



Fighting in women's clothes

The pictorial evidence of Walpurgis in Ms. I.33

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Abstract – Ms. I.33 is not only the oldest of the known fencing treatises in European context, it is also the only one showing a woman fighting equally with contemporary men. The author presents her research about the garments this female fencer wears, including her shirt, dress and overdress, hairstyle and footwear. Special consideration is given to the questions whether Walpurgis wears a belt, the length and hem circumference of her garments as well as the methods of draping them in the way depicted. The results of the analysis are compared with contemporary pictorial and archaeological sources of the early 14th century. Some personal insights gathered by the author while fighting in this kind of clothes shed light on the possibilities of moving without being disturbed by them. The clothes and hairstyle worn by Walpurgis, give clues about her social status and thus help to understand the context and dating of the whole manuscript.

Keywords – Ms. I.33, Sword and Buckler, 13th and 14th century dress, female fencer

I. INTRODUCTION

Manuscript Leeds, Royal Armouries, Ms. I.33 is not only the oldest of the known fencing treatises in European context, it is also the only one showing a woman fighting equally with contemporary men. Depicted in the manuscript is “Bloßfechten”, where the cleric Lutegerus¹ and his scholar as well as the woman, who is called Walpurgis², are shown in their everyday clothes. That means for the men a probably ankle or foot length priests’/clerical dress with a hood and typical floor length female dress and overdress for Walpurgis.

¹ Lutegerus being the name given to him on Leeds, Royal Armouries, Ms. I.33, fol. 1v (hereafter referred to as Ms. I.33). As this journal includes only black and white pictures, the author decided to forego images of the manuscript itself. Please refer to the free access high-resolution scans provided by the Royal Armouries Leeds, see below for the link. The same applies for other free access manuscripts and sources.

² On the last page, the name Walpurgis is inserted in the same hand as the original writing, cancelling *scolaris* (Ms. I.33, fol. 32v).

The author presents her research about the garments this female fencer wears, including her shirt, dress and overdress, hairstyle and footwear³. Special consideration will be given to the questions whether Walpurgis wears a belt, the length and hem circumference of her garments as well as the methods of draping them in the way depicted in the manuscript.

The results of the analysis will be compared with contemporary pictorial and archaeological sources. For example, the manuscript “Große Heidelberger Liederhandschrift” also known as “Codex Manesse”⁴. Archaeological finds of complete garments of the middle ages are quite rare, so the chorological frame needs to be spread more generally. Several garments of the permafrost find in Herjolfsnæs, Greenland, are dated by ¹⁴C to the 13th to 15th century and are therefore contemporary to Ms. I.33 and Codex Manesse⁵. But there are also a few garments from lesser known sites which show similarities to the clothes worn by Walpurgis.

The article includes some personal insights gathered by the author while fighting in this kind of clothes. All garments were reconstructed and made by the author herself. The suitability of leather soled turn shoes for fencing on different kinds of ground will be discussed in more detail.

The results shed light on the possibilities of fighting in typical women's clothes without being disturbed by them and can be transferred to the cleric and scholar depicted in the very same manuscript wearing almost similar kinds of garments according to length and hem circumference.

The identification of the clothes and the hairstyle worn by Walpurgis, give some more clues about her social status and thus help to understand the context and dating of this still enigmatic manuscript.

II. THE PICTORIAL EVIDENCE

Ms. I.33 today consists of 32 folios, several pages in between and at the end are missing⁶. No book cover is preserved and traces of wear and burning on the first and last page suggest that the manuscript was without binding for a prolonged period. The

³ The author wants to thank the following persons for their help and support: Roland Warzecha (Dimicator), Dr. Cornelius Berthold, Dipl.-Prähist. Ingo Petri, Martin Fischer M.A., Dr. Marquita Volken, Holger Heid.

⁴ Heidelberg, Universitätsbibliothek, Cod. Pal Germ. 848 (hereafter referred to as “Codex Manesse” or Cod. Pal Germ. 848): The manuscript is a compendium of songs and depicts amongst other things the “Sängerstreit auf der Wartburg” taking place at the beginning of the 13th century. Nevertheless, it is written and illuminated between 1304 and 1340 in Zürich and shows the poets in contemporary garments of the early 14th century.

⁵ Østergård, *Woven*, p. 253-255.

⁶ See: Binard, Jaquet, “Collation”, with further literature.

inner pages show few traces of use⁷. Each page consists of two registers, usually with a pair of fighters and explanations in Latin with some terminology in German. The manuscript includes four images of a female fighter, who is depicted on both pages of the last folio.

