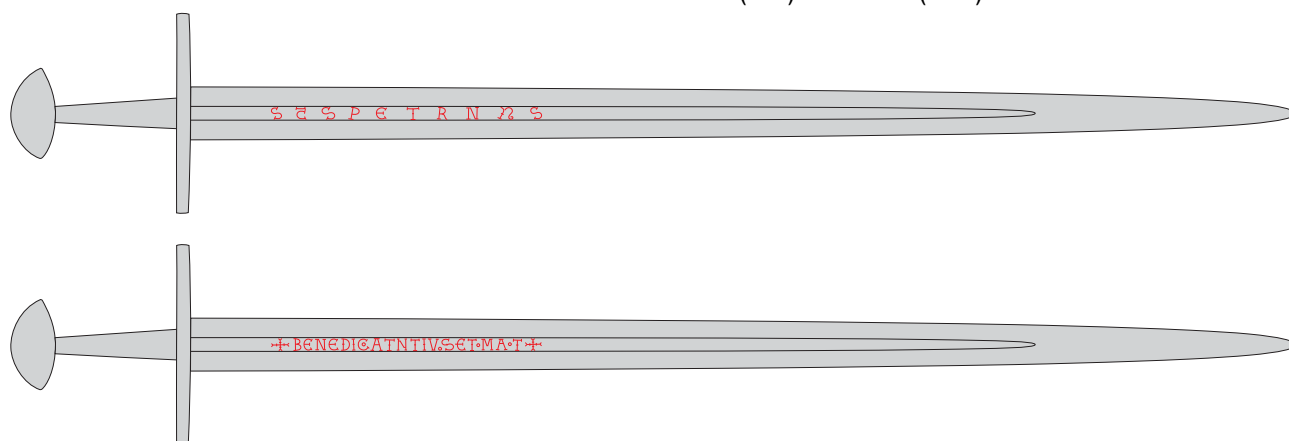


# The Søborg Sword

## *A Study of a 12th Century Weapon*

by  
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During excavations at Søborg castle a number of swords have been unearthed. Many of these are preserved in the National Museum in Copenhagen. One of them (inventory number D 8801) is an especially fine example of a long bladed knightly sword from the high medieval period. It has the typical straight guard and a well formed brazil nut pommel. In the fullers on both sides of the blade there are inscriptions inlaid with silver, reading +BENEDICoATNTIVoSEToMAoT+ on the front and S(CT)SPETRN(NU)S on the back.



S S P E T R N N U S

+ B E N E D I C A T N T I V O S E T O M A O T +

(fig 1)

According to Geibig's classification of medieval swords, the blade conforms to type 9 (a type that was in use during the 12th century) and the hilt is of combination type 16 variant 1 (mid 10th century to the third quarter of the 12th century). A further basis for dating is the inscription that according to Geibig is of a type that is in use from the mid 11th century to the end of 12th century. This suggests a span for dating from around AD 1100 - 1175 for Søborg D 8801.

D 8801 is a weapon of the highest order. It is masterfully made with a clear understanding of function and a fine sense of form and proportions. The inscriptions in the fullers show that its owner viewed his weapon and his role as a warrior in a religious perspective. The lettering is

cryptic, but part of its meaning might be decipherable. The first part of the inscription is probably a prayer for blessing from someone upon "Us" since the N after BENEDICoAT could indicate "Nos". TIOSEToMAoT could be an acronym for a saint (or saints) or religious persona(-s). MA(oT) towards the end might stand for "Mater" or "Maria".

The inscription "SctSPETRNnuS" on the other side is probably an invocation to Saint Peter, the protector of the Catholic Church.

In its time it would have belonged to a man of means and power. It was a weapon that vouched for his martial prowess, his sense of duty as well as his privileges. It did not express its owner's status through any gold or silver on the hilt but through a stark form that shows a dedication to severe knightly ideals.

### *Principles of design for the medieval sword*

The coherence of elements of design and harmony of proportions was important to medieval aesthetics. Beauty was established through application of number and geometry, in a way so that parts would relate to the totality of the design in a proportionate and harmonious way, reflecting the relationship of Microcosm and Macrocosm: As above, so below. As below, so above... (in a way not too different from contemporary ideas on fractal geometry)

To medieval man, numbers and geometry were steeped in symbolic meaning. The symbolic meaning embodied by an object or a building may be understood as an important part of its function.

