A Recreation of a 9th Century Viking Sword

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Presented is a recreation of a 9th century sword that is based on an extant piece found in Helsinki, Finland. The sword consists of a multi-layer, forge welded core with a mono steel cutting surface that is typical from swords of this era.

Designing the Blade

Although Viking swords appear somewhat different on the surface, they are in fact quite similar, with only relatively minor aesthetic features that separate them. For example, virtually all weapons of this era include a symmetrical, single-handed grip, a cross guard of relatively simple design and a pommel (Peirce, 2002). That is not to say that there have not been attempts made to classify Viking swords. Indeed, these pieces are commonly categorized by a method of typology developed by Jan Petersen in 1919. Other authors have developed their own typologies (or expanded on Petersen's), but this work will focus Petersen's typologies directly since they are most widely recognizable.

Jan Petersen's method of typology breaks swords down into categories based largely on the style of hilt that they have. These categories, and therefore designs, can then be associated with a rough timeframe for their likely construction. Figure 1, below, shows the Petersen typology for weapons believed to originate from the mid-eight through the mid-11th centuries.

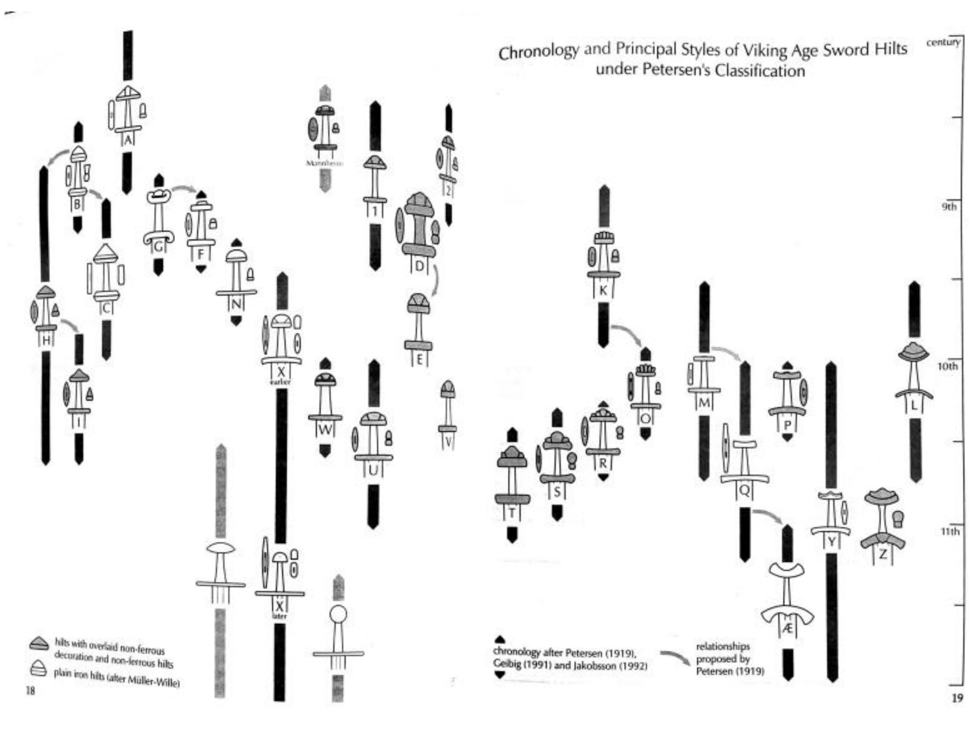

Figure 1, Petersen Typology of Viking Age swords (Peirce, 2002)

The work presented here is based on a Petersen type H, which is distinguishable by its very large, triangular shaped pommel and symmetrical “pointed oval” cross guard. These swords are largely found in graves dating from the 9th and 10th centuries. The original weapon has a blade length 76.2 cm and an over-all length of 91.6 cm. In addition, the sword features a very wide fuller, which is a groove through the center of the blade that is intended to lighten the sword and provide a level of flexibility (Oakeshott, 1991). In Type H swords, the fullers take up a majority of the blade width. The original piece also contains copper and silver wire that is set into grooves carved into the pommel and cross guard. While I did not include those features in my interpretation, I modified the assembly technique to allow for the addition of these details at a later date.