The images are colour washed ink drawings. While the first few pages show a greater variety of colours and greater detail in the clothing⁸, the most common colours are brown and blueish-grey for the fighters of one pair respectively.

Although the manuscript was written on parchment of a good quality, the drawings are simple and not very elaborate. While following contemporary drawing conventions and understanding of perspectives they depict the clothes and stances very clearly, sometimes even topical.

III. WALPURGIS CLOTHES

Walpurgis wears the following garments: shirt, dress or cotta, overdress or surcot, footwear containing of stockings and shoes, a schapel on her open or braided hair and gloves (fig. 1). This is a decent women's dress in the 13th and 14th century.



Fig. 1: Walpurgis reconstructed. Reconstruction: Julia Gräff; photo and graphics: Roland Warzecha.

⁷ See: Cinato, *Development*, especially 488-492 for a detailed analysis of the manuscripts history.

⁸ Ms. I.33, fol. 1r- 4v.

The detail of her dress seems to lessen from the first to the fourth image but this is due to signs of wear on the last page of the manuscript, which has been without binding for a prolonged period.

The colours of the garments can help with identifying the individual garments, but overall, they follow the scheme predominant in the manuscript and are either brown or blueish-grey.

III.1. The shirt

The first layer of clothing next to the body is a shirt. Only a little glimpse of the hem can be seen in the first image of Walpurgis⁹. The colour is a yellowish-white, which suggests undyed but perhaps bleached linen. As the hem is depicted straight, this garment seems not to be gathered high, therefore it is likely to be of knee-length or midcalf-length.

The famous illuminations of the “Bademägde” in the “Wenzelsbibel” for example shows sleeveless shirts of exactly that length¹⁰. Two contemporary versions of women's shirts, with long sleeves or with shoulder straps¹¹, are found in the archaeological record, as the examples from the royal graves in San Isidoro de Leon, Spain¹², and a find from Castle Ranis, Thuringia, Germany¹³, show. The reconstructed cutting pattern of another find, the shirt of St. Luis in Paris, France¹⁴, shows clearly the simple, time- and resource-saving pattern for sewing these shirts. The fabric was woven in the width which was needed for the garment around the breast. It consists of a combined front- and backpanel with godets consisting of two pieces of fabric inserted in the front and back. The armholes are only slightly shaped, the sleeves have a straight head.

The author went for the long-sleeved version in her reconstruction and followed the cutting pattern of the shirt of the Infantin Maria, from San Isidoro de Léon, with straight sleeve heads and armholes, wider upper arms and tight underarms to fit under the sleeves of the dress. Front and back panel are without shoulder seams. In the side seams godets consisting of two pieces were inserted to give the width needed for steps (fig. 2).

⁹ Ms. I.33, fol. 32r above, left.

¹⁰ Wenzelsbibel: Wien, Österreichische Nationalbibliothek, Cod. vindob. 2759 fol. 160.

¹¹ Kania, *Kleidung*, p. 129, fig. 52.

¹² Shirt of Infantin Maria, royal graves in San Isidoro de Léon, Spain, pre-1235, cotton. See: Kania, *Kleidung*, p. 250-251, fig. 148, 149.

¹³ Shirt from Burg Ranis, Thuringia, Germany, currently missing, due to the find circumstances dated to early 14th century, linen. See: Kania, *Kleidung*, p. 253-254, fig. 154.

¹⁴ Shirt of St. Louis, Paris, France, treasure of Notre-Dame de Paris, app. 1280, linen. See: Kania, *Kleidung*, p. 251-252, fig. 150-152.



Fig. 2: *The shirt*. Reconstruction: Julia Gräff; photo: Roland Warzecha.

The shirt Walpurgis wears, seems to have a fringed or scalloped hem. For shirts only one other example is known to the author¹⁵. It is similar to dagges, which are quite commonly depicted on hoods or very elaborate on sleeve openings especially from the middle of the 14th century onward¹⁶. In the literature, there are several possibilities of making such a fringed or scalloped hem but so far none of them was convincing. A felted woollen fabric can easily be cut into the shape of dagges without fraying, but this is not possible with linen. Separate weaving of the scallops is a very time-consuming method but might have been done, as several finds from London suggest¹⁷.

¹⁵ New York, Pierpont Morgan Library, MS G.24 fol. 6v.

¹⁶ For examples see: Crowfoot, Pritchard, Staniland, *Textiles*, p. 194-198, fig. 177-183.

¹⁷ Three garters dating to the late 14th century. See: Crowfoot, Pritchard, Staniland, *Textiles*, p. 143-145, fig. 113-115. The possibility that the fringed edge in Ms. I.33 is the depiction of a garter is excluded because of the angle in which the edge lies over the leg. A garter sits at right angles under the knee. See for example *ibid.* fig. 112.

