A Recreation of a 15th Century English Knife

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Presented is a recreation of a 15th century knife that is based on examples found in the river Thames. I made this knife as commission piece for a friend, and while I tried to keep the spirit of the original finds as period as possible, I did make my version with a pattern welded (Damascus) blade.

Designing the Blade

Medieval knives are often separated by features. These features are used to create a typology that can be used to date and define the construction of a knife. The knife being presented is based on type O blades, which tend to have long, slender blades with a minimal belly. They generally have a full length tang and are finished with oak scales attached to the tang via pins. Figure 1, below, depicts the various typologies of medieval British knives (Goodall, 2011). Over-all, this design makes for a strong, durable blade that is ideal for slicing, as well as other utility purposes.

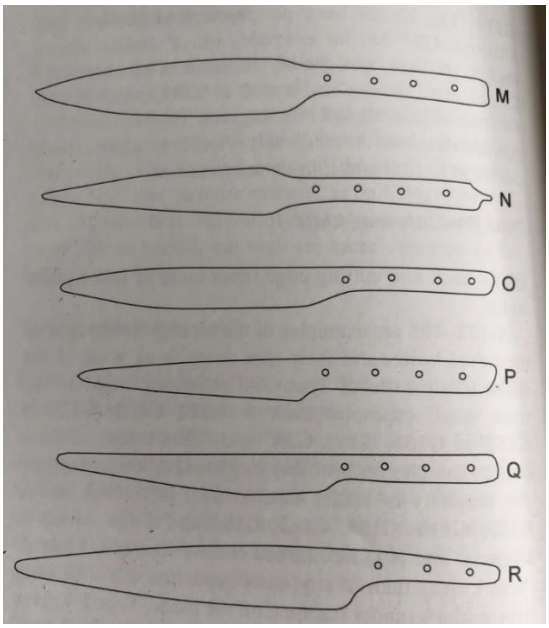

Figure 1 British Knife Typology

The inspiration for the design of my blade is an English blade dating to the mid-15th century. The original piece was found in the Thames and has oak scales held to the tang by copper alloy rivets. It also has copper alloy clovers inlaid into the scales and features a pommel of the same metal. While the blade from the find has mostly rusted away, there is enough remaining to get a feel for what the blade shape was like. I used another blade, also a Thames find, from the same time period to complete the blade profile. Figure 2 shows the actual knife that inspired my work while Figure 3 depicts the knife that I used to develop the blade profile for my piece (duHeaume).

Figure 2 a 15th century knife found in the Thames River

Figure 3 A type Q knife from the 15th century also from the Thames

Knives made in London during of this time period were generally produced by smiths associated with The Worshipful Company of Cutlers, which was the London livery company responsible for registering blade smiths during much of the medieval period. Chartered in the early part of the 15th Century (though their existence dates to the 13th C.), the guild was the body responsible for maintaining high quality standards and ensuring the safety and fair treatment of apprentice smiths (The Worshipful Company of Cutlers, n.d.). The brass pommel, often of a stylized crown or fleur-de-lis, are common with Flemish smiths who were registered with the Company (Brown, 2001) during the 14th and 15th centuries.

Forging the Blade

One of the difficult aspects of forging knives is the creation of steel that is durable, holds an edge well, and yet is not overly brittle. While early knives were made of iron, the minimal carbon content of this metal makes for a blade that, while flexible and unlikely to break, is too soft to hold an edge. Such a blade would require frequent sharpening (Goodall, 2011).

As time passed, medieval smiths developed techniques for producing steel, a high carbon iron alloy. Steel made for a much more durable blade that could hold an edge far better than a similarly constructed iron blade. However, steel was very expensive and labor intensive to produce, so new techniques were developed to combine steel with iron through a process called pattern welding (Alter, 2017). In this process multiple layers of steel and iron could be welded in the forge to form a solid billet. Billets made in this way are often referred to as pattern welded or Damascus billets. While the pattern welding process is quite labor intensive, knives made from this type of metal have distinct advantages over earlier iron knives:

1. The blades are harder and more durable, so they can hold an edge longer
2. They retain some flexibility from the wrought iron, thereby helping to prevent breakage
3. Use less high carbon steel than all steel knives and are therefore less costly to produce

Crucible steel, a process by which a homogenous piece of high carbon, hardenable steel is produced, was adopted in Western Europe in the 18th century (Alter, 2017). This allowed for strong, durable blades to be made much more economically.

Prior to crucible steel becoming readily available, smiths used a variety of construction techniques to form their pattern welded billets. During the 14th century, it was common for blades to be made by forge welding a piece of high carbon steel to a piece of wrought iron using a scarf weld (J. Cowgill, 1987). This weld uses a single piece of high carbon steel (on the blade edge) welded to a wrought iron bar (on the spine of the blade). Similar to the pattern welded blades mentioned earlier, this would have made for a blade with a strong, durable cutting edge while also reducing the amount of expensive, high carbon steel that was required to make the knife.

