribes of the 4th and 6th centuries AD, which dominated Europe.[[3]](#footnote-3)

Much can be learned from the weapons that influenced the creation and design of the warriors’ weaponry, yet there is a great lack of scholarly works that document and discuss these influences and developments. The following investigation aims to contribute in this field. By presenting the appropriate evidence that the weapons of the Vikings and Anglo-Saxons owed their creation to multiple predecessors. The most important field of study for this investigation will be the field of archaeology when analysing the different weapon discoveries down the centuries.

This will establish links between each weapon’s predecessor and successor. Some weapons have a more extended period of development. They obtained specific influences and designs from multiple past weapon.[[4]](#footnote-4) One example can be seen in the Roman Spatha sword, which was used by the late Roman army during the late empire.[[5]](#footnote-5) The Spatha was the influence for the swords of the migration period, which eventually became the Viking sword.[[6]](#footnote-6)

The development of these weapons will be established in four different sections. These chapters will establish the link between each weapon to its successor in order to demonstrate the development process through the centuries.

A great deal of the main evidence surrounding the weapons of the late Germanic tribes, as well as the Anglo-Saxon and Viking warriors is archaeological. The reason for this is that links can be established between certain finds discovered in archaeological excavations. Therefore, the most important field of study for this investigation is archaeology. Different examples from archaeological finds can demonstrate the connections in weapons developments and influences. Some of these examples are as follows below detailing similar grave finds of weapons between different Germanic people from different periods.

One of the most important examples is from the Sutton Hoo excavation in England in which the burial site of King Raedwald was discovered along with other weapons and treasures.[[7]](#footnote-7) Most notable among the treasures was a sword, which after an X-ray examination was discovered to have had a pattern welded blade.[[8]](#footnote-8) Which connects to Frankish sword designs, this is probably due to the major influx of Frankish tribes.

These warrior burials became a common practice among the Germanic tribes that swept across Europe.[[9]](#footnote-9) Many of the Frankish burials can be found along the Rhine frontier where they were buried with their Angons as well as a sword.[[10]](#footnote-10) These include the excavated sites at Krefeld-Gellep which is associated with a Roman military base known as Gelduba.[[11]](#footnote-11) These are similar to the Sutton Hoo grave burial as each of these warriors were discovered buried with their Angon javelins as well as their sword.[[12]](#footnote-12)

Warrior burials are the most important method of determining the weapons of the Vikings.[[13]](#footnote-13) One important example comes from Birka in Sweden where a Viking warrior was discovered buried amongst a host of different weapons.[[14]](#footnote-14) The warrior grave was found to have a sword, two spears as well as an axe, two shields, battle knife and multiple arrow heads.[[15]](#footnote-15) There were also two sacrificed horses in the grave as well alongside the deceased warrior.[[16]](#footnote-16) Since its discovery in the nineteenth century, the grave was believed to have been the final resting place of a male warrior.[[17]](#footnote-17) However, recent DNA results have determined it to be the grave of one of the legendary shield maidens.[[18]](#footnote-18) This burial demonstrates that certain customs were widespread among the Germanic and Nordic tribes. The only difference in this grave compared to the Sutton Hoo burial is that this warrior woman does not have links to any royalty of her area beyond her high status.[[19]](#footnote-19) Overall, these examples display that there were widespread practices and customs as well as weapon influences among the Germanic tribes as well as the old Norse.

Archaeological discoveries can also show the way they were used on the battlefield by analysing their design as well as contemporary battle accounts such as the Norse sagas as well as the Anglo-Saxon Chronicle. However, the subsequent investigation will expand the current state of knowledge.

**Chapter 2 – Methodology**

The methodology of this investigation will follow a multiple stage process when researching each weapon and its significance. Each weapon will be analysed in a three-step approach which will show its connection to the successor weapon. This will demonstrate how each weapon developed during each period of its history.

The first step in the research process will be to establish the Anglo-Saxon or Viking weapon’s appearance and its distinguishing features. One of the first areas of study will be archaeological examples of the weapon. These will help corroborate descriptions from contemporary literary sources describing the weapon and its distinguishing characteristics. These include the length of the weapon as well as its construction design and differences to other weapons of the time.

Another important area of study will be the iconography surrounding the depiction of certain weapons. This will include military monuments commemorating campaigns from the period in which carvings depict the weapon under analysis. These will be important in constructing the links between weapons as the similarities in design will be essential. This includes any differences in the length of the weapon, as well as its design features and similar methods of constructing the weapon. These distinguishing characteristics will be crucial in establishing the connection to the weapon's successor. This is due to the fact that they will determine the continuity between each weapon in similarities of design and materials. Iconographical evidence will also enable us to confirm the use of certain weapons from specific warriors.

The next phase will be an analysis of the weapons effects and abilities. The description of the weapon will become crucial in this section of the research process. This is due to the fact that the archaeological finds of the weapon will be corroborated with ancient battle accounts. The accounts will describe how the wielders of the weapon would use the weapon and any subsequent effect on features such as the enemy shields or armour as well as the enemies themselves. Therefore, the use and effect of the weapon on the battlefield can be established to determine the link to the successor of that specific weapon.

The third step in the research methodology is establishing how the initial weapon evolves to its successor weapon. The same research process will be applied to the successor weapon in which both weapon descriptions, characteristics and uses will be compared. The similarities and differences between each weapon will be determined in order to establish the connection between weapons. This is in order to determine which parallel weapon is, in fact, the successor to the initial weapon.

Another important part of this research process will investigate influences from cultures outside of the main focus of this study. Each weapon will also be analysed to determine if each may have been influenced by any contemporary cultures. This is due to the fact that each weapon may also have been influenced by other cultures, not under analysis in the investigation. One example can be seen in the Roman Spatha sword. Its external influences outside of the Roman army can be seen in the Gallic tribes.[[20]](#footnote-20) These may have come before the main influential cultures under analysis in the investigation. As seen in the above example, this can depend on the weapon. In this case, these are the Romans and Franks. Therefore, it would mean that it is the result of multiple stages of developments with different adaptation between different cultures.

The influences surrounding the development of Anglo-Saxon and Viking weapons are not well documented. This review of the relevant scholarship will help establish the links that can be explored when the relevant scholarship is applied. The review will highlight the scholarship trends on the topic of this study.

One scholarly trend states that the Viking and Saxon swords were developments from the Roman Spatha sword.[[21]](#footnote-21) The scholars that state this are as follows below.

Siddorn’s work is essential as it highlights the scholarly view that the origins of the Viking and Saxon swords lead back to the Roman Spatha.[[22]](#footnote-22) The Spatha was the Romans cavalry sword; Siddorn traces the development of the Northern European broadsword to it.[[23]](#footnote-23) Siddorn further suggests a development from a wooden hilt and handle, and a simple iron blade, to a thin pattern welded blade as we see in Siddorns picture of a Viking displaying a sword on his shoulder (Siddorn, 2000, pp. 80).[[24]](#footnote-24)

This trend is continued and expanded upon by Terence Wise. Terence states that the Saxon sword was also a development from the Roman Spatha sword.[[25]](#footnote-25) The dimensions of the sword are also expanded upon by stating they had a broad double-edged blade measuring up to seventy-five centimetres long with a round point.[[26]](#footnote-26) The source also includes a discovered example of a Saxon sword in the Spatha style from the River Lee with the short cross guard in the Spatha style.[[27]](#footnote-27) Therefore, Terence also agrees that the Viking as well as the Saxon sword were developed from the Spatha.[[28]](#footnote-28)

This trend continues with another scholar named Syed Ramsey. Ramsey also states that the Roman Spatha was responsible for the development of the Viking sword.[[29]](#footnote-29) He states that the development went through multiple swords from the Spatha to the Merovingian sword.[[30]](#footnote-30) This eventually became the Carolingian sword also known as the Viking sword.[[31]](#footnote-31)

When expanding upon scholarship trends regarding Anglo-Saxon and Viking weapon development, the forging method of the Viking and Saxon sword blade is also essential. One scholar who is essential to this trend to the Viking sword blade is Gareth Williams. His work states that Viking sword blades were pattern welded as a sign of status and prestige in society.[[32]](#footnote-32)

Another scholar whose work is essential to this trend is Mike Loades. Mike Loades states that Anglo-Saxon and Viking swords were pattern welded blades.[[33]](#footnote-33) He also uses an example to prove it.[[34]](#footnote-34) Mike Loades demonstrates this by stating the X-ray results of the Sutton Hoo sword blade in which it was revealed that the blade was a pattern welded design.[[35]](#footnote-35)

Ian Peirce also contributes to this trend in which his compilation of archaeologically discovered swords mostly were found to have pattern welded blades. One example from this book is the sword from Tisso which now resides in the national museum at Copenhagen.[[36]](#footnote-36) The sword was found to have had a pattern welded blade.[[37]](#footnote-37)

The relationship of these trends to this investigation is essential as they are the starting points for the analysis. The trends in theorised origin to a previous weapon as well as their forging methods as stated earlier with the sword will make it easier. This is because they will help establish the evolutionary links between each weapon to prove the development from previous influences.

Therefore, as seen in these previous examples, there are multiple trends in the scholarship regarding the development of Viking or Anglo-Saxon weapons. One trend, as seen earlier is that the Viking and Saxon swords owes its origins to the Spatha sword; another one is that the blades signature design is a pattern welded blade.

**Chapter 3 – Swords**

The first chapter of this investigation will concern the swords that influenced Anglo-Saxon and Viking weaponry. This will be an analysis of the Viking and Anglo-Saxon sword and their theorised predecessor.

The first Saxon and Viking weapon under analysis is their sword. The Saxon and Viking swords originated from the Frankish warriors.[[38]](#footnote-38) One of the main areas of study around this sword and its appearance is from archaeological excavations as well as certain bog deposits.[[39]](#footnote-39) Some of the best-preserved Viking arms and armour examples have been discovered in bogs with peat.[[40]](#footnote-40) This is due to the fact that peat protects the weapons from decay.[[41]](#footnote-41) These have been found all over Scandinavia.[[42]](#footnote-42) Some of these swords had Carolingian origins.[[43]](#footnote-43)

One example resides in the Musee de l’ Armee in Paris.[[44]](#footnote-44) This sword was dated from the middle of the ninth to the middle of the tenth century.[[45]](#footnote-45) The length of the entire sword is eighty-eight point three centimetres.[[46]](#footnote-46) The blade length measures up to seventy-six point four centimetres.[[47]](#footnote-47) The grip measured up to seven point nine centimetres and the cross guard measured up to nine centimetres.[[48]](#footnote-48) This sword is a Peterson Type L sword with a pommel which had multiple lobes.[[49]](#footnote-49)

However, another similar example of a Carolingian sword was discovered from the River Witham in the county of Lincolnshire in England.[[50]](#footnote-50) The type of this sword was also a Peterson Type L sword with its multi-lobed pommel dated back to the tenth century.[[51]](#footnote-51) The dimensions of this sword are slightly similar to the Paris example.[[52]](#footnote-52) The length of the entire sword is ninety-one point five centimetres while the blade length is seventy-seven point eight centimetres.[[53]](#footnote-53) The length of the grip measured up to eight point eight centimetres while the cross guard is eleven point eight centimetres in length.[[54]](#footnote-54) Both these examples had points tapered to be a round shape.[[55]](#footnote-55)



Viking sword from River Witham[[56]](#footnote-56)

Overall, these discovered swords establish how the Carolingian or Viking swords appeared with information on their dimensions as well. The uses and effects of the sword will be outlined in the following paragraphs below.

The use and effect of the Carolingian or Viking sword can be seen in the broad design of the blade. Typical sword blades of the period were broad as seen in certain examples from the British museum.[[57]](#footnote-57) The broad blade and its weight meant that the sword was used to cut and slash rather than thrust.[[58]](#footnote-58) One passage details the capabilities of the Viking sword in the Sogubrot regarding the Viking sword in action at the battle of Bravellir.[[59]](#footnote-59) The passage is as follows:

At that moment, Vebjorg the shieldmaiden made a great attack against the Swedes and Gauts. She charged at the champion called Attack-Soti, and she had trained herself so much with helm and byrnie and sword that she was the foremost in knighthood, as Starkad the old says. She struck champions with mighty blows, and attacked for a long time. She struck one blow on his cheek and chopped his jawbone apart and sliced off his chin.[[60]](#footnote-60)

This passage establishes the fact that the Viking sword was a slashing weapon. It also demonstrates its terrifying power when cleaving through the enemy champions face causing the horrific injury as described above.[[61]](#footnote-61) Overall, it can be determined from archaeological examples as well as passages regarding past battles that the Viking sword was a slashing weapon rather than a thrusting sword.