The line above the edge seems to indicate a seam¹⁸ which could mean that an extra fabricated strip of cloth possibly with woven in scallops was attached. It could also help to sew the decorated piece to a new garment once this shirt is worn down. Another possible fabrication technique is found in a late 19th century needlework encyclopaedia explicitly for decorating linen sheets (fig. 3)¹⁹. The “Bogensaum” resembles the depicted shirts seam but it works technically only for very small scallops.

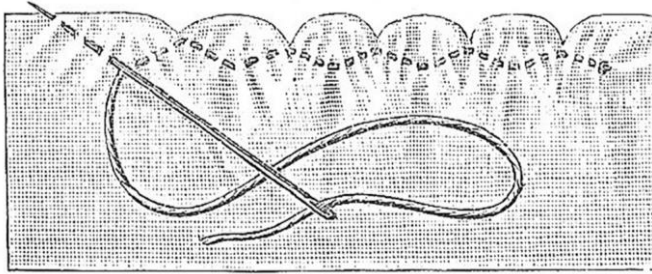


Fig. 3: “Bogensaum” for decorating 19th century linen sheets (De Dillmont 1893, fig. 23).

III.2. The dress or cotta

The main dress or cotta Walpurgis wears, can be seen in the first image because it is depicted in a slightly brighter blue than the rest of the outer layer of clothes²⁰. It can be seen at her arms and the pleats between her legs.

This garment is a stand-alone overdress in comparison with a lot of depictions in the Codex Manesse²¹. In the churchyard of Herjolfsnæs in Greenland several dresses have been excavated which date to the 13th to 15th century²².

During the 14th century there is a tendency to tight-fitting garments with a slim silhouette for males, due to changes in armour²³. Women's clothes also follow this trend. But there is still no major difference in the cutting patterns from earlier examples until the invention of the Quarter-pattern during the 14th century, increased by the more

¹⁸ Although it is not common in this manuscript to depict seams in garments but rather edges. So, another possibility would be two shirts of approximately the same length, the lower pleated, the upper straight.

¹⁹ De Dillmont, *Encyklopaedie*, p. 12, fig. 23.

²⁰ Ms. I.33, fol. 32r above, left.

²¹ For example, Cod. Pal Germ. 848, fol. 46v, 70v, 110r, 190v, 204r, 395r, seen here in various circumstances and combinations. See also: Kania, *Kleidung*, p. 165.

²² Østergård, *Woven*, p. 253-255.

²³ See: Anthore Baptiste/Baptiste, “Constriction – Construction” in this volume; and Kania, *Kleidung*, p. 149-150

common use of *mi-parti*²⁴. This new pattern allows for really body shaping garments in contrast to only tight-fitting dresses²⁵. Nevertheless, the old style with dresses, which follow the natural body shape, still exists well into the 15th century, and it is very common on depictions that a wide overdress is worn above the tighter one, like it can be assumed with Walpurgis' clothes²⁶.

The reconstruction is based on garment type 1b from Herjolfsnæs but is not a reconstruction of one specific find²⁷. Therefore, the reconstructed dress consists like the undergarment of a front and back panel and several side panels (fig. 4). The reconstruction is sewn with two side panels on each side with fake seams in the middle to pretend a more complex garment, as seen several times on the garments from Herjolfsnæs²⁸. This practice is both fabric- as well as laboursaving. The fabric can be cut without further seam allowance, it saves time by not having to neaten the edges and finally it helps shaping the garment to the body, because it can easily be adjusted after sewing the different parts together. Although most of the finds from Herjolfsnæs have front and back godets the author opted against them to stay in the tradition of the 13th century where women's dresses tend to omit them²⁹. A straight uninterrupted front panel optically stretches the silhouette vertically which was the favoured look at the time of the high gothic. Nevertheless, with the side panels widening at the lower edge a hem circumference of approximately 326 cm is created, which is still at the tight side of the range for contemporary garments, often having as much as 400 cm³⁰.

²⁴ First example of garments, divided by a vertical seam and made of two colours date to the late 12th and 13th century, but this style becomes most common during the 14th century. See: Kania, *Kleidung*, p. 146-147,

²⁵ Kania, *Kleidung*, p. 147, 161. Only one women's garment with Quarter-pattern is preserved, the golden dress of queen Margarethe, 15th century. See. Kania, *Kleidung*, p. 319-325, fig. 234-235.

²⁶ Kania, *Kleidung*, p. 160-161.