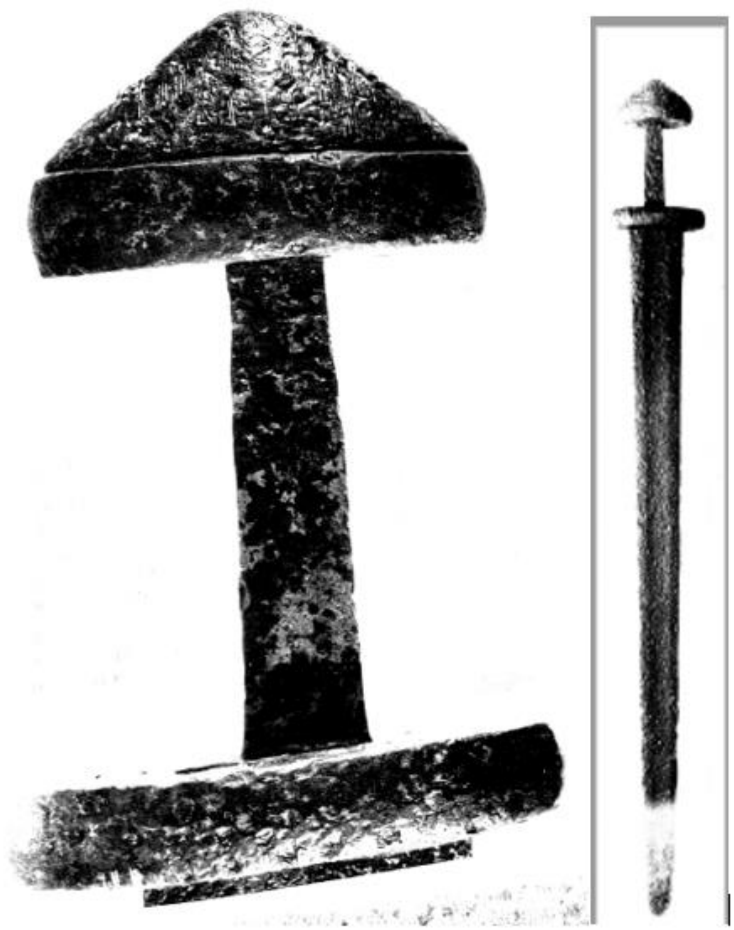

Figure 2, Petersen Type H (Peirce, 2002)

Forging the Blade

Swords of this era often consist of a multi-layer, forge welded core that is then forge welded onto a mono steel outer cutting edge. The central core would have been comprised of a mixture of wrought iron and steel and would have served to give the weapon additional toughness, allowing the sword to bend rather than break during use. For my sword I created two, six layer cores with alternating mild and 1045 steel. This allows for a recognizable pattern in the final result as the two metals will form different colors when etched in acid.

For a period blade, the layer of mono steel used for the cutting edge would have had a carbon content of roughly .45%. Since carbon content is roughly proportional to strength, the edge material of a Viking age sword would generally have been fairly weak as compared to modern swords. This is largely due to the limited ability that smiths of the era had to produce high purity steel. Indeed, high quality, high carbon steel was not seen in the west until the advent of crucible steel in the 18th century (Alter, 2017). Until that time, the Scandinavians formed the majority of their steel from bog iron, which tended to have a lot of impurities. Furthermore, the bloomery process used for making steel at this time was difficult to control, making it quite hard to get enough carbon into the iron to form quality steel. While there are examples of high carbon steels in some Viking Age swords, notably some Ulfbercht swords, there is some debate as to whether these weapons were actually made from steel forged by Viking smiths or, rather, if the steel was actually imported from the east, where forms of crucible steel had been used for centuries (NOVA: Secrets of the Viking Sword, 2017).

The core of the blade was often forge welded into distinct patterns. While purely aesthetic, these patterns would show the craftsmanship that went into a blade. The core of my work was taken from another sword found in Finland. It consists of two cores that are twisted in alternating patterns with straight areas in between. These two cores are then forge welded together. Once forged down to the final blade thickness, the pattern becomes quite striking.