One issue with the Sogubrut as a source is the same issue with most Norse sagas. They were written hundreds of years after the event took place.[[62]](#footnote-62) Therefore, they are more likely to be less accurate to the event and a lot more embellished from being told over the centuries.[[63]](#footnote-63) There is also an element of bias towards the protagonist in the story.[[64]](#footnote-64)

When discussing the connection that the Carolingian sword has with the Viking sword, there are two ways in which the weaponry link can be established. One link can be seen from the raids conducted by the Vikings on the Franks.[[65]](#footnote-65) This is due to the fact that weapons were often acquired as spoils.[[66]](#footnote-66) Such acquirement of weapons through plunder was seen as a symbol of power after slaying a powerful enemy.[[67]](#footnote-67)

However, Carolingian swords were also received through trade links with the Frankish kingdom.[[68]](#footnote-68) This occurred in the late eighth to the early ninth centuries.[[69]](#footnote-69) Therefore, merchants from Scandinavia were able to trade freely.[[70]](#footnote-70) It shows that the Vikings also imported their swords instead of being restricted to taking them after raids.[[71]](#footnote-71) One record from the monk of St Gall states that a group of Vikings appeared in the court of Louis the German.[[72]](#footnote-72) They intended to purchase swords that are said to be far superior than their own.[[73]](#footnote-73)

Many Carolingian swords have also been found in multiple bog deposits around Scandinavia.[[74]](#footnote-74) However, one famous deposit held a great number of Carolingian arms and armour.[[75]](#footnote-75) This was the Nydam bog in Denmark.[[76]](#footnote-76) Alongside four Viking ships, one hundred and six double edged swords were discovered as well as five hundred and fifty-two spears.[[77]](#footnote-77) Some of these sword blades were pattern welded designs.[[78]](#footnote-78) This demonstrates that the Vikings greatly valued Frankish swords enough to acquire them as spoils of war.[[79]](#footnote-79)

Overall, the Carolingian sword was also used by the Vikings due to the fact that they were highly valued by them.[[80]](#footnote-80) They would fall into Viking warriors’ hands via trade links from the emporia’s or they were taken as Spolia from defeated enemies on Viking raids.[[81]](#footnote-81)

Another influence from the Franks can be seen in some of the inscribed swords that the Viking warriors. The inscribed blades had the word Ulfberht running down the middle of the sword blade.[[82]](#footnote-82) The Ulfberht inscription on sword blades is stated to originate from the Frankish blacksmiths.[[83]](#footnote-83) The Ulfberht sword blades originate from the middle Rhine area.[[84]](#footnote-84) Blacksmiths of this region would inscribe their work with the word Ulfberht.[[85]](#footnote-85) The earliest example seems to be dated back to the year eight fifty AD.[[86]](#footnote-86) This also demonstrates the widespread exportation of Frankish weapons.[[87]](#footnote-87) This includes the Norsemen who as stated earlier often purchased swords from Frankish trading emporia.[[88]](#footnote-88)



Ulfberht swords [[89]](#footnote-89)

These Ulfberht inscribed swords have been discovered in multiple sites around Northern Europe where Vikings settled.[[90]](#footnote-90) This includes the Scandinavian nations as well where multiple Ulfberht examples have been found.[[91]](#footnote-91) One example resides in the Museum at Dublin after being discovered in a bog drainage ditch.[[92]](#footnote-92) The dimensions of the sword are similar to the earlier Carolingian swords.[[93]](#footnote-93) The length of the full sword measured up to ninety-two point eight centimetres long.[[94]](#footnote-94) The length of the inscribed blade measured seventy-nine centimetres.[[95]](#footnote-95) The sword dates back to the ninth century AD.[[96]](#footnote-96)

A smaller (length: 91.6cm; blade length: 76.2 cm) example of the Ulfberht sword, dated to the ninth century, was found in Finland; its inscription runs down the middle of the blade.[[97]](#footnote-97)

Another indication to the fact that the Frankish warriors influenced the Ulfberht swords used by the Viking warriors can be seen in the hilts.[[98]](#footnote-98) This is due to the fact that many swords discovered in the Viking world were found to have had Frankish hilts as well as Frankish blades as stated earlier.[[99]](#footnote-99) Therefore, as stated by the above examples, the Frankish warriors were an influencing factor in the development of swords used by the Scandinavian warriors.[[100]](#footnote-100)

Scholars theorise that the weapon behind the development of the Carolingian or Viking sword was the Roman Spatha sword. This was a small arm that became a lot more common in the Roman army.[[101]](#footnote-101) The Roman Spatha sword become more common during the third century AD.[[102]](#footnote-102) The spatha was long with a broad blade; archaeological examples are between 84cm (Pontoux) and 102cm (Rottweil) long.[[103]](#footnote-103) These discoveries show that the Spatha sword was typically a long bladed weapon with a broad blade which is the basic description of the Spatha sword.



Spatha sword [[104]](#footnote-104)

This weapon began as a sword of the auxiliary cavalry units. The Celts are the troops that brought this weapon while going on a campaign.[[105]](#footnote-105) Therefore, it can be stated that the Spatha’s main origins can be seen in the Gallic tribal warriors.[[106]](#footnote-106) This can be seen in the conquest of Gaul by Julius Caesar. This is due to the fact that Caesar recruited cavalry units that acted as auxiliaries from tribes that were allied to Rome.[[107]](#footnote-107) These allied tribes include the Aedui.[[108]](#footnote-108)

However, a change occurred in the standard equipment of the typical Roman soldier in the regular heavy infantry that made up the main battle line of a Roman army when on the battlefield.[[109]](#footnote-109)

The uses of this Spatha sword can be determined from the blade of this weapon as with the previous Carolingian sword. The longer blade of the Spatha was designed for slashing and hacking but had a rounded point to ensure the rider did not accidentally stab his own horse.[[110]](#footnote-110) This change occurred in the late second century AD.[[111]](#footnote-111) It became the standard small arm of the Roman infantry.[[112]](#footnote-112) Since this weapon originated from the Gallic auxiliary cavalry, one example of its use can possibly be seen in the battle of Idistaviso. This is due to the fact that the use of the Spatha sword is not mentioned in the ancient sources directly. However, they do state the actions of the cavalry troops that are known to have used the Spatha sword. Tacitus states such actions when describing the cavalry manoeuvres at the battle of Idistaviso. The passage from Tacitus is as follows:

Caesar, as soon as he saw the Cheruscan bands which in their impetuous spirit had rushed to the attack, ordered the finest of his cavalry to charge them in the flank, Stertinius with the other squadrons to make a detour and fall on their rear, promising himself to come up in good time.[[113]](#footnote-113)

The cavalry action continues below in a second passage:

At the same moment, the infantry charged, and the cavalry which had been sent on in advance dashed on the rear and the flanks.[[114]](#footnote-114)

As stated earlier, the early Spatha sword was the weapon used by Gallic auxiliary cavalry in the Roman army.[[115]](#footnote-115) Therefore, as seen in this battle during Germanicus’ campaign, it could be shown that the Spatha sword was used by the cavalry when attacking the enemy in aggressive flanking manoeuvres.[[116]](#footnote-116) This could be due to its ability to attack enemies on foot with its long reach in order to hack them down.[[117]](#footnote-117)

There are two examples from archaeological excavations that display the use of the Spatha sword in the Roman military. A Spatha blade was discovered at the Roman fort of Newstead or Trimontium which is located on the border of Scotland.[[118]](#footnote-118) Also, in the fort, an inscription was discovered upon an altar stone which mentions ‘Aelius Marcius, Decurion of the Vocontian wing’.[[119]](#footnote-119) The rank of Decurion commanded a Turma, a unit of cavalry that usually consisted of thirty-two men.[[120]](#footnote-120) This shows that in the early years of the Imperial period of Rome, the Roman Spatha was predominantly a cavalry weapon due to its long reach for cutting down retreating enemies easier.[[121]](#footnote-121)



Spatha blade [[122]](#footnote-122)

One of the reasons for this sword’s connection to the Saxon and Viking swords is its placement on the left hip.[[123]](#footnote-123) Archaeological evidence of this can be found from sites in Dorchester where a certain warrior’s belt was discovered worn by both Germanic and Roman soldiers.[[124]](#footnote-124) The belt supports another belt made for the shoulder as the rings at the top left show.[[125]](#footnote-125) This shows that Roman soldiers, as well as the Germanic warriors, wore their swords on their left hip.[[126]](#footnote-126)

However, it is also possible that the sword was slung from a secondary belt that was attached to the main belt via the ring on the right side of the main belt which would also hang it down from the left hip.[[127]](#footnote-127) The Vikings and Saxons also wore their swords on the left hip.[[128]](#footnote-128) This would be suspended by a baldric.[[129]](#footnote-129) This shows yet another influence the late Roman army had on the Germanic warrior's equipment. This is due to the fact that this belt was discovered on a late Roman army military site often used by Germanic auxiliary troops.[[130]](#footnote-130) This demonstrates the long-standing influence that the Roman army had on the military practices of the Germanic and Norse people.

Archaeological evidence suggests that this sword did have an effect on the weapons of the Germanic warriors. Many of these types of swords have been found in Scandinavian peat bogs which demonstrates the widespread import of the Spatha sword from the Roman world.[[131]](#footnote-131) This was due to the influx of large numbers of Germans that would join the Roman army.[[132]](#footnote-132)

This ancient connection between these two people is also demonstrated by another archaeological discovery from Denmark.[[133]](#footnote-133) The site was a lake near modern-day Illerup in Jutland.[[134]](#footnote-134) The discoveries were ritually destroyed weapons originating from an army that had been returning to west Norway through Denmark during the two hundred AD.[[135]](#footnote-135) There were weapons in the lake that belonged to seven hundred and fifty soldiers as well as one hundred soldiers from middle ranks then 12 officers.[[136]](#footnote-136) The army is theorised to have been a Roman auxiliary army returning to their homeland in Norway after service with the Roman army on campaign.[[137]](#footnote-137) This is due to the fact that they were well equipped with Roman weaponry and their purses were full of Roman Denarii.[[138]](#footnote-138)

The presence of Roman Denarii in their purses indicates that they were a well-paid force of auxiliaries.[[139]](#footnote-139) Estimations around the losses incurred from this battle on the Norwegians indicate that the Norwegians may have lost half their men.[[140]](#footnote-140) Therefore, the number of weapons discovered could mean that the Norwegian force could have numbered one thousand seven hundred troops.[[141]](#footnote-141) This is the size of a Roman auxiliary force.[[142]](#footnote-142) Historians determine they were returning to Norway after serving alongside the Roman military as an auxiliary force.[[143]](#footnote-143) This also established the fact that Norway clearly had connections with the Roman military and often exchanged weapons and equipment including armour for their service.[[144]](#footnote-144)

To conclude, the development of the Viking sword also known as the Carolingian sword came from the Roman Spatha evolution over time. In comparison, each sword has certain similarities. Their measurements of the overall weapon are similar despite small gaps in their exact measurements. Different discovered Spatha swords were discovered to measure between eighty to one hundred centimetres long overall.[[145]](#footnote-145) The Carolingian or Viking swords have similar measurements as seen in the example from Paris.[[146]](#footnote-146) This includes the example of a Viking or Carolingian sword from the river Witham as stated earlier.[[147]](#footnote-147) Also, each sword had similar uses and effects on the battlefield as hacking and slashing weapons.[[148]](#footnote-148) This was stated earlier with the passage of the battle of Bravellir for the Viking sword.[[149]](#footnote-149)

The evolution came from the change in forging methods when the Roman method of Piling was discarded in the fourth century AD.[[150]](#footnote-150) They changed their method of forging blades to Pattern welding which is how the Viking or Carolingian sword blades were forged.[[151]](#footnote-151) This style of forging became the symbol of prestige among Germanic and Scandinavian warriors in the later fifth to seventh centuries AD onwards.[[152]](#footnote-152) Overall, this is how the Spatha sword developed through the centuries to become the Carolingian or Viking sword through changing forge methods and dimensions.

**Chapter 4 – Javelins**

This next chapter be an analysis to establish a connection between the Angon javelin and its possible predecessor, the Pilum.