²⁷ Østergård, *Woven*, p., 128, Fransen, Nørgaard, Østergård, *Medieval garments*, p. 41. Most important models are No. D10580 and D 10583, originally made of Greenlandic *vaðmál*, a local coarse woollen fabric. For one-to-one reconstructions see: Fransen, Nørgaard, Østergård, *Medieval garments*.

²⁸ Six out of 16 garments have "false seams" in the godets or side panels. See garments No. D 5674, D10580, D10581, D10584, D10587 or D10593, Østergård, *Woven*, p., 155, 161, 164, 171, 179-180, 194, 292-293; Fransen, Nørgaard, Østergård, *Medieval garments*, p. 55, 63, 71, 12-93, 99.

²⁹ Kania, *Kleidung*, p. 157-158, The gender determination of the Herjolfsnæs garments is not reliable. Women's dresses without middle godets for example: St. Elisabeth 13th century, St. Klara 13th century, Leonor of Kastilien dress 13th century, Virgin Mary late 15th/ 16th century. See: Kania, *Kleidung*, p. 286, 289, 292, 334.

³⁰ Seam width: St. Elisabeth 13th century 406 cm, St. Klara 13th century ca. 400 cm, Leonor of Kastilien dress 13th century 180 cm, Leonor of Kastilien surcoat ca. 370 cm, St. Birgitta coat early 14th century ca. 360 cm, Herjolfsnæs 13th to 15th century: D10577 type 1a 275 cm, D10581 type 1b 360 cm, D10580 type 1b 340 cm, D10582 type 1c 348 cm, D10587 type 1c 305 cm, Golden

With an average step length of about 60 cm, 2 m circumference would be more than enough for good movability in a long dress so this is clearly a fashion or wealth statement³¹. Images show, that the dress or cotta for women in the early 14th century is floor-length or even longer as can be clearly seen in the Codex Manesse³². The garments from Herjolfsnæs seem to be shorter in comparison. With an average height of women at 166 cm, they usually reach ankle-length³³.

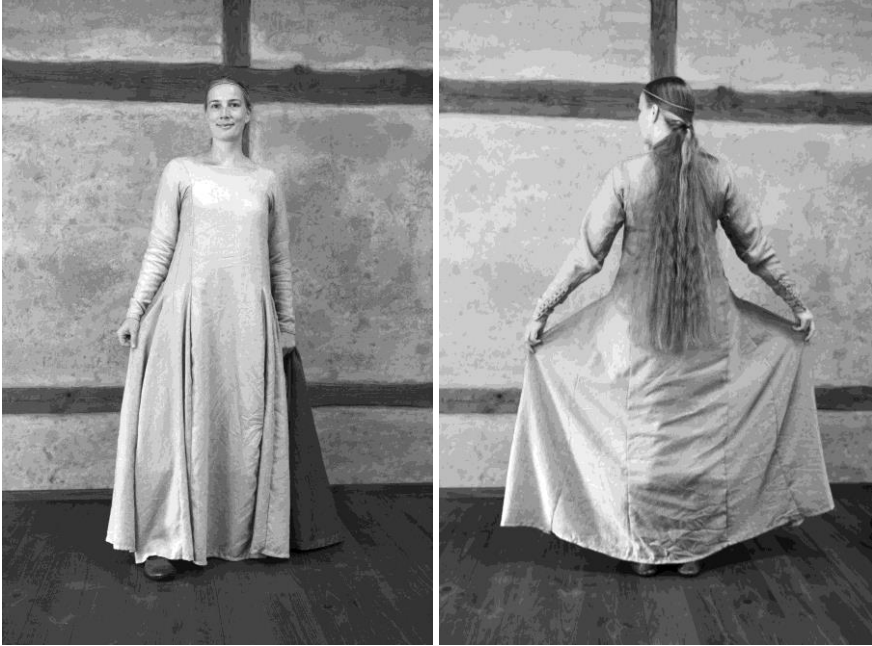


Fig. 4: *The dress or cotta. Reconstruction: Julia Gräff; photo: Roland Warzecha.*

While medieval shirts usually are still sewn in a T-shape without sleeve heads, the sleeves of dresses are ingeniously shaped to allow for better movement at least since the

dress of queen Margarethe 15th century ca. 420 cm, Virgin Mary late 15th/16th century 212 cm, Shinrone 16th /17th century 686 cm (pleated). See: Kania, *Kleidung*, p. 286, 289, 292, 300, 319, 327, 334, 338, 346, 347, 349, 351, 426.

³¹ Kania, *Kleidung*, p. 158-159, The dress of Leonor of Kastilien shows this perfectly, having only 180 cm circumference at the seam, but being almost 2 m long!