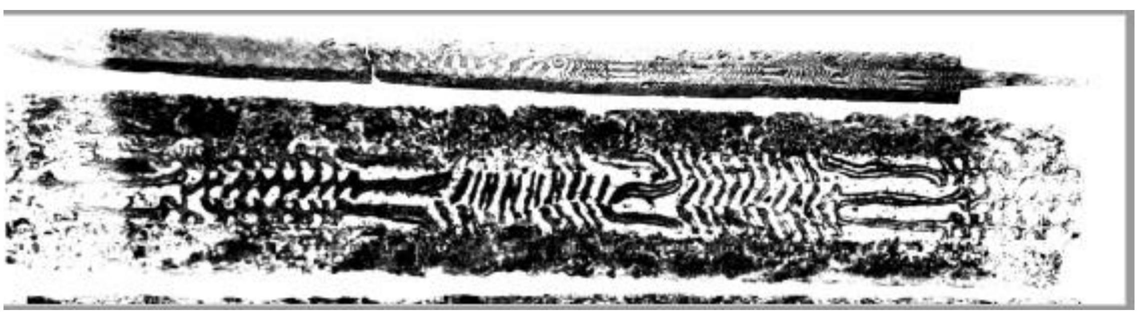

Figure 3, Alternating twist pattern core steel (Pierce, 2002)

Figure 4, forging the core steel

Figure 5, forging the alternating twists

Once the core has been fully welded, the mono steel edge material is then forge welded onto the core. As mentioned previously, while the original piece would have had an edge steel with a relatively low carbon content, the steel for this sword uses a higher carbon content steel (6150 spring steel). This steel was chosen as it provides a more durable cutting surface than what would have been present on the period piece.

One of the tricky parts of forge welding the edge steel onto the core was in welding the blade tip. First, the steel needs to be drawn out to roughly the same dimensions are the core steel, except for an enlarged area in the center. This will become the tip of the sword, so it is very important to form this piece correctly. Next, the edge steel is wrapped around the core steel and the edges are all forge welded together. Finally, the tip is forge welded to the core steel. Since it is very difficult to hammer the end of the blade hard enough to establish a solid weld, I had to slam the billet onto a piece of steel that was placed on the ground. It took quite a lot of effort to generate enough force to get a good weld. This step is crucial though as the core material, if left exposed, will not form a durable tip due to the lack of carbon in the mild steel.