The original knives that I used as inspiration for this project would have had blades made from a single piece of high carbon steel. However, since this knife was a commission, I wanted to pursue beauty over absolute historical accuracy. For that reason, I went with a pattern welded design using modern steel (1095 and 15N20), both high carbon, hardenable steels, and forge welded them together to form a billet. Once the billet was formed, I forged the knives to shape and then quenched and tempered the blades.

Figure 4 heating up the stacked billet

Figure 5 forge welding the billet

Figure 6 the completed billet

In period, the knives would have been hand forged to shape and then final profiling would have been performed using hand files. My blades were hand forged to shape using traditional blacksmithing techniques, though I did use a modern belt grinder to do the final profiling and sharpening.

Oftentimes, smiths use specific techniques to induce certain patterns into their pattern welded steel. While this is a generally for aesthetic purposes, it can add a striking feature to a blade. For this piece, I decided to allow the natural forging process to determine my pattern. This technique, called random pattern, allows for an organic, natural flowing pattern that I find quite beautiful.

Figure 7 the forged blade following rough grind

Figure 8 a close-up of the blade pattern

Casting the Pommel

While the clovers were cut from brass bar using a jeweler's saw, the brass pommel had to be cast. In period, the pommel would have been hand carved in wax and then that wax would have been used to create a negative for the casting. However, since I have no talent in carving, I decided to design the pommel in CAD (Computer-Aided Design) software. I then took that design and printed it using a 3D resin printer. This gave me a resin version of the part that would be cast.

Once the resin piece had been cast, I pressed delft clay into a casting mold and then used the printed part to form a negative in the clay. Once removed, the resin part formed a negative in the clay that duplicates the final form of the cast part. I then cut small holes in the sand to allow air to vent from the mold. Failure to include these features could prevent the pommel from forming correctly during the casting process.

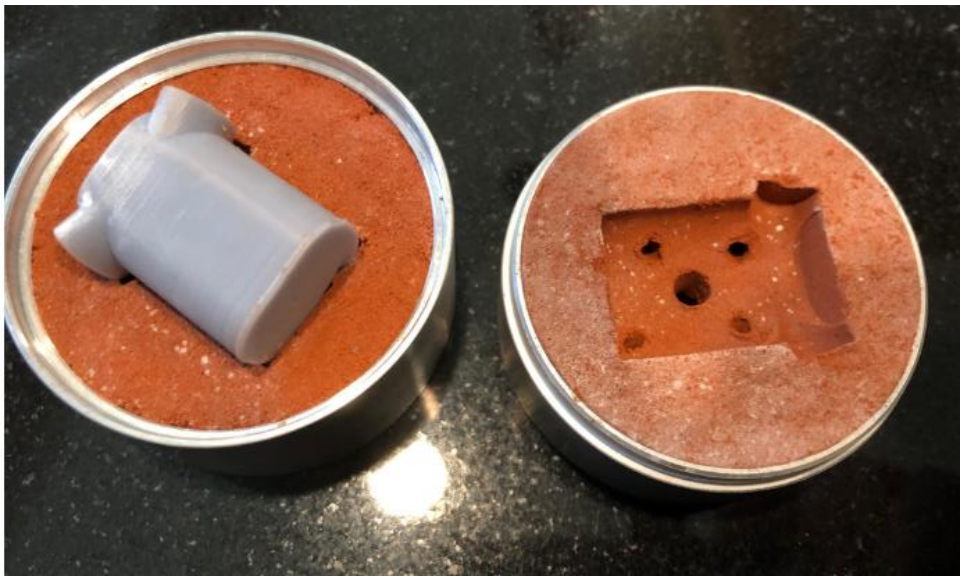

Figure 9 the casting mold prior to pouring

Figure 10 assembled mold and brass in crucible

Figure 11 the pommel removed from the mold

Figure 12 the cast pommel following rough clean-up

The Handle Scales

Handle materials from this time period could be made from wood, ivory, bone or even composites in some rare cases. The handle scales on my reference pieces, as mentioned earlier, has oak handles. The dominant species of oak during this time period was English Oak (Quercus robur) (The Ancient Oaks of England, n.d.). While the white oak available in North America (Quercus alba) is a close substitute, I wanted my blade to be as authentic as possible. As such, I was fortunate enough to find a source actual English Oak that came from an estate in Scotland.

The Sheath

The scabbard is made from a design typical from the 14th – 16th centuries and is made from leather with leather thongs used to hold the sheath to the belt (J. Cowgill, 1987). I made the sheath from some spare leather that we had and sewed the pieces together using a sewing awl and thread.

Figure 13 the finished knife

Figure 14 the finished knife and sheath

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