³² For example, Cod. Pal Germ. 848, fol. 63r, 70v, 217r. Kania, *Kleidung*, p. 156.

³³ Østergård, *Woven*, p., 143-144. See: Kania, *Kleidung*, p. 350 for example D10580: Seam width 340 cm, length 123 cm, height of the buried woman ca. 140-147 cm, but while the gender determination might be correct, due to deterioration of the bones in the soil the skeletal measurements most probable are not.

beginning of the 13th century³⁴. This shape differs in several ways from today's sleeve designs:

The arm hole lies more in the front panel than the back one and therefore proximal to the shoulder joint so the front panel is not affected (wrinkled) when the arms are moved forward.

The greatest sleeve length is behind and slightly under the arm, as can be seen in the depiction of Walpurgis sleeves with slight wrinkles at this place³⁵, concluding in a reserve of fabric to move the arm forward and up without lifting the whole garment.

The seam lies behind the arm and not under it, this makes it easy to shape the upper arms loose, with enough space around the elbow to bend, and a tight fit at the underarms, although this is not as extreme as in the depictions of priest and scholar³⁶. The fit at the underarm is even more tightened by a slit and buttons, which start to occur on garments at the end of the 13th century and rapidly become en vogue in the 14th century³⁷. All depictions of Walpurgis sleeves show between three and five buttons, although the front ones might be covered by her glove³⁸. It is difficult to assess how far up the arm they reach, as this varies from image to image. Several images in the Codex Manesse show buttons half way up the underarm while one garment from Herjolfsnæs (D10583) still shows 16 button holes on the sleeve, running along the underarm almost to the elbow³⁹. Longer rows of buttons seem to be a feature of the second half of the 14th century⁴⁰. The buttons in Ms. I.33 as well as in Codex Manesse are depicted white, but several existing examples are made of cloth from the same fabric as the dress, either flat or domed⁴¹.

³⁴ Convex sleeve heads are used for women's dresses at least since the beginning of the 13th century, see for example Bußkleid of St. Elisabeth, Rheingau, pre-1231. Kania, *Kleidung*, p. 157, fig. 193. For the differences compared to a modern sleeve, see: *ibid.* p. 200-206 fig. 126-130.

³⁵ Ms. I.33, fol. 32v, above. The same occurs on the priests' and scholars' dresses for example on Ms. I.33, fol. 1v, below and fol. 2v, above and below.

³⁶ Compare for example Walpurgis' dress with the priests' on Ms. I.33, fol. 32r above.

³⁷ Kania, *Kleidung*, p. 108.

³⁸ Ms. I.33, fol. 32r, 32v.

³⁹ For example: Cod. Pal Germ. 848, fol. 20r, 63r, Østergård, *Woven*, p. 168-169, fig. 23.

⁴⁰ Crowfoot, Pritchard, Staniland, *Textiles*, p. 168-169.

⁴¹ Crowfoot, Pritchard, Staniland, *Textiles*, p. 171, fig. 141, 143-144, 147-148, Østergård, *Woven*, p. 170, fig. 24-25.



*Fig. 5: Detail of the button and slit construction at the sleeves of the dress or cotta.
Reconstruction: Julia Gräff; photo: Roland Warzecha.*

The reconstructed dress features seven domed cloth buckles running halfway up the underarm (fig. 5). A sleeve shaped like the one Walpurgis has on her dress is ideal for fighting sword and buckler where the arms are extended forward quite a lot. It helps to fight the opponent and not the clothes and it really is a question why this kind of pattern was abandoned⁴².

III.3. The overdress or surcot

The images of Walpurgis are the only ones which show lines around her shoulders. This is most likely not a depiction of the sleeve head because it is not in the conventions of the manuscript to show seams, but rather to show pleats and edges of garments. Therefore, the conclusion is, that Walpurgis wears another sleeveless garment on top of her dress.

The sleeveless surcot is a very common overdress from the 13th century well into the 15th century for both women and men⁴³. There are two main types of surcot, one with deep armholes (so called “Höllfenster” or side less surcot) and one with smaller armholes. The later are frequently depicted in several variations in the Codex Manesse, while the side less surcot does not appear in this source⁴⁴. In comparison to the rich and

⁴² Although this really seems to be a recent development, even in the 1950s sewing books suggest cutting sleeves similar to “medieval fashion” with greater length in the back, for example: Lutterloh, *Der Goldene Schnitt*.

⁴³ Kania, *Kleidung*, p. 181.