I believe that these methods of design were also used to define the proportions of swords. Since the summer of 2010 more than 80 swords from different time periods has been analysed. Not every sword will conform to geometric proportions, but many from the high and late medieval period does. Especially weapons from the 12th and 13th centuries seems to be based on strikingly clear and beautiful geometric constructions.

The igniting spark for this study of geometric principles of design for the medieval sword was the discovery that the proportions of D 8801 from Søborg followed a simple and coherent geometric structure to remarkably small tolerances.

The symbolic meaning inherent in geometry and numbers would have been important for a weapon like the sword. The inherent symbolic meaning of the geometric design transformed it into a divine instrument, possessed of a perfect wholeness derived from the unity and harmony of its parts.

That such an emblematic power object as the sword was based on a system of design that carried levels of meaning is perhaps not entirely surprising, since its creators lived in a time when the mystical understanding of objects was commonplace. The sword was an emblem for worldly power and prowess but also a symbol of the spiritual fight against evil. Letters and symbols inlaid in blades served as religious invocations and magical talismans. Likewise the use of geometry in its design transformed the sword into a divine instrument, possessed of a perfect wholeness derived from the unity and harmony of its parts.

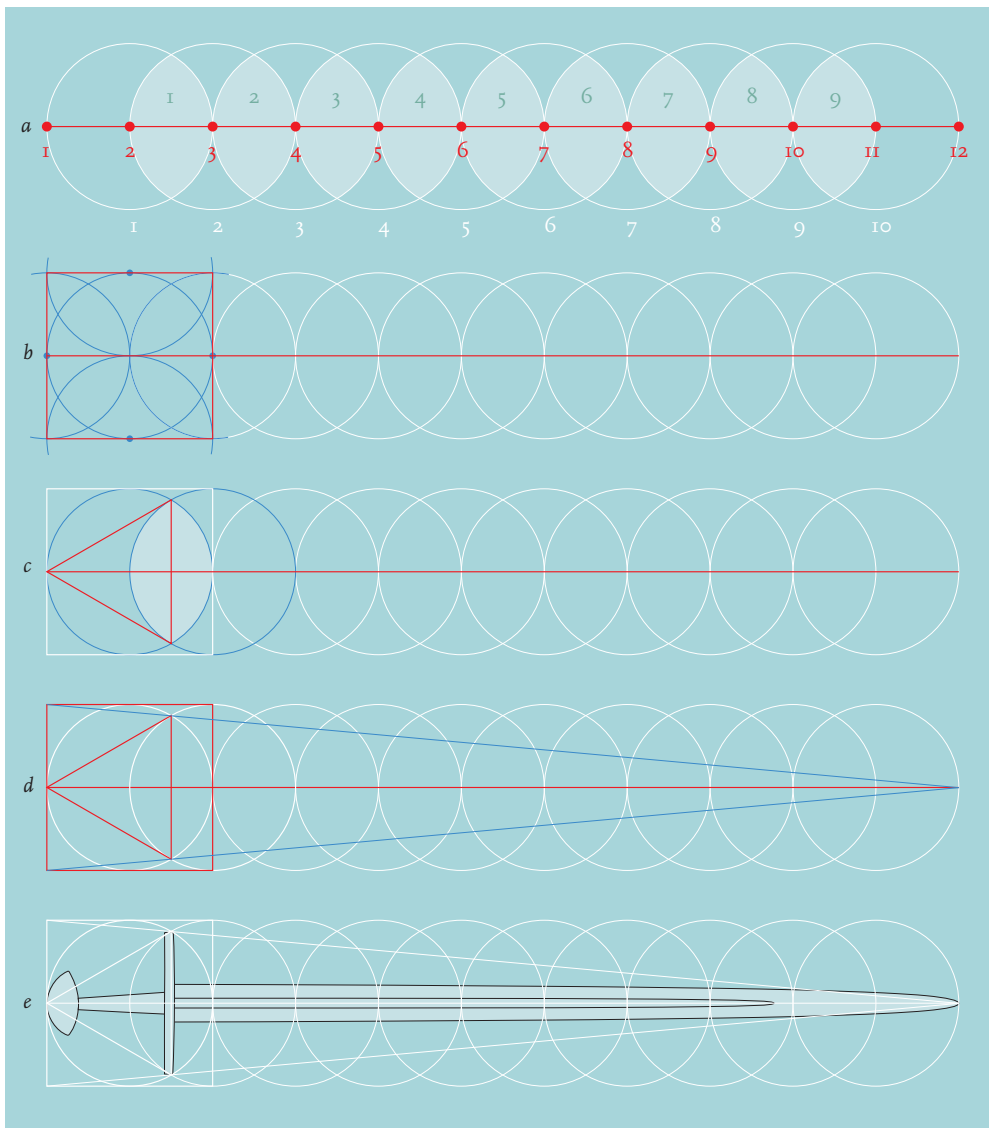
The use of geometry in design has also several practical benefits. It is a handy way to establish specifications for work that is divided between several expert craftsmen, as was the case in the production of swords. Geometric structures are also simple to scale to any size and easy to memorize.