The next Anglo-Saxon weapon under analysis is the Angon javelin. Scholars theorise that the Angon was an development from the Roman Pilum javelin.[[153]](#footnote-153) It came to be the standard javelin weapon used during the Viking age with the purpose of thinning out enemy ranks.[[154]](#footnote-154) The Angon javelin was an adaption of the Pilum used by the Germanic tribes in the later periods of the Roman Empire as well as the future Anglo-Saxons.[[155]](#footnote-155) However, among the first warriors to have used this javelin in battle were the Frankish warriors during the late Roman Empire as well as the period following Rome’s fall during which they carved out their own empire in Western Europe.[[156]](#footnote-156)

From archaeological excavations, it is easier to establish a description on what the Angon javelin would have looked like. One example comes from Abingdon.[[157]](#footnote-157) The head measured up to fifty-two point five centimetres in length.[[158]](#footnote-158) This discovered javelin head also had barbs behind the point stretching backwards.[[159]](#footnote-159) From this example, it can be determined that the Angon javelin had a similar long slender shank.[[160]](#footnote-160) However, one of the main differences can be seen in the length of the weapon. Some Pilum heads measured a metre in length as described by Polybius.[[161]](#footnote-161) This is corroborated by a discovered Pilum head from the site at Numance which measured ninety-five centimetres long.[[162]](#footnote-162) However, the Angon javelin heads discovered have been discovered to measure up to only fifty-two centimetres.[[163]](#footnote-163) This is from the barbed point to the wooden socket.[[164]](#footnote-164)



Frankish Angon javelin [[165]](#footnote-165)

Therefore, from these archaeological excavations, it has been determined that the design and characteristics of the Angon were similar to the Pilum. This is due to the fact that the Angon was a long slender iron head as the Pilum was with a wooden socket shaft attached below it.[[166]](#footnote-166) However, one difference is the fact that the head of the Angon had barbs in order to remain stuck in its target.[[167]](#footnote-167) This makes removing the javelin more difficult for the enemy combatant which renders him vulnerable in close quarter combat.[[168]](#footnote-168) The paragraph below will determine the use of the Angon javelin on the battlefield.

The only method of establishing the use of the Angon javelin on the battlefield is by analysing sources from the period. One essential source on Frankish weapons and warfare is Agathias.[[169]](#footnote-169) The reason that this historian is important to this section of the investigation is that he offers valuable information on the Frankish way of fighting.[[170]](#footnote-170) This is because it will display that the warriors who contributed these influences used these weapons for similar purposes. The similarities will be seen between certain sources from each period concerning certain battles. This includes battles from the Frankish period such as the battle of Casilinum between the Byzantine Empire and the Franks.[[171]](#footnote-171) Therefore, Agathias will be an important source on the use of the Angon by the Franks.

Another important detail to be considered in this investigation comes from Procopius.[[172]](#footnote-172) This is due to the fact that his account can offer different accounts on the method in which the Germanic warriors of the period approached warfare.[[173]](#footnote-173) Germanic warriors of the western kingdoms were often known, but only on certain occasions, to fight as horsemen.[[174]](#footnote-174) This is an important detail as it is corroborated by Procopius.[[175]](#footnote-175) The fact that Frankish warriors may have fought on horseback at times is seen with iconographical evidence.[[176]](#footnote-176) This is seen from a relief sculpture from the site of Hornhausen.[[177]](#footnote-177) The relief depicts a Frankish warrior on horseback carrying a spear as well as a round shield and sword.[[178]](#footnote-178) The importance of this detail can be found in the similarities of the Anglo-Saxons and Viking warriors.

Both fought mainly on foot as infantry and rarely as a cavalry force.[[179]](#footnote-179) It can be seen from the Viking raid into Frankia at the River Geule in 891.[[180]](#footnote-180) However, these horseman were scouts.[[181]](#footnote-181) These scouts nonetheless were instrumental in luring the Frankish force straight into the Viking infantry who promptly slaughtered them.[[182]](#footnote-182)

Agathias is one of the main sources on the Angon javelin, including Frankish weapons. There are two passages from Agathias that describe the design and function of the weapon.[[183]](#footnote-183) This will help determine the link between the Pilum and Angon in design and effect on the battlefield. Agathias also describes Frankish weapons and the design and purpose of the Angon javelin.[[184]](#footnote-184) The specific passage from Agathias is as follows:

They have neither bows nor slings, no missile weapon except the double-edged axe and the Angon which they use most often. The Angons are spears which are neither very short nor very long. They can be used, if necessary, for throwing like a javelin and also in hand to hand combat, the greater part of the Angon is covered with iron and very little wood is exposed. Above, at the socket of the spear, some points are turned back, bent like hooks and turned towards the handle.[[185]](#footnote-185)

The second passage describing the capabilities of the Angon is as follows:

In battle, the Frank throws the Angon. If it hits an enemy the spear is caught in the man and neither can the wounded man nor anyone else draw it out. The bards hold inside the flesh causing great pain and in this way a man whose wound may not be in a vital spot dies. If the Angon hits a shield it is fixed there, hanging down with the butt on the ground. The Angon cannot be pulled out because the bards have penetrated the shield. Nor can it be cut off by a sword because the wood of the shaft is covered with iron. When the Frank sees this situation, he quickly puts his foot on the butt of the spear, pulling down so his enemy falls, his head and chest left unprotected. The unprotected warrior is then killed either by a stroke of the axe or a thrust with another spear.[[186]](#footnote-186)

This passage clearly demonstrates that the Angon javelin had some similarities to the Pilum. They can be seen in the design of the long thin iron head with its back covered by the wooden shaft.[[187]](#footnote-187) Another similarity can be seen in the capabilities of the Angon with the barbs lodging the javelin in an enemy shield or body.[[188]](#footnote-188) This renders it useless to the enemy who is unable to throw it back.[[189]](#footnote-189) Therefore, this would make the enemy more vulnerable to a strike from an enemy spear as stated by Agathias.[[190]](#footnote-190)

One of the main issues surrounding Agathias is his attempts to relegate the Franks to nothing more than naked barbarians who wore no armour.[[191]](#footnote-191) This can be seen as a continuation of Tacitus style of generic writing.[[192]](#footnote-192) This is seen in how both describe the Germanic warriors’ armaments and armour as primitive and inferior.[[193]](#footnote-193) However, this is highly unlikely in the case of the Franks as their conquest of Gaul gained them access to former Roman armouries.[[194]](#footnote-194) This includes skilled Gallo-Roman craftsmen.[[195]](#footnote-195)

Agathias is reliable as a source on the weapons and fighting methods of the Franks.[[196]](#footnote-196) His description of how the Franks fought with throwing axes and javelins is corroborated with archaeological evidence.[[197]](#footnote-197) This can be seen in the Saint Dizier excavation in which Frankish warrior graves were discovered with multiple weapons including Axes, Seaxes as well as Lances and Angons.[[198]](#footnote-198)

Overall, Agathias description of the design and capabilities of the Angon javelin demonstrate the similarities to the Roman Pilum. This presents more feasibility to the Angon being a possible adaptation by the later Germanic tribes.

There is one archaeological excavation which holds great importance to this section of the investigation. The discovered site is known as the Sutton Hoo burial. Its importance can be seen in the weapons discovered. It shows there was a clear influence among the Germanic tribes in terms of their weapons. Multiple spears were on the body’s right.[[199]](#footnote-199) Among these spears were three barbed Angon javelins.[[200]](#footnote-200) This demonstrates that the Franks clearly had an influence on the weapons of the Anglo-Saxons. The influence can be seen in the time gap between Agathias source on the battle of Casilinum and King Raedwalds death. King Raedwald of the East Anglian kingdom died in the year six twenty-five[[201]](#footnote-201) However, the battle of Casilinum occurred in the previous century in the year five hundred fifty-four AD.[[202]](#footnote-202)

This is similar to another excavated set of warrior burials connected to the Frankish warriors. The burials are from the middle of the sixth century AD.[[203]](#footnote-203) This date is close to the battle of Casilinum as mentioned above.[[204]](#footnote-204) The burials were discovered in Saint-Dizier in the district of La Tuilerie in the ruins of an early medieval site.[[205]](#footnote-205) There were three male graves discovered bearing weapons.[[206]](#footnote-206) The weapons found buried in these graves included axes, shields as well as arrowheads, Seaxes, Lances and Angons.[[207]](#footnote-207)

These weapons demonstrate the fact that these men were warriors of a high rank in Frankish society.[[208]](#footnote-208) Among these weapons discovered at this site were two swords which shows that they were high-status warriors.[[209]](#footnote-209) King Raedwald died in the year six twenty-four AD which dates the century after the Frankish burials.[[210]](#footnote-210) Therefore, these burials show that the Anglo-Saxons high-class warriors also used the Angon. The Saxons first came to Britain in the Fifth century AD.[[211]](#footnote-211) This means that the widespread Germanic tribes used the Angon javelin and this use was taken to Britain. Overall, this shows that the Franks influenced the Anglo-Saxons to use the Angon javelin as their missile weapon as seen in these different excavations discovered from multiple periods of time.

The weapon that influenced the Angon javelin was the Pilum javelin. This was the main missile weapon used by the regular heavy infantry in the Roman legions.[[212]](#footnote-212) The Pilum seems to be unique to the arsenal of the Roman army.[[213]](#footnote-213) This is due to the fact that this weapon may actually have its origins in Italy when compared to other weapons.[[214]](#footnote-214) This is because the Romans often adapted their weapons and armour from conquered enemies.[[215]](#footnote-215) One example is the Gladius sword adapted from the Spanish tribes.[[216]](#footnote-216) The Pilum javelin is important to this investigation as it is the main influence behind the development of another javelin.[[217]](#footnote-217) However, this will be explained later in the investigation after the history and design of the Pilum has been assessed.

The Pilum javelin may have its origins in a much earlier period of Italy’s history as seen in archaeological discoveries.[[218]](#footnote-218) Missile heads were found in fifteen tombs related to the Pilum.[[219]](#footnote-219) These were discovered in Ostoria dell’Osa in the city of Rome itself.[[220]](#footnote-220) All of these archaeological discoveries from the fifteen tombs have been dated back to the ninth and eighth century’s BC.[[221]](#footnote-221) One contemporary source on the Pilum javelin dates back to the middle of the second century BC.[[222]](#footnote-222) This source was written by Polybius who describes two types of javelin heads as well as their lengths and designs.[[223]](#footnote-223) Each spearhead is over one metres long with heads as long as the shaft.[[224]](#footnote-224) However, one head is described to have half its length buried in the wooden shaft.[[225]](#footnote-225)



Pilum Javelin head and Rivets [[226]](#footnote-226)

From contemporary sources as well as archaeological discoveries, a description of the Pilum can be established as well as its effect on the battlefield. Polybius describes the head as being riveted in place.[[227]](#footnote-227) Keppie states that in order to ensure that the Pilum could not be thrown back or dislodged, a new design feature was implemented.[[228]](#footnote-228) The new design ensured that the javelin would snap when it slammed into an enemy shield.[[229]](#footnote-229) General Gaius Marius introduced this feature, Marius added feature was to replace the two rivets with a wooden peg.[[230]](#footnote-230) This new addition made the javelin snap and disable the enemy shield.[[231]](#footnote-231) This made the opponent more vulnerable.[[232]](#footnote-232)

Certain archaeological discoveries can corroborate these ancient sources on the description of the Pilum javelins design and appearance. For example, an archaeological excavation at the site of Entremont discovered a socketed Pilum point which dated from one twenty-three BC.[[233]](#footnote-233) However, over time the length of the Pilum head seems to have periodically increased.[[234]](#footnote-234) One discovered Pilum also from Entremont measures up to seventy right centimetres.[[235]](#footnote-235) Another Pilum head which was discovered at the site of Numance measured up to ninety-five centimetres long.[[236]](#footnote-236) Other examples from archaeologically excavated sites at Alesia and Saone were found to measure over a metre in length.[[237]](#footnote-237)

When discussing the uses of the Pilum javelin, the design is a major indication of its capabilities. The Pilum javelin was used in massed volleys against enemy formations.[[238]](#footnote-238) The thin head ensured that when it punched through an enemy’s shield, it would bend.[[239]](#footnote-239) This would render the shield useless and the enemy vulnerable.[[240]](#footnote-240)

This can be seen in the battle of Bibracte.[[241]](#footnote-241) The description demonstrates the effect of a volley of Pilum javelins on their enemies.[[242]](#footnote-242) This event occurs in book one of Caesar’s Commentarii de Bello Gallico.[[243]](#footnote-243) The passage describing the effect of the Pilum javelin when used in mass volleys is as follows:

His soldiers hurling their javelins from the higher ground, easily broke the enemy’s phalanx. That being dispersed, they made a charge on them with drawn swords. It was a great hinderance to the Gauls in fighting, that, when several of their bucklers had been by one stroke of the javelins pierced through and pinned fast together, as the point of the iron had bent itself, they could neither pluck it out, nor, with their left hand entangled, fight with sufficient ease; so that many, after having long tossed their arm about, chose rather to cast away the Buckler from their hand, and to fight with their person unprotected.[[244]](#footnote-244)

This passage from Gaius Julius Caesar’s Commentarii de Bello Gallico illustrates the function and effect of the Pilum javelin as seen in its design. The volley as described by Gaius Julius Caesar clearly states of the effect that the weapon has on enemy formations.[[245]](#footnote-245) Gaius Marius introduction of the wooden peg into the head of the javelin clearly had a great effect on the battlefields of future Roman generals.[[246]](#footnote-246) The effect can be seen in the multiple functions of the Pilum javelin in which they can kill the enemy but also make the enemy a lot more vulnerable to Roman swords by disabling their shield.[[247]](#footnote-247) This occurs when the Pilum smashes through their shield rendering it useless with the javelin piercing through the wood as well as snapping to prevent it from being thrown back at the Roman line.[[248]](#footnote-248)

The only issue in using a passage from Caesar’s Gallic Wars is his reliability as a source. This is due to the fact that Caesar is known to possibly exaggerate certain moments in his Commentarii.[[249]](#footnote-249) They often exaggerate in Caesar’s favour in order to portray him as a flawless commander in battle.[[250]](#footnote-250) Therefore, the Commentarii could have the purpose of enhancing Caesars reputation rather than non-bias documentation of historical moments.[[251]](#footnote-251) However, it remains an important source for demonstrating the effects of Roman weaponry on the battlefield.