⁴⁴ For example: Cod. Pal Germ. 848, fol. 20r (with a slit and buttons in the front), 46v (with relatively wide armholes), 63r, 69r, 178r (you can clearly see the difference in length for the women's and men's surcot respectively, the men's' having a riding slit) 188r (with V-neck opening), 217r (with folds in the front).

diverse pictorial evidence of surcots, not many variations of them are preserved as existing garments. In the royal tombs of Burgos las Huelgas and San Isidoro de León in Spain several side less surcots from the 13th century have been found⁴⁵. But as their cutting pattern is different from the one depicted in the manuscript, the author decided to go for the cloak of St. Birgitta, as a model instead. This cloak, which is held as a relic of the St. Birgitta of Vadstena in Rome, who lived in the beginning of the 14th century, is sewn together of several quite small pieces, which can easily be rearranged as a former dress or surcot⁴⁶. There is no sign of sleeves so it being a surcot is more likely.

Frequently the inside of the surcots in the Codex Manesse show linings made of fabric or fur⁴⁷. Several surcots from Spain also show a lining with fur⁴⁸.

Nonetheless, the author made the surcot without a lining as the handwoven fabric, made according to the fabric specifications of the mantle of St. Birgitta, is quite thick and it was not sure whether and how it could be gathered afterwards (fig. 6). Instead small silk strips along the neck and sleeve-openings were applied which is a well-known practice both at the mantle of St. Birgitta itself and on 14th century archaeological finds from London (fig. 7)⁴⁹. At the front, a small slit is inserted according to the depictions in Ms. I.33⁵⁰, such slits do not occur in depictions in the Codex Manesse, although several surcots seem to have a button band in that place⁵¹.

⁴⁵ Seven examples, see: Kania, *Kleidung*, p. 417-418, 424, 426-428, 431.

⁴⁶ Kania, *Kleidung*, p. 300-302, fig. 211-212.

⁴⁷ For example: Cod. Pal Germ. 848, fol. 178r, 188r If fur lining is shown, it can frequently be identified as a stouts winter fur (ermine) by the characteristic white colour with black tail tips.

⁴⁸ Four out of seven, see: Kania, *Kleidung*, p. 417, 424, 426, 431. The fur is identified as rabbit in all cases.

⁴⁹ Kania, *Kleidung*, p. 301; Crowfoot, Pritchard, Staniland, *Textiles*, p. 158-161, fig. 131- 133, pl. 2B.

⁵⁰ Ms. I.33, fol. 32r above, 32v above and below.

⁵¹ This might be due to small changes in fashion, because of different region or date. A very interesting aspect which is recommended for further investigations in narrowing down the date and origin of the Ms. I.33!

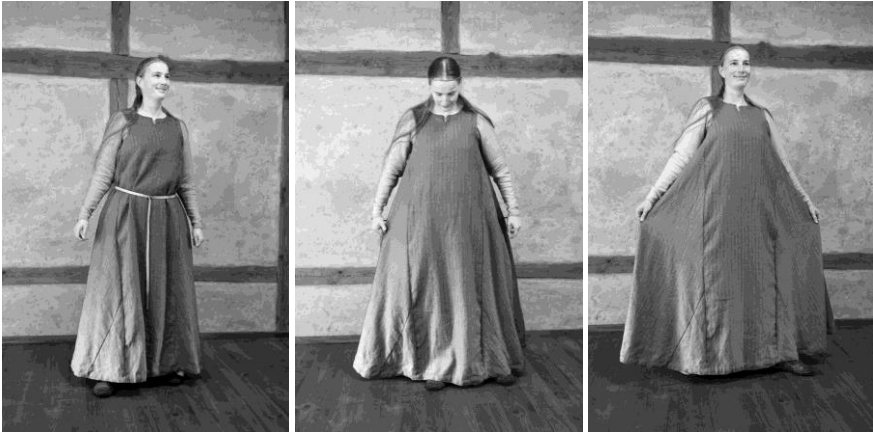


Fig. 6: The surcot. Reconstruction: Julia Gräff; photo: Roland Warzecha.



Fig. 7: Detail of the silk strip lining of the surcot. Reconstruction and photo: Julia Gräff.

This surcot is still in the tradition of the 13th and beginning 14th century with very wide overdresses where the width starts directly under the neck opening and arms. The circumference at the hem is about 370 cm which fits well over the dress worn under it.

III.3.1. Gathering the dresses

To reconstruct the gathering of fabrics, which is depicted in the Ms. I.33, the author started with the assumption that Walpurgis wears no belt over her surcot, because there is very few evidence in contemporary artwork and indeed it is never seen in the Codex Manesse. Instead there are other quite ingenious ways to lift the hem from the floor like buttoning up the cotta⁵². Regularly shown are women who gather some fabric of their

⁵² Cod. Pal Germ. 848, fol. 395r, the woman depicted in this case is shown running away with her lover, so this is not necessarily a decent situation.

surcot tucked under their arm⁵³. But in this case, they make sure it is only the surcot which is lifted and not the cotta, which leaves them morally inviolable by not showing their undergarments or even their ankles and legs. It also barely lifts the hem of the surcot from the floor, which is sufficient for walking, but when both hands should be used for sword and buckler, this method is not an option.