## *Geometric properties of the Søborg sword*

There is a hierarchical order to the elements of a geometric design: a progression from the general to the details.

The proportion between blade and hilt is first decided by dividing a line with a series of circles, drawn so that their circumference always pass through the centre of its neighbors. Using fewer circles in the design will make the hilt become longer in proportion to the blade. Increasing the number of circles in the layout will produce a sword with a longer blade in proportion to the hilt.

The actual size of the circles does not matter. Geometric drawing defines the proportional relationship of elements of the design and is not directly concerned with the actual dimensions of the finished work. The drawing can be made in any convenient size whereafter the completed design is easily scaled to any dimension. It is worth noting that it is famously difficult to appreciate the size of a sword from just looking at a photograph. Two swords with very similar proportions might be of very different size. This is a typical result of designs that are based on proportion and not dimension.



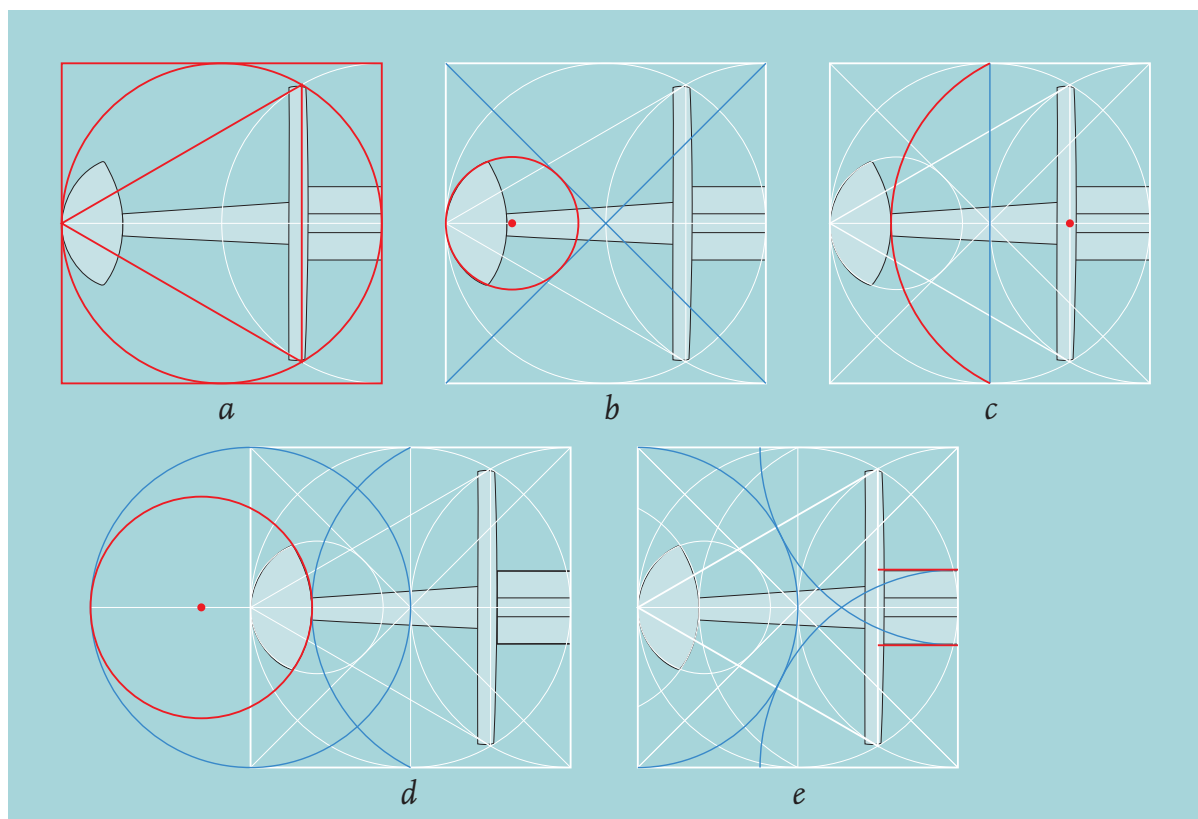
(fig. 2a) The lay out of the Søborg sword use ten circles and involve numbers that may be important and intentional for the design. The ten circles (the Commandments) cut the line in 12 points (the apostles), and produce nine vesica forms (Thrice Holy).