Despite the fact that the Pilum was made as a missile weapon, there are accounts describing it being used for hand to hand combat. The most notable example was in the battle of Pharsalus.[[252]](#footnote-252) This occurred during the cavalry engagement which happened on the right flank of Gaius Julius Caesar’s legions.[[253]](#footnote-253) Caesar gave a reserve fourth line of infantry the order to use their Pila as if they were thrusting spears.[[254]](#footnote-254) This routed Pompey’s cavalry from the field and enabled Gaius Julius Caesar to outflank Pompey Magnus’ left flank.[[255]](#footnote-255) Therefore, from these archaeological excavations and ancient battle accounts the uses of the Pilum javelin have been established as well as their design and characteristics.

However, it has been determined that archaeological excavations can possibly enable the analysis of the Pilum javelin from the Republican period of Roman history a lot more correctly rather than relying solely on the ancient literature sources.[[256]](#footnote-256) Other archaeological discoveries of the Republican period Pilum show different design features to the ancient texts.[[257]](#footnote-257) The design differences include dimensions and attachment of the head.[[258]](#footnote-258) For example, one model from the second century BC had a short head.[[259]](#footnote-259) The head was fastened to a trapezoid shaped plate with two rivets and the head attached to a triangular segment with two wings.[[260]](#footnote-260) The conclusion to this section will indicate the comparisons between the Angon and Pilum to determine their connection through developments.

The following paragraph will demonstrate the connection that the Roman Pilum javelin has on the weapons of Anglo-Saxon and Viking warriors. It was the main influence for the development of the Angon javelin.[[261]](#footnote-261) During the Viking age, armies of Anglo-Saxons, as well as Vikings, would often begin their battles by launching missile weapons.[[262]](#footnote-262) This was what the Angon javelin was used for in order to thin out enemy ranks.[[263]](#footnote-263) This was a throwing spear developed from the Pilum javelin.[[264]](#footnote-264) The purpose of the Angon javelin was solely as a missile weapon.[[265]](#footnote-265) One notable similarity is that it was able to perform the same functions.[[266]](#footnote-266) The previous passages describe the Pilum disabling enemy shields.[[267]](#footnote-267) Despite the similarity that the Angon has to the predecessor javelin or Pilum, there are also distinguishing differences.

More differences with the Angon javelin are seen in the design of the javelin head itself. This is due to the fact that there are barbs on the head of the javelin.[[268]](#footnote-268) Also, the head could measure up to fifty-two centimetres long.[[269]](#footnote-269) This was seen with a barbed Angon example discovered at Abingdon.[[270]](#footnote-270) These measurements were only half a metre in length.[[271]](#footnote-271) Barbs on the head of the javelin will lodge in an enemy’s shield to ensure that it cannot be removed.[[272]](#footnote-272) This is an important similarity when discussing the Angons connection to the Pilum javelin due to the fact that it has the same effect when thrown upon enemy formations.[[273]](#footnote-273)

Therefore, by rendering the shield useless, the enemy is now completely vulnerable.[[274]](#footnote-274) Also, the iron shank of the javelin will make it impossible for the head to be cut from the shaft.[[275]](#footnote-275) Another similarity can be seen in the design of the Angon javelin head. The similarity is that the javelin head is a long slender iron shank.[[276]](#footnote-276) This is similar to the pilum in design because it is fixed to a socket.[[277]](#footnote-277) The Angon javelin was also used by Germanic tribes predating the Viking age who would come to influence the Norse and Anglo-Saxon weapons with this javelin.[[278]](#footnote-278)

In conclusion from this analysis, it can be determined that there is a connection in the Roman Pilum javelin and the development of the Angon javelin.[[279]](#footnote-279) This can be seen in the similarities of design and function as well as their effects. The Pilum was a thin iron head attached to a wooden shaft.[[280]](#footnote-280) The design of the Pilum was corroborated by Polybius as he stated that the iron javelin head is fixed into the shaft.[[281]](#footnote-281) This includes the Angon javelin whom as stated by Agathias has a shaft below the barbed head.[[282]](#footnote-282)



Evolution from Pilum to Angon [[283]](#footnote-283)

Their functions on the battlefield remain the same as well in terms of their use. The Angon would be thrown before close combat.[[284]](#footnote-284) When thrown the Angon would punch through the enemy shield and disable it.[[285]](#footnote-285) This would ensure that the enemy would lose as many shields as possible so that they were more vulnerable to close combat weapon such as axes or spears as stated by Agathias.[[286]](#footnote-286)

This is the same for the Pilum javelin as stated earlier in this section. Roman legionaries would throw the Pilum in a volley in order to weaken the enemy line.[[287]](#footnote-287) The wooden peg however as added by Gaius Marius ensured that the Pilum would bend in the enemy shield.[[288]](#footnote-288) This would make sure that the enemy shield was not only disabled but could not be thrown back.[[289]](#footnote-289) This was seen in the battle of Bibracte from Caesars Gallic wars when the Helvetii charge was blunted in opening stage of the battle.[[290]](#footnote-290) The volleys effect allowed the Romans to charge with swords and push the Helvetii back.[[291]](#footnote-291)

One difference can be noted in the design of the Angon javelin compared to the Pilum javelin. This is due to the method in which each iron head was fixed to the wooden shaft. The Pilum head was fixed by riveting the head to the wooden shaft.[[292]](#footnote-292) Another method includes using a trapezoid shaped plate on the wooden shaft with two wings.[[293]](#footnote-293) However, the Angon javelin head was fastened into a socket in the top of the wooden shaft.[[294]](#footnote-294)

Other differences include the difference of length between each javelins thin iron head. Two archaeological examples from an earlier paragraph state this difference. One Angon javelin head from Abingdon measured fifty-two point five centimetres long.[[295]](#footnote-295) However, a Pilum javelin head discovered from Numance was ninety-two centimetres in length.[[296]](#footnote-296) Therefore, the Pilum javelin head was longer. A third difference can be seen in the Angon javelin head as barbs can be seen on the top of the head from the point.[[297]](#footnote-297) These barbs were the part that ensured the Angon javelin could not be pulled from a shield or wound.[[298]](#footnote-298) This was another difference as a wooden peg ensured the Pilum javelin would bend upon impact.[[299]](#footnote-299)

**Chapter 5 – Axes**

One other missile weapon used is the Francisca throwing axe named after the Frankish warriors.[[300]](#footnote-300) However, archaeology suggests that the Saxons also used them.[[301]](#footnote-301) The connection from the Frankish throwing axe to the weapons of the Anglo-Saxons can be seen in archaeological excavations.[[302]](#footnote-302) This is due to the fact that multiple examples have been found in Anglo-Saxon warrior burial sites.[[303]](#footnote-303)

One example comes from an excavated site at Burgh Castle in Norfolk.[[304]](#footnote-304) The axe is similar in design to the Francisca as the top of the head curves outwards.[[305]](#footnote-305) This was one of two axe heads discovered at Burgh Castle in Norfolk.[[306]](#footnote-306) Another example comes from Morning Thorpe in Norfolk.[[307]](#footnote-307) The design is also the same as the Francisca throwing axe.[[308]](#footnote-308) This can be seen in the top surface of the axe head as it also has an S shape.[[309]](#footnote-309) These examples demonstrate that the Francisca throwing axe did spread to the Anglo-Saxons.[[310]](#footnote-310) Therefore, these could mean that the Frankish warriors did impact Anglo-Saxon weapons. This is due to the fact that even though the throwing axe is named after the Frankish warriors, examples have still been found in warrior burials related to the Anglo-Saxons.[[311]](#footnote-311)

Another connection can be seen in the Anglo-Saxon and Viking use of missiles before engaging in close combat. As stated by Mike Loades, the Francisca was often used by both Anglo-Saxon and Vikings.[[312]](#footnote-312) They would begin the battle by launching missiles such as arrows and javelins at the enemy.[[313]](#footnote-313) When the two armies would begin to close after this exchange, the warriors would launch their Francisca throwing axes at the enemy shield wall.[[314]](#footnote-314) Then the warriors would equip their spears or swords and charge into combat after softening the enemy line with missiles.[[315]](#footnote-315) Therefore, as stated by Mike Loades, the Francisca became one of the main missile weapons of the Vikings and Anglo-Saxon warriors.[[316]](#footnote-316)

The Francisca originated from the Frankish warriors.[[317]](#footnote-317) They would be exchanged before close combat was engaged between the opposing armies as stated by Procopius.[[318]](#footnote-318) The reason for the importance of this throwing axe to the investigation is their widespread use by multiple Germanic tribes.[[319]](#footnote-319) The Francisca throwing axe has also been discovered in England.[[320]](#footnote-320) The Francisca was named after the Franks.[[321]](#footnote-321) The Francisca axe may have links to the Late Roman army in Northern Gaul in which a previous prototype may have been used.[[322]](#footnote-322)

It is from archaeological excavations which establish a clear description on what the Francisca throwing axe looked like. Many of these come from Frankish warrior graves from the fifth century AD.[[323]](#footnote-323) It was a typical hand axe with a wooden handle while the top edge of the Francisca has a shape of an S facing upwards.[[324]](#footnote-324) One example comes from the archaeological excavation at Saint-Dizier.[[325]](#footnote-325) Among the male burials discovered at this site, was an iron head remnant of an axe.[[326]](#footnote-326) The design with the reversed S means this discovered head was the head of a Francisca axe.[[327]](#footnote-327) Therefore, from archaeological discoveries, a description of the appearance of the weapon has been established. As explained above, the main characteristic of this throwing axe was the S facing upwards.[[328]](#footnote-328)



Francisca axe head [[329]](#footnote-329)

In order to establish the use of the Francisca throwing axe as well as its effects, contemporary sources will be the most important area of study rather than battle accounts. The most important source for determining the use of the Francisca throwing axe is the Roman scholar Procopius.[[330]](#footnote-330) His works come from the Sixth century.[[331]](#footnote-331) The following information is a passage on how the Francisca throwing axe was used as well as its effects on the enemies frontline.[[332]](#footnote-332) The passage follows below:

Each man carried a sword and shield and an axe. Now the iron head of this weapon was thick and exceedingly sharp on both sides while the wooden handle was very short. And they are accustomed always to throw these axes at one signal in the first charge and thus shatter the shields of the enemy and kill the men.[[333]](#footnote-333)

This passage from Procopius determines that the Francisca was used to soften the enemy line before the first charge crashed into their battle line.[[334]](#footnote-334) They would throw multiple Francisca’s in a volley in which some would destroy the shields of the enemy as well as kill some.[[335]](#footnote-335)

Therefore, from this passage from Procopius, the use of the Francisca throwing axe has been established as a shock missile weapon.[[336]](#footnote-336) This was done in order to weaken the enemy front line.[[337]](#footnote-337) Hand to hand combat would engage after this volley was launched after the destruction of enemy shields.[[338]](#footnote-338) This includes the disorientation of the enemy’s front ranks.[[339]](#footnote-339) The first volley also had a psychological purpose in which the enemy would turn and run rather than face a possible second volley.[[340]](#footnote-340)

One issue surrounding the reliability of Procopius accuracy on Frankish weapons is that archaeology proves one of his statements wrong.[[341]](#footnote-341) This concerns his stance on Frankish use of spears.[[342]](#footnote-342) This is due to the fact that in some Frankish warrior graves, conventional spearheads have been discovered.[[343]](#footnote-343) These also corroborate Agathias source in which he states that Franks would finish off enemies with a spear thrust.[[344]](#footnote-344) Therefore, his source can be seen as contradictory when compared with archaeological discoveries and other sources on Frankish weaponry.[[345]](#footnote-345)

Procopius is similar to Agathias as both state information on Frankish fighting styles and weapons corroborated by archaeology as stated earlier.[[346]](#footnote-346) The following section will evaluate the connection of the Francisca to the Anglo-Saxons.