Figure 6 forging the steel for the cutting edge

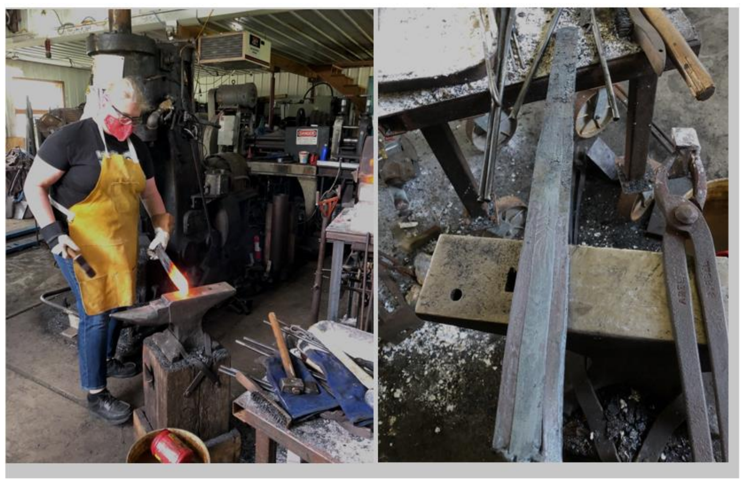

Figure 7 forge welding the edge steel to the core

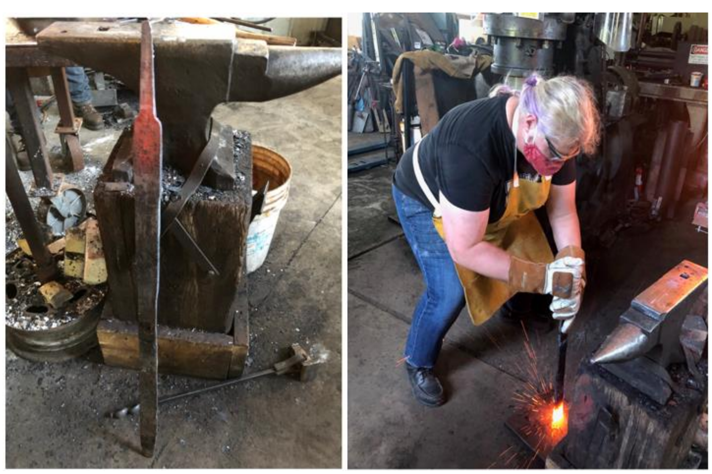

Figure 8 forge welding the tip and the forge welded sword

With the raw steel all forge welded together, I needed to draw the steel out to its final thickness and length. time to draw out the material to close to the final thickness. In period this would have obviously be done by hand and there likely would have been several multiple smiths hammering out the steel at once. In order to save time, I used a hydraulic press and a power hammer to draw my steel out. While the original piece had a blade length of ~76 cm, mine came in quite a bit longer during the drawing out phase and actually ended up being about 86 cm long. While I did conside shortening the blade to make it match the original sword, I decided against it as I would have had to cut away some of the pattern in my core steel. Also, since there are several extant pieces with blade lengths over 84 cm ((Peirce, 2002), references several pieces from Oslo and the Netherlands that have blade lengths from 84-86 cm), I felt that thre was sufficient historical evidence to justify not cutting my blade.

Figure 9 drawing out the blade

While the blade thermal cycled, and while it cooled down following heat treat, I moved to forging the hilt hardware. Figure 10, below shows the rough forged blanks and the semi-polished pommel.

Figure 10 handle hardware

With the sword completely forged and thermal cycled, I was able to start rough grinding the blade. In period this would have been done by hand using hammers, chisels and files, but again, to save time, I used modern grinders.

The first step was to rough grind the fullers in. The gaol was to take the thickness of the steel down to approximatly 4 mm thick at the tang and slightly tapering down to 2.5mm thick at the tip. This would keep the balance point close to the hand and keep the center of the blade flexible and light.

Once the fullers were ground in, I then focused on the bevels (the angled areas on the blade edge that allow for a shrp sword). The bevels are ground onto all four sides and the angles have to match all the way around. It requires frequent checking to ensure that the correct angle is being maintained on all sides, as well as, down the entire length of the edge.

Figure 11 grinding bevels and fullers

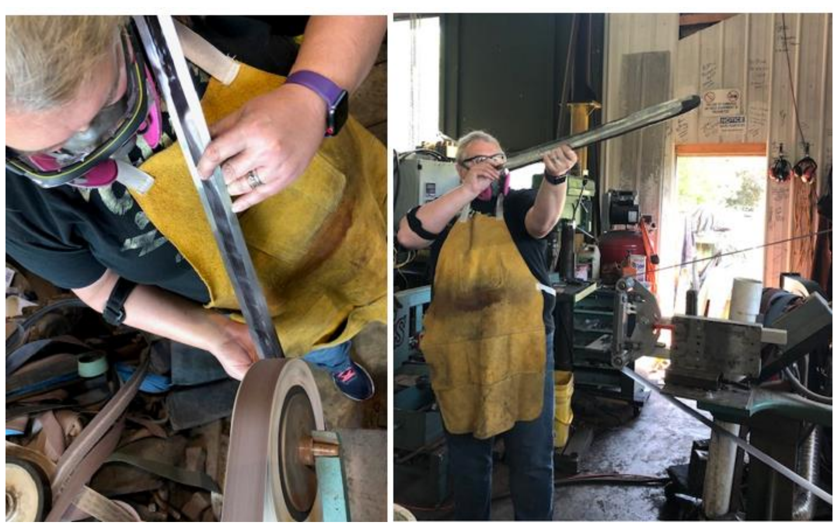

Figure 12 grinding bevels and checking the angles

Completing the handle

Viking era swords generally consisted of a wooden, hollowed-out handle that fits over the tang of the blade. I made my handle out of poplar wood and epoxied it in place. Then, as typical for these types of weapons, I wrapped the wooden handle with cord. This was done to provide strenth to the handle and to hold everything together securely.

Figure 13 a Viking era cord wrapped handle (Pierce, 2002)

Figure 14 wrapping the handle

Not many swords of the Viking Age survive with the leather of the handles intact. However, there are examples where small bits of leather have been found (pierce, 1991). For my sword, I used thin, book binding leather and dyed it yellow. I then folded the edges over to form a clean edge and punched lacing holes. Finally, I got the leather wet in order to allow it to stretch and laced the leather around the wrapped handle using artificial sinew. As the leather dries, it shrinks and tightens up around the handle, making for a snug, secure fit.

This was my first time making a sword and I found the process exhilerating. While it was difficult and extremely time consuming, I found that the work was required extreme attention to detail. Not only did I come away with a new set of skills, but I found myself in awe of the artistry and skill of the craftsmen from a millenia ago.

The Finished Sword


the CLASH


References

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Oakeshott, E. (1991). *Records of the Medieval Sword.* Woodbridge: Boydell Press.

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