(fig.2b) A square is then constructed around the first circle. This square is a practical device for construction, but may also signify the concepts of stability, strength or even righteousness.

(fig.2c) Into the the first circle is then drawn an equilateral triangle, a common symbol for the Trinity.

(fig.2d) The ten circles, the square and the equilateral triangle now correspond to each other in a precise and special way. Two lines can be drawn diagonally across the figure so that they connect the corners of the square, the corners of the triangle and the end of the line marked by the ten circles. The figure is actually not mathematically perfect: the diagonal lines will cut 0.2 millimeter inside the corner of the triangle if the geometric structure is drawn to the full scale of the Søborg sword. An error this small is not discernable if drawn with ruler and compass on a chalked board or a piece of parchment.

(fig2e) To a medieval draftsman the figure must have seemed unusually harmonious and meaningful: a fitting lay out for a knightly sword. The structure defines the proportion between hilt and blade and also gives the width of the guard.



(fig3a) The main proportions of the hilt are set out by the combined square, circle and triangle.

(fig 3b) Top curve of the pommel is defined by a circle that is tangent to the side of the square and diagonals across the square.

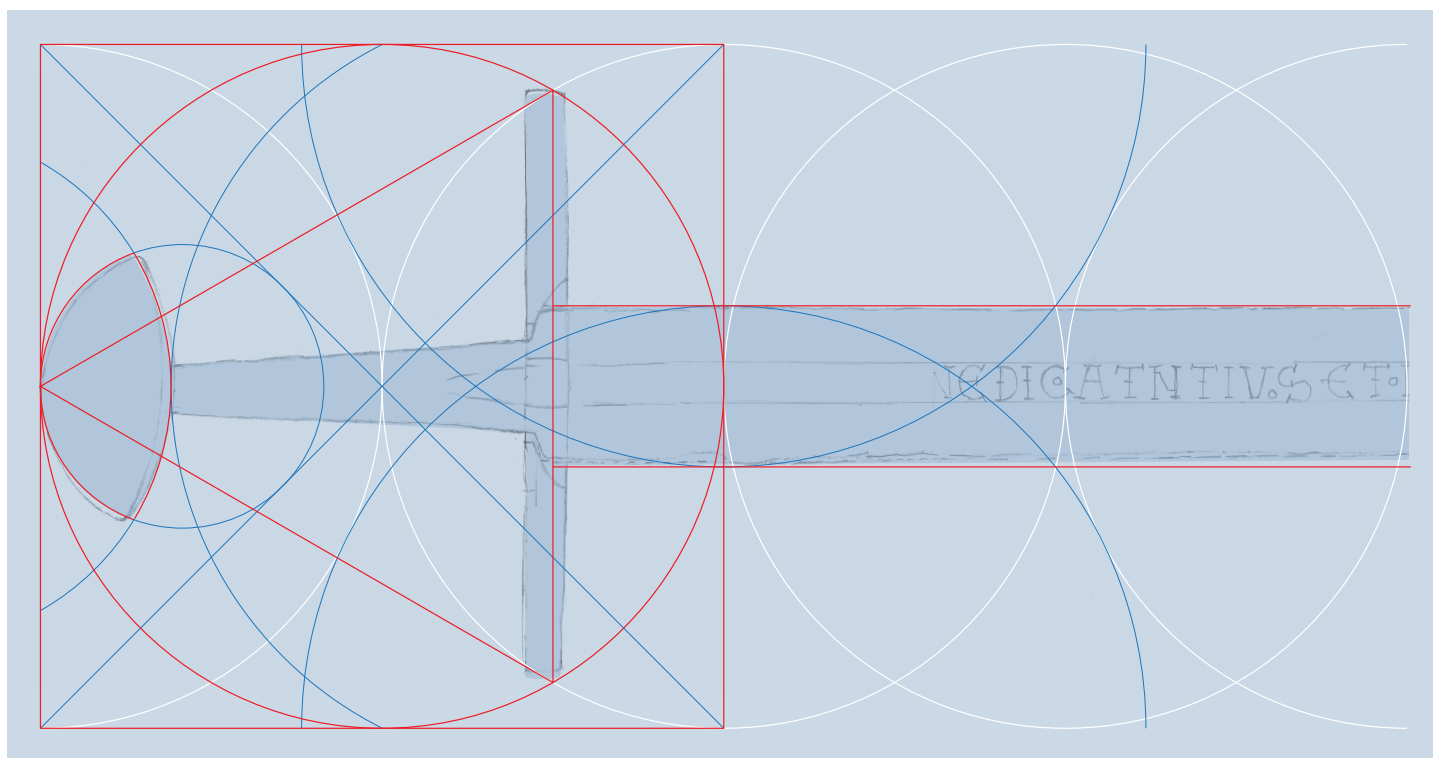
(fig3c) The pommel height is defined by an arc whose centre is in the middle of the vesica and is drawn between the mid points of the side of the square.

(fig3d) The bottom curve of the pommel is defined by a combination of two circles.

(fig3e) blade width is defined by two arcs that are tangent to the circle that sets the height of the pommel. These two arcs defines the width of the blade in the proportion of the golden section to the side of the square.

The components of the hilt are naturally not perfectly symmetrical, but they still meet the geometric overlay within small tolerances when we compare the original tracing to the geometric proportions.