Two garments from Herjolfsnæs and the cloak of St. Birgitta feature pocket slits so that a pouch which is securely fastened to a belt worn underneath the surcot can be reached without lifting the surcot⁵⁴. So maybe Walpurgis gathered the right and the left side of the garment, right side to the left (the underlying pleat) and left side to the right (the upper pleat) (fig. 1) and tucked them through the slits under the belt worn under her surcot? Image 1⁵⁵ could suggest this method, but it does not correlate with images 2 and 3⁵⁶. Image 2 looks as if the whole left side was tucked from above and under a belt around the waist, there is also a distinct constriction of the garments around the waist, showing in pleats directly above. In picture 3 you can alternatively see the tail being tucked from under to above the belt.

It might be noticed that the depiction in image 4⁵⁷ seems to be different from the others and resembles the clerics and his scholars' dresses more. Perhaps in this image the woman does not wear a surcot as a second dress, but it is difficult to tell because of the bigger damage to the colours compared to the previous ones.

The author decided to reconstruct the clothes with a leather belt worn over the surcot. Gathering the surcot nevertheless is only half of the game. The equally floor length cotta can be tucked quite high to the waist so that in the back part it hangs no longer than the buttocks, this makes for very good movability of the knees. In order of not creating too much of a bulge around the waist (which ruins the typical slim gothic outline), the fabric is pulled into two tails which show between the legs in the front. To gather the cotta, a second belt tightly worn under the surcot was used as the folds tend to unravel without it. The shirt being only knee length is not affected by the gathering of fabrics and sits in his natural position showing a horizontal hem.

⁵³ See for example: Cod. Pal Germ. 848, fol.63r, 178r (holding a pet dog on this arm as well), 217r.

⁵⁴ Herjolfsnæs D10580, D10584, Østergård, *Woven*, p. 161, 172; Kania, *Kleidung*, p. 300.

⁵⁵ Ms. I.33, fol. 32r above.

⁵⁶ Ms. I.33, fol. 32r below, 32v above.

⁵⁷ Ms. I.33, fol. 32v below.

III.4. Footwear

III.4.1. The stockings

Walpurgis stockings⁵⁸ on the first two images are the only ones in the manuscript which are depicted black⁵⁹. At first glance, this suggests that she wears long boot like shoes. But the depiction of the actual shoes is like those on the last page where you can see the difference between shoes and stockings because of the colour and the diverging lines⁶⁰.

Before the breakthrough of knitting, stockings were often sewn from woven cloth⁶¹. Quite a lot of them have survived⁶², perhaps because it was not worth to recycle the fabric. Their cutting pattern is similar with a seam in the back of the leg. Smaller differences are in the way the feet parts are formed and attached. Images also show that some of them purposely lack the toe part or only have stirrup strips⁶³. To fit the stockings tight to the calves it is advisable to bias cut them from a twill fabric which gives much more elasticity. The bias cutting pattern of a pair of stockings is not as fabric consuming as one might think⁶⁴.

Walpurgis like most other depicted women of that time never shows her knees, so we can't be sure about the length of her stockings, while men's hoses cover the whole legs and are attached to a waist belt, it is possible that they are merely of knee length like depicted in a very unfortunate scene of the 15th century, where a woman is dragged at her hair by a jealous husband⁶⁵. They are probably secured under the knees with garters like the authors reconstructions (fig. 8).

⁵⁸ The author uses the term stocking for garments ending at the knee, longer ones which are attached to a belt at the waste, are usually called hoses. Compare to: Kania, *Kleidung*, p. 168.

⁵⁹ Ms. I.33, fol. 32r.

⁶⁰ Ms. I.33, fol. 32v.

⁶¹ Other possibilities would be bands wound around the calves or rectangular pieces of cloth wound around the calves and fastened with bands or garters. The first possibility is common in the Roman Iron Age and Early Medieval Times but is not proven for High or Late Medieval times at least in Germany, See: Kania, *Kleidung*, p. 167-168. The latter possibility is difficult to detect and interpret in the archaeological record or in collections, so no distinct examples are known.

⁶² At least 18 examples or pairs of stockings/hoses are known, the oldest dating to the 2nd century AD, Kania, *Kleidung*, p. 375-376, 378-380, 385-387, 391-397, 400-405.