In conclusion, the Frankish warriors do seem to have influenced the Anglo-Saxon warriors and Viking warriors with the Francisca throwing axe. The connection is mostly established between archaeological discoveries from multiple sites. The main site from France is Saint Dizier where some Frankish burials were discovered with some weapons.[[347]](#footnote-347) One of the burials was discovered with the remnant of an iron axe with the reverse S shape on the top of the head.[[348]](#footnote-348) This discovered axe has the same description as three other axe heads discovered in England.[[349]](#footnote-349) Two similar axe heads were discovered at Burgh castle in Norfolk, both with the same design as the Francisca throwing axe.[[350]](#footnote-350) This includes another Francisca axe head discovered at Morning Thorpe in Norfolk.[[351]](#footnote-351)

Therefore, these widespread discoveries demonstrate that the Frankish throwing axe was also used by the Anglo-Saxon warriors. This also includes the Viking warriors as stated by Mike Loades in an earlier paragraph on use of the Francisca in battle.[[352]](#footnote-352)

**Chapter 6 – Spears**

The following chapter will discuss the main spear that was an influential weapon on the Anglo-Saxon and Viking warriors. This is known as the winged spear.[[353]](#footnote-353) However, the winged spear is mainly restricted to archaeological and literature fields of study. This is due to the fact that the main sources in relation to the winged spear used by the Vikings are seen in archaeological discoveries.[[354]](#footnote-354) This includes certain passages from the Viking sagas.

In order to establish the description of the winged spears appearance, archaeological discoveries are one of the main methods in which its features can be determined. This can be demonstrated by archaeological examples discovered at sites in England.[[355]](#footnote-355) One example is a complete preserved spearhead which comes from an excavation in the city of York.[[356]](#footnote-356) This example York had a broad blade with two wings.[[357]](#footnote-357) Another similar ‘lugged’ spear head design can be seen from Nottingham.[[358]](#footnote-358) Therefore, a description can be established by these two examples. They were broad blade spears with two-winged protruding from the side.[[359]](#footnote-359)



Winged Spearheads [[360]](#footnote-360)

When it comes to determining the uses of the winged spear head, archaeological journals on discovered specimens as well as certain passages from the sagas are essential. One article determines that the spear was mostly used as a hunting weapon.[[361]](#footnote-361) This is due to the fact that the wings prevent the spear from penetrating too deep.[[362]](#footnote-362) The hunting capabilities can be seen in the design of the spear as the wings are located behind the blade.[[363]](#footnote-363) Therefore, ensuring that the spear does not get stuck inside the intended target animal.[[364]](#footnote-364)

However, certain sources point towards this spear head being used as a combat weapon. Such sources include passages from the old Nordic sagas as well as the Anglo-Saxon poems. Both demonstrate that spears were often the most common weapon on the battlefield for the Viking and Anglo-Saxon warriors.[[365]](#footnote-365) They were used when close combat ensued.[[366]](#footnote-366) One passage from the Battle of Maldon poem demonstrates this with an encounter between Byrhtnoth and three Viking warriors.[[367]](#footnote-367) The passage is as follows below:

The warrior was angered; with spear he struck the arrogant Viking who dealt him the wound. The soldier was skilful; he let his lance pass through the man’s throat, his hand guiding it, so reached the life of his sudden foe. Speedily then a second, he struck so the byrny burst: in the breast he was wounded through the locked rings; in his heart stood the poisonous point.[[368]](#footnote-368)

The passage continues below detailing a change in weaponry:

Then a warrior went armed towards the earl; he was minded to seize the man’s precious gems, raiment and rings, and well-wrought sword. Then Byrhtnoth from sheath drew brand, broad and brown edged, byrny smote.[[369]](#footnote-369)

This demonstrates that the spear was the main weapon during the close combat stage of a Viking or Saxon battle.[[370]](#footnote-370) Byrhtnoth drawing his sword in order to take on the third Viking shows that the sword was considered a secondary weapon.[[371]](#footnote-371)

However, the main issue with the battle of Maldon poem is how the details it portrays cannot be verified by other sources.[[372]](#footnote-372) Therefore, the poem can be mostly considered as a work of literature rather than a historical source.[[373]](#footnote-373) The only advantage to using this poem is that an account of the battle event by event can be built.[[374]](#footnote-374) This includes troop dispositions as well as graphic depictions on how each armies fought.[[375]](#footnote-375)

One specific passage comes from the old Norse saga known as the Grettis saga. The passage details a violent encounter between Grettir and several armed opponents while he uses a winged spear.[[376]](#footnote-376) It clearly states the capabilities of the winged spear head in combat. The passage is as follows below:

Now bears-gang seized them, and they howled like dogs. In that very nick of time, Grettir came up and with both hands thrust his spear at the midst of Thorir, as he was about to get down the steps, so that it went through him all at once. Now the spear head was both long and broad, and Ogmund the evil ran onto Thorir and pushed him onto Grettirs thrust, so that all went up to the barb ends.[[377]](#footnote-377)

This passage from the Grettir saga demonstrates the winged spear head in combat. As seen in this passage, it enabled the spear to inflict a deadly thrust while the wings ensured it did not become stuck.[[378]](#footnote-378)

While the Grettir Saga describes the effect of the winged spear in combat, it has the same problems as other sagas do. They are more likely to be bias towards the protagonist of the story.[[379]](#footnote-379) Despite the fact that the sagas were written by Scandinavians, they were written hundreds of years after the events took place.[[380]](#footnote-380) There is also the issue of the stories possibly being embellished over time when being retold by many Skalds.[[381]](#footnote-381) Therefore, they become less accurate and objective over time.[[382]](#footnote-382)

However, the wings of the spear head could also have other capabilities.[[383]](#footnote-383) This has been determined by experimental archaeology with replicas.[[384]](#footnote-384) One use of the wings can be to trap an opponent’s weapon.[[385]](#footnote-385) Another important use can be to use the wings to pull an enemies shield away.[[386]](#footnote-386) These would make them vulnerable in their shield wall.[[387]](#footnote-387) Therefore, the winged spear had the ability to pull enemy shields.[[388]](#footnote-388) This includes ensuring that the spear head does not get stuck.[[389]](#footnote-389) The following paragraph will demonstrate how the winged spearhead is connected to the Viking warriors.

The connection of the winged spear to the Viking warriors can be seen in the design of the spears broad blade itself. The broad blade of the winged spear head originates from the Carolingian Franks.[[390]](#footnote-390) This is due to the fact that the Franks often exported their weapons through trade links throughout the European continent.[[391]](#footnote-391) As stated above in the sword section, five hundred and fifty-two spears were discovered in the Nydam bog deposit.[[392]](#footnote-392) This demonstrates the fact that Frankish weapons were often exported as well as sought after in Viking raids.[[393]](#footnote-393) This is due to the fact that Frankish spears among other weapons were greatly valued.[[394]](#footnote-394) This is shown from certain sites in England where multiple preserved winged spear heads were discovered.[[395]](#footnote-395)

Another connection can be seen in the design of the spear head that links this weapon from the Frankish warriors to the Viking warriors. The design similarity can be seen in examples of preserved winged spear heads.[[396]](#footnote-396) The Winged spear head found at the city of York site as well as the example found in the burial excavation at Nottingham are important.[[397]](#footnote-397) This is due to the fact that they demonstrate the links between the Franks and Vikings. The broad Carolingian style blade of each spear head is an important characteristic of the spears used by Carolingians.[[398]](#footnote-398)

In conclusion to this winged spear section analysis, it can be determined that this Carolingian winged spear was used by both the Anglo-Saxons and Vikings. Therefore, this was another influence on the Anglo-Saxons and Vikings by the Franks. This is due to the fact that certain examples have been discovered in areas related to the Saxons.[[399]](#footnote-399) One example as stated earlier was discovered at Nottingham.[[400]](#footnote-400) This includes another Carolingian winged spear from an excavation at York.[[401]](#footnote-401)

One of the connections to the Vikings can be found in the sagas. The main saga of relevance is Grettir saga in which a certain combat involving the winged spear head is described.[[402]](#footnote-402) Grettir is stated to have stabbed Thorir with his spear until Thorir reached the ‘barbs’ or wings of the spear.[[403]](#footnote-403)

As stated in the sword chapter, the Franks often exported their weapons abroad to other people including the Vikings as seen with their swords.[[404]](#footnote-404) This includes the Vikings capturing weapons from the Franks as seen in their raids when taking spoils from a battle.[[405]](#footnote-405) Therefore, the winged spear head could also have been acquired either through trade between the Anglo-Saxons and Vikings. It could also have been taken as ‘spolia’ during raids as weapons often were.[[406]](#footnote-406)

Overall, these are some of the major influences that led to the development of some of the main Anglo-Saxon and Viking warrior weapons. However, this is not the entire spectrum concerning the development of Anglo-Saxon and Viking warriors from certain influences. There are certain areas of study that could be expanded upon when concerning more factors that influenced the development of certain weapons. For example, this area of research could be extended into the possible influences contributed by the other Germanic tribes on the other types of thrusting spears. More research can also be conducted into the origins behind one of the main Viking weapons. This weapon was the Viking hand axe.[[407]](#footnote-407) The hand axe was one of the main close combat weapons used by the Viking warriors.[[408]](#footnote-408)



Viking Dane and hand axe heads [[409]](#footnote-409)

Research can also be extended into other weapons such as the Seaxe knife. This includes how it became the knife of choice used by both the Anglo-Saxon warriors as well as the Viking warriors.[[410]](#footnote-410) Another possible area of research could also explore the influences on later medieval weapons by Anglo-Saxon or Viking weapons. Therefore, this investigation has only analysed the origins behind a selection of certain Viking and Anglo-Saxon weapons. However, further discussion is required in certain areas where other influences and different weapons can be analysed for their origins.

**Conclusion:**

In conclusion, the weapons used by the Anglo-Saxon and Viking warriors had their origins in previous weapons. These predecessor weapons came from the Roman army and the Frankish warriors.

These include weapons from the late Roman army to the Frankish warriors following the fall of Rome. Swords and spears clearly went under multiple stages of development with longer blades and different steel.[[411]](#footnote-411) The Spatha sword evolved into the Carolingian sword through changing forging techniques in which they used pattern welding.[[412]](#footnote-412) They were considered weapons of prestige in Northern Europe as well as Britain.[[413]](#footnote-413) These eventually found their way into the hands of the Vikings via raids.[[414]](#footnote-414)

The Pilum javelin evolved into the Angon javelin most likely through Germanic interaction with the Roman army and their Pilum javelin.[[415]](#footnote-415) Similarities can be seen in each design both having wooden shafts to fit an iron thin head.[[416]](#footnote-416) The influence is seen in burial excavations. One Frankish site at Saint Dizier had three male warrior graves containing Angons among other weapons.[[417]](#footnote-417) A later Anglo-Saxon site at Sutton Hoo held three Angons beside the king’s body.[[418]](#footnote-418) Therefore, it can be determined that the Angon was an evolution of the Pilum from the Frankish experience with it as Roman auxiliaries and passed it on through trade as seen above.

However, other weapons such as the Francisca and winged spear were obtained through trade and raids between the Franks as well as the Anglo-Saxons and Vikings as weapons often were.[[419]](#footnote-419) Therefore, each weapon was an influence through different metal working methods as well as widespread trade.

Overall, Viking and Anglo-Saxon weapons were the result of developments from Roman weapons which were obtained through trade with the Frankish kingdom like the Carolingian sword.[[420]](#footnote-420) Others such as the Francisca and winged spear as well as the javelin were simply acquired through arms trade with the Franks.[[421]](#footnote-421)

**Bibliography**

**Adkins, R. A. (1998) Handbook to life in Ancient Rome. Oxford: Oxford University Press**

**Bruce-Mitford, R. (1978) The Sutton Hoo ship-Burial, 2. pp. 241-272**

**BlueCrystalGem (2013) Weapons that made Britain E04 Shield [video]. Available at:** [**https://www.youtube.com/watch?v=5hUl7izkSbk**](https://www.youtube.com/watch?v=5hUl7izkSbk) **(Accessed: 29/05/2019)**

**Connolly, P. (2016) Greece and Rome at war. Barnsley: Frontline Books**

**Caesar (1869) Gallic War. (Trans) W. A. Mcdevitte. New York: Harper and Brothers**

**Caesar (1976) Civil War. (Trans) J. F. Gardner. London: Penguin Classics**

**Csiky, G. (2015) Avar-Age Polearms and Edged Weapons: Classification, Typology, Chronology and Technology. Leiden: Brill Publishers**

**Davis, R. H. C. (2005) A History of Medieval Europe: From Constantine to Saint Louis. Abingdon: Routledge**

**Elly, Ms. (2019) Ulfberht swords. Available at:** [**https://www.uwtsd.ac.uk/media/uwtsd-website/content-assets/documents/library-and-learning-resources/infoskills/harvard-eng.PDF**](https://www.uwtsd.ac.uk/media/uwtsd-website/content-assets/documents/library-and-learning-resources/infoskills/harvard-eng.PDF) **(Accessed: 17/08/2019)**