The guard of the sword is 170 mm wide. If the geometric structure is made to full scale according to a blade length of 938 mm, the side of the equilateral triangle becomes 171,2 mm: a variance of 0,7%. The geometric definition of the pommel varies in width and height to the measurements of the original by 0,1% and 0,2% respectively.



The original circle is the “seed” to the design, that multiplied gives the proportions of the blade and hilt of the sword and by division provides definitions of the hilt.

Each new element in the design is derived from at least two points (or tangents) previously defined in the structure. The concept grows gradually from the centre or periphery of the original circle and is completed without introducing elements outside what can be derived from the original form. To paraphrase Thomas Aquinas: “...*When the parts are arranged in this way, they all combine into the whole; so that out of all the parts (in the universe) there emerges one single wholeness of things*”

### *The Søborg sword and its time*

The sword D8801 from Søborg is contemporary to the dynamic and powerful archbishop Eskil (ca AD 1100 - 1181), who according to legend had Søborg castle built into the most formidable stronghold in 12th century Denmark. This was a period when the political necessities of kings

clashed dramatically with the interests of the Holy See. Eskil took active part in the internal conflicts of the kingdom as well as the powerstruggle within the Church. As a loyal follower of Pope Alexander III, he put the interests of the Catholic church before those of the Danish monarchy. He was also much in favor of the Cistercian order and it expanded its influence during this time period.

The inscriptions in the fullers of the Søborg sword makes clear that it was a weapon intended for a holy purpose and that its owner most probably favored the cause of the Catholic church. If we let our imagination have some free rein it is not difficult to imagine that the original owner could have been a man at arms in the service of Archbishop Eskil.