**Fields, N. (2011) Boudicca’s Rebellion AD 60-61. Oxford: Osprey Publishing**

**Feugere, M. (1993) Weapons of the Romans. Stroud: Tempus Publishing**

**Grancsay, S. V. (1959) A Vikings Chieftains Sword, 17(7). pp. 173-181**

**Goldsworthy, A. (2003) In the Name of Rome: The Men who won the Roman Empire. London: Phoenix**

**Harrison, M. (1993) Anglo-Saxon Thegn: AD 449 – 1066. Oxford: Osprey Publishing**

**Harrison, M. (1993) Viking Hersir: 793-1066 AD. Oxford: Osprey Publishing**

**Hjardar, K. (2016) Vikings at war. Oxford: Casemate Publishers**

**Hampton, V. D. (2011) Viking Age Arms and Armour Originating in the Frankish Kingdom, 4(2). pp. 36-44**

**Heath, I. (1985) The Vikings. Oxford: Osprey Publishing**

**Hayward, I (1848) Sword. Available at:** [**https://www.britishmuseum.org/research/collection\_online/collection\_object\_details.aspx?assetId=34881001&objectId=65088&partId=1**](https://www.britishmuseum.org/research/collection_online/collection_object_details.aspx?assetId=34881001&objectId=65088&partId=1) **(Accessed: 17/08/2019)**

**Keppie, L. (1998) The Making of the Roman Army: From Republic to Empire. Abingdon: Routledge**

**Lang, J. T. (1981) A Viking Age Spear Socket from York, 25. pp. 157-160**

**Laing, J. (2000) Warriors of the Dark Ages. Stroud: Sutton Publishing**

**Loades, M. (2010) Swords and Swordsman. Barnsley: Pen and Sword**

**Macdowall, S. (1996) Germanic warrior: AD 236-568. Oxford: Osprey Publishing**

**Metatron. (2017) *Gladius vs Spatha: Why did the empire abandon the Gladius?* Available at:** [**https://www.youtube.com/watch?v=mYK2LntJpj4**](https://www.youtube.com/watch?v=mYK2LntJpj4) **(Accessed: 16/04/2019).**

**Macdowall, S. (2018) Conquerors of the Roman Empire: The Franks. Barnsley: Pen and Sword**

**Morel, L. (1901) Throwing axe. Available at:** [**https://www.britishmuseum.org/research/collection\_online/collection\_object\_details/collection\_image\_gallery.aspx?partid=1&assetid=163176001&objectid=87258**](https://www.britishmuseum.org/research/collection_online/collection_object_details/collection_image_gallery.aspx?partid=1&assetid=163176001&objectid=87258) **(Accessed: 17/08/2019)**

**Magnusson, E. trans. (1869) Grettir Saga. London: F. S. Ellis**

**Nicolle, D. (1984) Arthur and the Anglo-Saxon Wars. Oxford: Osprey Publishing**

**Neilson, T. (2016) Viking Axes. Available at:** [**https://www.vikingmartialarts.com/viking-warfare**](https://www.vikingmartialarts.com/viking-warfare) **(Accessed: 18/08/2019)**

**Oakeshott, R. E. (1996) The Archaeology of Weapons: Arms and Armour from Prehistory to the Age of Chivalry. Mineola: Dover Publications**

**Oakeshott, E and Peirce, I. (2002) Swords of the Viking Age. Woodbridge: Boydell Press**

**Oliver, N. (2012) Vikings: A History. London: Weidenfeld & Nicholson**

**Price, N. (2019) Viking Warrior women? Reassessing Birka Chamber grave, 93(367). pp. 181-198 (Accessed: 05/06/2019) DOI:** [**https://doi.org/10.15184/aqy.2018.258**](https://doi.org/10.15184/aqy.2018.258)

**Polybius (1889) Histories. (Trans) E S. Shuckburgh. London: Macmillan**

**Peers, C. (2012) Offa and the Mercian Wars. Barnsley: Pen and Sword**

**Rodrigues, L. trans. (1991) The Battles of Maldon and Brunanburh. Felinfach: Llanerch Publishers**

**Ramsey, S. (2016) Tools of War: History of Weapons in Ancient Times. New Delhi: Alpha Editions**

**Siddorn, J. K. (2000) Viking weapons and warfare. Stroud: The History Press**

**Tacitus (2003) The Annals. (Trans) M Grant. London: Penguin Classics**

**Todd, M. (2004) The Early Germans. Oxford: Blackwell Publishing**

**Truc, M. C. (2012) Probable Frankish burials of the Sixth Century AD at Saint-Dizier. pp. 51-66**

**Trimontium Trust (2018) Spatha. Available at:** [**https://twitter.com/TrimontiumTrust/status/954281279117291520**](https://twitter.com/TrimontiumTrust/status/954281279117291520) **(Accessed: 17/08/2019)**

**Thompson, A. (2011) Frankish Angon. Available at:** [**http://thethegns.blogspot.com/2011/11/angon-english-heavy-javelin.html**](http://thethegns.blogspot.com/2011/11/angon-english-heavy-javelin.html) **(Accessed: 17/08/2019)**

**Thompson, A. (2011) From Pilum to Angon. Available at:** [**http://thethegns.blogspot.com/2011/11/angon-english-heavy-javelin.html**](http://thethegns.blogspot.com/2011/11/angon-english-heavy-javelin.html) **(Accessed: 17/08/2019)**

**Thompson, L. (2004) Ancient Weapons in Britain. Barnsley: Pen and Sword**

**Underwood, R. (1999) Anglo-Saxon Weapons and Warfare. Stroud: Tempus Publishing**

**Williams, G. (2019) Weapons of the Viking Warrior. Oxford: Osprey Publishing**

**Williams, G. (2017) Viking Warrior Vs Anglo-Saxon Warrior: England 865-1066. Oxford: Osprey Publishing**

**Waggoner, B. trans. (2009) The Sagas of Ragnar Lodbrok. New Haven: The Troth**

**Wise, T. (1979) Saxon, Viking and Norman. Oxford: Osprey Publishing**

 **(2008) Early Spatha. Available at:** [**http://www.romancoins.info/MilitaryEquipment-Attack.html**](http://www.romancoins.info/MilitaryEquipment-Attack.html) **(Accessed: 19/08/2019)**

 **(2019) Pilum. Available at:** [**https://www.romanobritain.org/8-military/mil\_roman\_soldiers\_thrown-weapons.php**](https://www.romanobritain.org/8-military/mil_roman_soldiers_thrown-weapons.php) **(Accessed: 17/08/2019)**

1. Siddorn 2000: 16. [↑](#footnote-ref-1)
2. Siddorn 2000: 16. [↑](#footnote-ref-2)
3. Siddorn 2000: 16. [↑](#footnote-ref-3)
4. Siddorn 2000: 16. [↑](#footnote-ref-4)
5. Feugere 1993: 115. [↑](#footnote-ref-5)
6. Oakeshott 1996: 107. [↑](#footnote-ref-6)
7. Harrison 1993: 13-14 [↑](#footnote-ref-7)
8. Loades 2010: 80 [↑](#footnote-ref-8)
9. Todd 2004: 183-185 [↑](#footnote-ref-9)
10. Truc 2012: 51-57 [↑](#footnote-ref-10)
11. Todd 2004: 183 [↑](#footnote-ref-11)
12. Truc 2012: 51-57 [↑](#footnote-ref-12)
13. Hjardar 2016: 158 [↑](#footnote-ref-13)
14. Price 2019: 181-198 [↑](#footnote-ref-14)
15. Price 2019: 181-198 [↑](#footnote-ref-15)
16. Price 2019: 181-198 [↑](#footnote-ref-16)
17. Price 2019: 181-198 [↑](#footnote-ref-17)
18. Price 2019: 181-198 [↑](#footnote-ref-18)
19. Price 2019: 181-198 [↑](#footnote-ref-19)
20. Adkins 1998: 87 [↑](#footnote-ref-20)
21. Siddorn 2000: 77 [↑](#footnote-ref-21)
22. Siddorn 2000: 77 [↑](#footnote-ref-22)
23. Siddorn 2000: 77 [↑](#footnote-ref-23)
24. Siddorn 2000: 80 [↑](#footnote-ref-24)
25. Wise 1979: 12 [↑](#footnote-ref-25)
26. Wise 1979: 12 [↑](#footnote-ref-26)
27. Wise 1979: 12 [↑](#footnote-ref-27)
28. Wise 1979: 12 [↑](#footnote-ref-28)
29. Ramsey 2016: 159 [↑](#footnote-ref-29)
30. Ramsey 2016: 159 [↑](#footnote-ref-30)
31. Ramsey 2016: 159 [↑](#footnote-ref-31)
32. Williams 2019: 18-20 [↑](#footnote-ref-32)
33. Loades 2010: 80 [↑](#footnote-ref-33)
34. Loades 2010: 80 [↑](#footnote-ref-34)
35. Loades 2010: 80 [↑](#footnote-ref-35)
36. Peirce 2002: 115 [↑](#footnote-ref-36)
37. Peirce 2002: 115 [↑](#footnote-ref-37)
38. Hampton 2011: 36-44 [↑](#footnote-ref-38)
39. Hampton 2011: 36 [↑](#footnote-ref-39)
40. Hampton 2011: 36 [↑](#footnote-ref-40)
41. Hampton 2011: 36 [↑](#footnote-ref-41)
42. Hampton 2011: 36-44 [↑](#footnote-ref-42)
43. Hampton 2011: 36-44 [↑](#footnote-ref-43)
44. Peirce 2002: 74 [↑](#footnote-ref-44)
45. Peirce 2002: 74 [↑](#footnote-ref-45)
46. Peirce 2002: 74 [↑](#footnote-ref-46)
47. Peirce 2002: 74 [↑](#footnote-ref-47)
48. Peirce 2002: 74 [↑](#footnote-ref-48)
49. Peirce 2002: 74 [↑](#footnote-ref-49)
50. Peirce 2002: 77 [↑](#footnote-ref-50)
51. Peirce 2002: 77 [↑](#footnote-ref-51)
52. Peirce 2002: 77 [↑](#footnote-ref-52)
53. Peirce 2002: 77 [↑](#footnote-ref-53)
54. Peirce 2002: 77 [↑](#footnote-ref-54)
55. Peirce 2002: 74 77 [↑](#footnote-ref-55)
56. Hayward, I (1848) Sword. Available at: <https://www.britishmuseum.org/research/collection_online/collection_object_details.aspx?assetId=34881001&objectId=65088&partId=1> (Accessed: 17/08/2019) [↑](#footnote-ref-56)
57. Harrison 1993: 25 [↑](#footnote-ref-57)
58. Williams 2017: 64-65 [↑](#footnote-ref-58)
59. Waggoner 2009: 56 [↑](#footnote-ref-59)
60. Waggoner 2009: 56 [↑](#footnote-ref-60)
61. Waggoner 2009: 56 [↑](#footnote-ref-61)
62. Oliver 2012: 64 [↑](#footnote-ref-62)
63. Oliver 2012: 64 [↑](#footnote-ref-63)
64. Oliver 2012: 64 [↑](#footnote-ref-64)
65. Hampton 2011: 36 [↑](#footnote-ref-65)
66. Hampton 2011: 36 [↑](#footnote-ref-66)
67. Hampton 2011: 38 [↑](#footnote-ref-67)
68. Hampton 2011: 36-38 [↑](#footnote-ref-68)
69. Hampton 2011: 38 [↑](#footnote-ref-69)
70. Hampton 2011: 38 [↑](#footnote-ref-70)
71. Hampton 2011: 38 [↑](#footnote-ref-71)
72. Hampton 2011: 36-37 [↑](#footnote-ref-72)
73. Hampton 2011: 37 [↑](#footnote-ref-73)
74. Hampton 2011: 36-44 [↑](#footnote-ref-74)
75. Hampton 2011: 39 [↑](#footnote-ref-75)
76. Hampton 2011: 39 [↑](#footnote-ref-76)
77. Hampton 2011: 39 [↑](#footnote-ref-77)
78. Grancsay 1959: 174 [↑](#footnote-ref-78)
79. Hampton 2011: 36 [↑](#footnote-ref-79)
80. Hampton 2011: 36-44 [↑](#footnote-ref-80)
81. Hampton 2011: 36-44 [↑](#footnote-ref-81)
82. Peirce 2002: 7 [↑](#footnote-ref-82)
83. Peirce 2002: 7 [↑](#footnote-ref-83)
84. Peirce 2002: 7 [↑](#footnote-ref-84)
85. Peirce 2002: 7 [↑](#footnote-ref-85)
86. Peirce 2002: 7-8 [↑](#footnote-ref-86)
87. Peirce 2002: 9 [↑](#footnote-ref-87)
88. Hampton 2011: 36-44 [↑](#footnote-ref-88)
89. Elly, Ms. (2019) Ulfberht swords. Available at: <https://www.uwtsd.ac.uk/media/uwtsd-website/content-assets/documents/library-and-learning-resources/infoskills/harvard-eng.PDF> (Accessed: 17/08/2019) [↑](#footnote-ref-89)
90. Peirce 2002: 9 [↑](#footnote-ref-90)
91. Williams 2019: 18 [↑](#footnote-ref-91)
92. Peirce 2002: 63 [↑](#footnote-ref-92)
93. Peirce 2002: 77 [↑](#footnote-ref-93)
94. Peirce 2002: 63 [↑](#footnote-ref-94)
95. Peirce 2002: 63 [↑](#footnote-ref-95)
96. Peirce 2002: 63 [↑](#footnote-ref-96)
97. Peirce 2002: 54 [↑](#footnote-ref-97)
98. Williams 2019: 18 [↑](#footnote-ref-98)
99. Williams 2019: 18 [↑](#footnote-ref-99)
100. Williams 2019: 18 [↑](#footnote-ref-100)
101. Connolly 2016: 260 [↑](#footnote-ref-101)
102. Connolly 2016: 260 [↑](#footnote-ref-102)
103. Feugere 1993: 115 [↑](#footnote-ref-103)
104. (2008) Early Spatha. Available at: <http://www.romancoins.info/MilitaryEquipment-Attack.html> (Accessed: 19/08/2019) [↑](#footnote-ref-104)
105. Connolly 2016: 236 [↑](#footnote-ref-105)
106. Connolly 2016: 236 [↑](#footnote-ref-106)
107. Goldsworthy 2003: 211 [↑](#footnote-ref-107)
108. Goldsworthy 2003: 211 [↑](#footnote-ref-108)
109. Feugere 1993: 115 [↑](#footnote-ref-109)
110. Fields 2011: 67 [↑](#footnote-ref-110)
111. Feugere 1993: 115 [↑](#footnote-ref-111)
112. Connolly 2016: 260 [↑](#footnote-ref-112)
113. Tac. Ann. 2.17 [↑](#footnote-ref-113)
114. Tac. Ann. 2.17 [↑](#footnote-ref-114)
115. Connolly 2016: 236 [↑](#footnote-ref-115)
116. Tac. Ann. 2.17 [↑](#footnote-ref-116)
117. Metatron. (2017) *Gladius vs Spatha: Why did the empire abandon the Gladius?* Available at: <https://www.youtube.com/watch?v=mYK2LntJpj4> (Accessed: 16/04/2019). [↑](#footnote-ref-117)
118. Loades 2010: 74 [↑](#footnote-ref-118)
119. Loades 2010: 74 [↑](#footnote-ref-119)
120. Loades 2010: 74 [↑](#footnote-ref-120)
121. Loades 2010: 74 [↑](#footnote-ref-121)
122. Trimontium Trust (2018) Spatha. Available at: <https://twitter.com/TrimontiumTrust/status/954281279117291520> (Accessed: 17/08/2019) [↑](#footnote-ref-122)
123. Feugere 1993: 115 [↑](#footnote-ref-123)
124. Macdowall 1996: 6 [↑](#footnote-ref-124)
125. Macdowall 1996: 6 [↑](#footnote-ref-125)
126. Macdowall 1996: 6 [↑](#footnote-ref-126)
127. Macdowall 1996: 6 [↑](#footnote-ref-127)
128. Oakeshott 2002: 110 [↑](#footnote-ref-128)
129. Harrison 1993: 49 [↑](#footnote-ref-129)
130. Macdowall 1996: 6 [↑](#footnote-ref-130)
131. Feugere 1993: 117 [↑](#footnote-ref-131)
132. Macdowall 1996: 5-6 [↑](#footnote-ref-132)
133. Hjardar 2016: 14 [↑](#footnote-ref-133)
134. Hjardar 2016: 14 [↑](#footnote-ref-134)
135. Hjardar 2016: 14 [↑](#footnote-ref-135)
136. Hjardar 2016: 14 [↑](#footnote-ref-136)
137. Hjardar 2016: 14 [↑](#footnote-ref-137)
138. Hjardar 2016: 14 [↑](#footnote-ref-138)
139. Hjardar 2016: 14 [↑](#footnote-ref-139)
140. Hjardar 2016: 14 [↑](#footnote-ref-140)
141. Hjardar 2016: 14 [↑](#footnote-ref-141)
142. Hjardar 2016: 14 [↑](#footnote-ref-142)
143. Hjardar 2016: 14 [↑](#footnote-ref-143)
144. Hjardar 2016: 14 [↑](#footnote-ref-144)
145. Feugere 1993: 115 [↑](#footnote-ref-145)
146. Peirce 2002: 74 [↑](#footnote-ref-146)
147. Peirce 2002: 77 [↑](#footnote-ref-147)
148. Williams 2017: 64-65 [↑](#footnote-ref-148)
149. Waggoner 2009: 56 [↑](#footnote-ref-149)
150. Loades 2010: 77 [↑](#footnote-ref-150)
151. Loades 2010: 77 [↑](#footnote-ref-151)
152. Loades 2010: 77 [↑](#footnote-ref-152)
153. Underwood 1999: 24 [↑](#footnote-ref-153)
154. Macdowall 2018: 150 [↑](#footnote-ref-154)
155. Oakeshott 2017: 128 [↑](#footnote-ref-155)
156. Macdowall 2018: 132 [↑](#footnote-ref-156)
157. Underwood 1999: 25 [↑](#footnote-ref-157)
158. Underwood 1999: 25 [↑](#footnote-ref-158)
159. Underwood 1999: 25 [↑](#footnote-ref-159)
160. Underwood 1999: 24 [↑](#footnote-ref-160)
161. Feugere 1993: 80 [↑](#footnote-ref-161)
162. Feugere 1993: 82 [↑](#footnote-ref-162)
163. Underwood 1999: 25 [↑](#footnote-ref-163)
164. Underwood 1999: 24-25 [↑](#footnote-ref-164)
165. Thompson, A. (2011) Frankish Angon. Available at: <http://thethegns.blogspot.com/2011/11/angon-english-heavy-javelin.html> (Accessed: 17/08/2019) [↑](#footnote-ref-165)
166. Underwood 1999: 24-25 [↑](#footnote-ref-166)
167. Macdowall 2018: 150 [↑](#footnote-ref-167)
168. Macdowall 2018: 150 [↑](#footnote-ref-168)
169. Underwood 1999: 24 [↑](#footnote-ref-169)
170. Underwood 1999: 24 [↑](#footnote-ref-170)
171. Underwood 1999: 24 [↑](#footnote-ref-171)
172. Macdowall 2018: 149 [↑](#footnote-ref-172)
173. Macdowall 2018: 149-151 [↑](#footnote-ref-173)
174. Macdowall 2018: 151 [↑](#footnote-ref-174)
175. Macdowall 2018: 149 [↑](#footnote-ref-175)
176. Laing 2000: 136 [↑](#footnote-ref-176)
177. Laing 2000: 136 [↑](#footnote-ref-177)
178. Laing 2000: 136 [↑](#footnote-ref-178)
179. Nicolle 1984: 30 [↑](#footnote-ref-179)
180. Hjardar 2016: 85 [↑](#footnote-ref-180)
181. Davis 2006: 184-185 [↑](#footnote-ref-181)
182. Davis 2006: 184-185 [↑](#footnote-ref-182)
183. Oakeshott 2017: 128 [↑](#footnote-ref-183)
184. Macdowall 2018: 149-150 [↑](#footnote-ref-184)
185. Macdowall 2018: 149-150 [↑](#footnote-ref-185)
186. Macdowall 2018: 150 [↑](#footnote-ref-186)
187. Underwood 1999: 24-25 [↑](#footnote-ref-187)
188. Oakeshott 2017: 128 [↑](#footnote-ref-188)
189. Oakeshott 2017: 128 [↑](#footnote-ref-189)
190. Macdowall 2018: 150 [↑](#footnote-ref-190)
191. Macdowall 2018: 12 [↑](#footnote-ref-191)
192. Macdowall 2018: 11 [↑](#footnote-ref-192)
193. Macdowall 2018: 11-12 [↑](#footnote-ref-193)
194. Macdowall 2018: 12 [↑](#footnote-ref-194)
195. Macdowall 2018: 12 [↑](#footnote-ref-195)
196. Macdowall 2018: 146 [↑](#footnote-ref-196)
197. Macdowall 2018: 146 [↑](#footnote-ref-197)
198. Truc 2012: 51-53 [↑](#footnote-ref-198)
199. Bruce-Mitford 1978: 241-272 [↑](#footnote-ref-199)
200. Bruce-Mitford 1978: 241-272 [↑](#footnote-ref-200)
201. Peers 2012: 82 [↑](#footnote-ref-201)
202. Underwood 1999: 24 [↑](#footnote-ref-202)
203. Truc 2012: 51 [↑](#footnote-ref-203)
204. Underwood 1999: 24 [↑](#footnote-ref-204)
205. Truc 2012: 51 [↑](#footnote-ref-205)
206. Truc 2012: 53 [↑](#footnote-ref-206)
207. Truc 2012: 53 [↑](#footnote-ref-207)
208. Truc 2012: 53 [↑](#footnote-ref-208)
209. Truc 2012: 53 [↑](#footnote-ref-209)
210. Peers 2012: 82 [↑](#footnote-ref-210)
211. Wise 1979: 3-4 [↑](#footnote-ref-211)
212. Feugere 1993: 129 [↑](#footnote-ref-212)
213. Feugere 1993: 80 [↑](#footnote-ref-213)
214. Feugere 1993: 80 [↑](#footnote-ref-214)
215. Connolly 2016: 130 [↑](#footnote-ref-215)
216. Connolly 2016: 130 [↑](#footnote-ref-216)
217. Underwood 1999: 24 [↑](#footnote-ref-217)
218. Feugere 1993: 80 [↑](#footnote-ref-218)
219. Feugere 1993: 80 [↑](#footnote-ref-219)
220. Feugere 1993: 80 [↑](#footnote-ref-220)
221. Feugere 1993: 80 [↑](#footnote-ref-221)
222. Feugere 1993: 80 [↑](#footnote-ref-222)
223. Feugere 1993: 80 [↑](#footnote-ref-223)
224. Feugere 1993: 80 [↑](#footnote-ref-224)
225. Feugere 1993: 80 [↑](#footnote-ref-225)
226. (2019) Pilum. Available at: <https://www.romanobritain.org/8-military/mil_roman_soldiers_thrown-weapons.php> (Accessed: 17/08/2019) [↑](#footnote-ref-226)
227. Plb. 6.23 [↑](#footnote-ref-227)
228. Keppie 1998: 66 [↑](#footnote-ref-228)
229. Keppie 1998: 66 [↑](#footnote-ref-229)
230. Keppie 1998: 66 [↑](#footnote-ref-230)
231. Keppie 1998: 66 [↑](#footnote-ref-231)
232. Feugere 1993: 82 [↑](#footnote-ref-232)
233. Feugere 1993: 82 [↑](#footnote-ref-233)
234. Feugere 1993: 82 [↑](#footnote-ref-234)
235. Feugere 1993: 82 [↑](#footnote-ref-235)
236. Feugere 1993: 82 [↑](#footnote-ref-236)
237. Feugere 1993: 83 [↑](#footnote-ref-237)
238. Goldsworthy 2003: 149 [↑](#footnote-ref-238)
239. Feugere 1993: 82 [↑](#footnote-ref-239)
240. Feugere 1993: 82 [↑](#footnote-ref-240)
241. Caes. Gal. 1.23-26 [↑](#footnote-ref-241)
242. Caes. Gal. 1.23-26 [↑](#footnote-ref-242)
243. Caes. Gal. 1.23-26 [↑](#footnote-ref-243)
244. Caes. Gal. 1.25 [↑](#footnote-ref-244)
245. Caes. Gal. 1.25 [↑](#footnote-ref-245)
246. Feugere 1993: 82 [↑](#footnote-ref-246)
247. Caes. Gal. 1.25 [↑](#footnote-ref-247)
248. Caes. Gal. 1.25 [↑](#footnote-ref-248)
249. Goldsworthy 2003: 203-204 [↑](#footnote-ref-249)
250. Goldsworthy 2003: 204-205 [↑](#footnote-ref-250)
251. Goldsworthy 2003: 203-205 [↑](#footnote-ref-251)
252. Caes. Civ. 3.92-99 [↑](#footnote-ref-252)
253. Caes. Civ. 3.93 [↑](#footnote-ref-253)
254. Goldsworthy 2003: 254 [↑](#footnote-ref-254)
255. Caes. Civ. 3.93 [↑](#footnote-ref-255)
256. Feugere 1993: 82 [↑](#footnote-ref-256)
257. Feugere 1993: 82 [↑](#footnote-ref-257)
258. Feugere 1993: 82 [↑](#footnote-ref-258)
259. Feugere 1993: 82 [↑](#footnote-ref-259)
260. Feugere 1993: 82 [↑](#footnote-ref-260)
261. Underwood 1999: 24 [↑](#footnote-ref-261)
262. Heath 1985: 31-32 [↑](#footnote-ref-262)
263. Underwood 1999: 23 [↑](#footnote-ref-263)
264. Underwood 1999: 24 [↑](#footnote-ref-264)
265. Underwood 1999: 24 [↑](#footnote-ref-265)
266. Underwood 1999: 23-24 [↑](#footnote-ref-266)
267. Caes. Gal. 1.25 [↑](#footnote-ref-267)
268. Underwood 1999: 24 [↑](#footnote-ref-268)
269. Underwood 1999: 25 [↑](#footnote-ref-269)
270. Underwood 1999: 25 [↑](#footnote-ref-270)
271. Underwood 1999: 25 [↑](#footnote-ref-271)
272. Underwood 1999: 24 [↑](#footnote-ref-272)
273. Underwood 1999: 24 [↑](#footnote-ref-273)
274. Underwood 1999: 24 [↑](#footnote-ref-274)
275. Underwood 1999: 24 [↑](#footnote-ref-275)
276. Underwood 1999: 24 [↑](#footnote-ref-276)
277. Feugere 1993: 80-83 [↑](#footnote-ref-277)
278. Macdowall 2018: 132 [↑](#footnote-ref-278)
279. Underwood 1999: 24 [↑](#footnote-ref-279)
280. Feugere 1993: 80 [↑](#footnote-ref-280)
281. Feugere 1993: 80 [↑](#footnote-ref-281)
282. Underwood 1999: 24-25 [↑](#footnote-ref-282)
283. Thompson, A. (2011) From Pilum to Angon. Available at: <http://thethegns.blogspot.com/2011/11/angon-english-heavy-javelin.html> (Accessed: 17/08/2019) [↑](#footnote-ref-283)
284. Macdowall 2018: 150 [↑](#footnote-ref-284)
285. Oakeshott 2017: 128 [↑](#footnote-ref-285)
286. Macdowall 2018: 150 [↑](#footnote-ref-286)
287. Goldsworthy 2003: 149 [↑](#footnote-ref-287)
288. Feugere 1993: 82 [↑](#footnote-ref-288)
289. Feugere 1993: 82 [↑](#footnote-ref-289)
290. Caes. Gal. 1.25 [↑](#footnote-ref-290)
291. Caes. Gal. 1.25 [↑](#footnote-ref-291)
292. Plb. 6.23 [↑](#footnote-ref-292)
293. Feugere 1993: 82 [↑](#footnote-ref-293)
294. Macdowall 2018: 149-150 [↑](#footnote-ref-294)
295. Underwood 1999: 25 [↑](#footnote-ref-295)
296. Feugere 1993: 82 [↑](#footnote-ref-296)
297. Macdowall 2018: 149-150 [↑](#footnote-ref-297)
298. Macdowall 2018: 149-150 [↑](#footnote-ref-298)
299. Feugere 1993: 82 [↑](#footnote-ref-299)
300. Macdowall 2018: 32 [↑](#footnote-ref-300)
301. Underwood 1999: 35-36 [↑](#footnote-ref-301)
302. Underwood 1999: 35-36 [↑](#footnote-ref-302)
303. Underwood 1999: 35-36 [↑](#footnote-ref-303)
304. Underwood 1999: 36 [↑](#footnote-ref-304)
305. Underwood 1999: 35-36 [↑](#footnote-ref-305)
306. Underwood 1999: 36 [↑](#footnote-ref-306)
307. Underwood 1999: 36 [↑](#footnote-ref-307)
308. Underwood 1999: 35-36 [↑](#footnote-ref-308)
309. Underwood 1999: 35-36 [↑](#footnote-ref-309)
310. Underwood 1999: 35-36 [↑](#footnote-ref-310)
311. Underwood 1999: 35-36 [↑](#footnote-ref-311)
312. BlueCrystalGem (2013) Weapons that made Britain E04 Shield [video]. Available at: <https://www.youtube.com/watch?v=5hUl7izkSbk> (Accessed: 29/05/2019) [↑](#footnote-ref-312)
313. BlueCrystalGem (2013) Weapons that made Britain E04 Shield [video]. Available at: <https://www.youtube.com/watch?v=5hUl7izkSbk> (Accessed: 29/05/2019) [↑](#footnote-ref-313)
314. BlueCrystalGem (2013) Weapons that made Britain E04 Shield [video]. Available at: <https://www.youtube.com/watch?v=5hUl7izkSbk> (Accessed: 29/05/2019) [↑](#footnote-ref-314)
315. BlueCrystalGem (2013) Weapons that made Britain E04 Shield [video]. Available at: <https://www.youtube.com/watch?v=5hUl7izkSbk> (Accessed: 29/05/2019) [↑](#footnote-ref-315)
316. BlueCrystalGem (2013) Weapons that made Britain E04 Shield [video]. Available at: <https://www.youtube.com/watch?v=5hUl7izkSbk> (Accessed: 29/05/2019) [↑](#footnote-ref-316)
317. Macdowall 2018: 149 [↑](#footnote-ref-317)
318. Macdowall 2018: 149 [↑](#footnote-ref-318)
319. Underwood 1999: 35 [↑](#footnote-ref-319)
320. Underwood 1999: 35 [↑](#footnote-ref-320)
321. Macdowall 2018: 32 [↑](#footnote-ref-321)
322. Macdowall 2018: 32 [↑](#footnote-ref-322)
323. Macdowall 2018: 104 [↑](#footnote-ref-323)
324. Underwood 1999: 35 [↑](#footnote-ref-324)
325. Truc 2012: 55-57 [↑](#footnote-ref-325)
326. Truc 2012: 55-57 [↑](#footnote-ref-326)
327. Truc 2012: 55-57 [↑](#footnote-ref-327)
328. Underwood 1999: 35 [↑](#footnote-ref-328)
329. Morel, L. (1901) Throwing axe. Available at: <https://www.britishmuseum.org/research/collection_online/collection_object_details/collection_image_gallery.aspx?partid=1&assetid=163176001&objectid=87258> (Accessed: 17/08/2019) [↑](#footnote-ref-329)
330. Underwood 1999: 35 [↑](#footnote-ref-330)
331. Underwood 1999: 35 [↑](#footnote-ref-331)
332. Underwood 1999: 35 [↑](#footnote-ref-332)
333. Underwood 1999: 35 [↑](#footnote-ref-333)
334. Underwood 1999: 35 [↑](#footnote-ref-334)
335. Macdowall 2018: 149 [↑](#footnote-ref-335)
336. Macdowall 2018: 149 [↑](#footnote-ref-336)
337. Underwood 1999: 37 [↑](#footnote-ref-337)
338. Underwood 1999: 35-37 [↑](#footnote-ref-338)
339. Underwood 1999: 35-37 [↑](#footnote-ref-339)
340. Underwood 1999: 35-37 [↑](#footnote-ref-340)
341. Macdowall 2018: 150 [↑](#footnote-ref-341)
342. Macdowall 2018: 150 [↑](#footnote-ref-342)
343. Macdowall 2018: 150 [↑](#footnote-ref-343)
344. Macdowall 2018: 150 [↑](#footnote-ref-344)
345. Macdowall 2018: 150 [↑](#footnote-ref-345)
346. Macdowall 2018: 146 [↑](#footnote-ref-346)
347. Truc 2012: 55-57 [↑](#footnote-ref-347)
348. Truc 2012: 55-57 [↑](#footnote-ref-348)
349. Underwood 1999: 35-36 [↑](#footnote-ref-349)
350. Underwood 1999: 35-36 [↑](#footnote-ref-350)
351. Underwood 1999: 35-36 [↑](#footnote-ref-351)
352. BlueCrystalGem (2013) Weapons that made Britain E04 Shield [video]. Available at: <https://www.youtube.com/watch?v=5hUl7izkSbk> (Accessed: 29/05/2019) [↑](#footnote-ref-352)
353. Lang 1981: 158 [↑](#footnote-ref-353)
354. Lang 1981: 158 [↑](#footnote-ref-354)
355. Lang 1981: 158 [↑](#footnote-ref-355)
356. Lang 1981: 158 [↑](#footnote-ref-356)
357. Lang 1981: 158 [↑](#footnote-ref-357)
358. Lang 1981: 158 [↑](#footnote-ref-358)
359. Lang 1981: 158 [↑](#footnote-ref-359)
360. Assortment of Spear heads. Available at: <http://www.hurstwic.org/history/articles/manufacturing/text/viking_spear.htm> (Accessed: 20/08/2019) [↑](#footnote-ref-360)
361. Lang 1981: 158-159 [↑](#footnote-ref-361)
362. Lang 1981: 158 [↑](#footnote-ref-362)
363. Lang 1981: 158-159 [↑](#footnote-ref-363)
364. Lang 1981: 158 [↑](#footnote-ref-364)
365. Williams 2019: 9 [↑](#footnote-ref-365)
366. Williams 2019: 42-51 [↑](#footnote-ref-366)
367. Rodrigues 1991: 65 [↑](#footnote-ref-367)
368. Rodrigues 1991: 65 [↑](#footnote-ref-368)
369. Rodrigues 1991: 69 [↑](#footnote-ref-369)
370. Williams 2019: 42-51 [↑](#footnote-ref-370)
371. Rodrigues 1991: 69 [↑](#footnote-ref-371)
372. Williams 2017: 48 [↑](#footnote-ref-372)
373. Williams 2017: 48 [↑](#footnote-ref-373)
374. Williams 2017: 48 [↑](#footnote-ref-374)
375. Williams 2017: 48 [↑](#footnote-ref-375)
376. Magnusson 1869: 57 [↑](#footnote-ref-376)
377. Magnusson 1869: 57 [↑](#footnote-ref-377)
378. Magnusson 1869: 57 [↑](#footnote-ref-378)
379. Oliver 2012: 64 [↑](#footnote-ref-379)
380. Oliver 2012: 64 [↑](#footnote-ref-380)
381. Oliver 2012: 64 [↑](#footnote-ref-381)
382. Oliver 2012: 64 [↑](#footnote-ref-382)
383. Thompson 2004: 69 [↑](#footnote-ref-383)
384. Thompson 2004: 69 [↑](#footnote-ref-384)
385. Thompson 2004: 69 [↑](#footnote-ref-385)
386. Thompson 2004: 69 [↑](#footnote-ref-386)
387. Thompson 2004: 69 [↑](#footnote-ref-387)
388. Thompson 2004: 69 [↑](#footnote-ref-388)
389. Lang 1981: 158 [↑](#footnote-ref-389)
390. Lang 1981: 158 [↑](#footnote-ref-390)
391. Hampton 2011: 37-38 [↑](#footnote-ref-391)
392. Hampton 2011: 39 [↑](#footnote-ref-392)
393. Hampton 2011: 37-38 [↑](#footnote-ref-393)
394. Hampton 2011: 36-39 [↑](#footnote-ref-394)
395. Lang 1981: 158 [↑](#footnote-ref-395)
396. Lang 1981: 158 [↑](#footnote-ref-396)
397. Lang 1981: 158 [↑](#footnote-ref-397)
398. Lang 1981: 158 [↑](#footnote-ref-398)
399. Lang 1981: 158 [↑](#footnote-ref-399)
400. Lang 1981: 158 [↑](#footnote-ref-400)
401. Lang 1981: 158 [↑](#footnote-ref-401)
402. Magnusson 1869: 57 [↑](#footnote-ref-402)
403. Magnusson 1869: 57 [↑](#footnote-ref-403)
404. Hampton 2011: 36-38 [↑](#footnote-ref-404)
405. Hampton 2011: 36 [↑](#footnote-ref-405)
406. Hampton 2011: 36-38 [↑](#footnote-ref-406)
407. Williams 2017: 13 [↑](#footnote-ref-407)
408. Williams 2017: 13 [↑](#footnote-ref-408)
409. Neilson, T. (2016) Viking Axes. Available at: <https://www.vikingmartialarts.com/viking-warfare> (Accessed: 18/08/2019) [↑](#footnote-ref-409)
410. Williams 2017: 17 [↑](#footnote-ref-410)
411. Loades 2010: 77 [↑](#footnote-ref-411)
412. Loades 2010: 77 [↑](#footnote-ref-412)
413. Loades 2010: 77 [↑](#footnote-ref-413)
414. Hampton 2011: 36-39 [↑](#footnote-ref-414)
415. Oakeshott 2017: 128 [↑](#footnote-ref-415)
416. Underwood 1999: 24-25 [↑](#footnote-ref-416)
417. Truc 2012: 51-53 [↑](#footnote-ref-417)
418. Bruce-Mitford 1978: 241-272 [↑](#footnote-ref-418)
419. Hampton 2011: 36-44 [↑](#footnote-ref-419)
420. Hampton 2011: 36-44 [↑](#footnote-ref-420)
421. Hampton 2011: 36-44 [↑](#footnote-ref-421)