⁶³ Toeless stockings/hoses for example: Oldenburger Sachsenspiegel, Rastede 1336, Oldenburg, Landesbibliothek, LBO CIM I 410, fol. 33v, 34r, 34v, 35r, interestingly used only in the context of duels.

⁶⁴ Compare with: Kania, *Kleidung*, p. 218-219, fig. 96, 136. Fig. 96 showing the cutting pattern of the hoses from Bocksten Bog, out of a 70x128 cm piece of cloth, with very few offcuts.

⁶⁵ After: Kania, *Kleidung*, p. fig. 106.



Fig. 8: *The stockings. Reconstruction: Julia Gräff; photo: Roland Warzecha.*

III.4.2. The shoes

There is a significant difference between shoes depicted in art and excavated shoes⁶⁶. This might be due to pictorial conventions but is a lot more obvious in shoes than in other pieces of fashion. One reason suggested is, that most excavated shoes are from rubbish dumps and highly worn out and thus were worn by a quite poor population. These are not the social strata commonly depicted in period art. So, there might be a difference in footwear according to social status.

As already mentioned with the stockings we rarely have images where female footwear is depicted, so we can only assume that in general they wore the same styles as contemporary men. Comparisons of shoe sizes suggest only minor differences in distribution⁶⁷.

Most similar to Walpurgis shoes are several ankle-height shoes from Schleswig-Schild, with side lace fastening and slashed leaf decoration (fig. 9)⁶⁸. The decoration is cut in the leather along both sides of the shoe, like it is also depicted in the manuscript⁶⁹. The fastening is not visible in this case. Another type of shoe, which has been discussed,

⁶⁶ Groenman-van Waateringe, Velt, *Schubmode*, p. 95.

⁶⁷ Groenman-van Waateringe, Velt, *Schubmode*, p. 98.

⁶⁸ Schnack ankle-height shoe type C 2: Schnack, *Schleswig-Schild*, p. 78-84, fig. 5, 30, pl. 28-30; Volken style Schild-J or Trave-J: Volken, *Archaeological footwear*, p. 147-149, 322, fig 201.

⁶⁹ Ms. I.33, fol. 32r, 32v.

features a fastening with a row of buttons or buckles⁷⁰, but this would be a distinctive asymmetrical closure and could not explain the repeated depiction with white dots on both sides of the shoe.

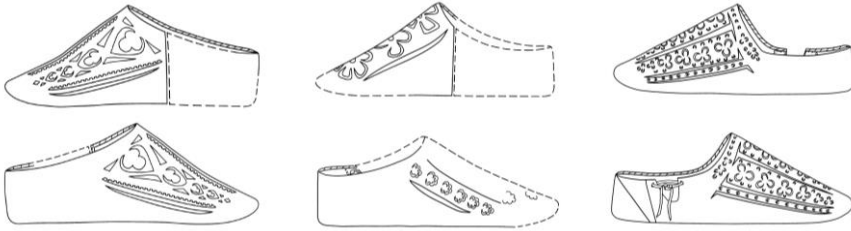


Fig. 9: Four ankle-height shoes from Schleswig-Schild, with side lace fastening and slashed leaf decoration (after Schnack 1992, pl. 28, 29).

The shoes from Schleswig are of Marquita Volkens Style Schild-J with paired lace fastening at the inside. This seems to be a northern European type, but that might be an artificial gap in southern Germany, due to very few published find complexes. These decorations occur almost exclusively on shoes with side lacing of one or another kind. There is one example from Konstanz with a side lace fastening (Volken style Trave-J) but without decorations.

This style of shoe is widespread from the beginning of the 13th until the end of the 14th century. Although the decoration might narrow that down to the decades around 1300⁷¹. In the manuscript the shoes from Walpurgis and the cleric and scholar are depicted of equal height but the men's shoes do not show decorations or fastenings. If any shoe can be called a typical arming shoe of the period it is one with a side lace fastening, because it can be fitted very close to the foot and thus is not disturbing movement in armour⁷².

Shoes of that period are made with a turnshoe-construction and a single-layered leather sole. This alters your possibilities of movement on natural grounds a bit, as they can be quite slippery especially on wet ground or wooden floors. But this is less of a problem if stances like the ones depicted in the manuscript are adopted. This means both legs are almost straight, the back is straight and the upper body is shifted forward in a hinging motion from the hips. It is necessary to keep the point of balance between the legs and thus having equal weight on both feet, unlike with a modern fencing lunge. Further security features are keeping the weight on the balls of the feet instead of the heels and

⁷⁰ Like for example; Schnack high shoe with buckle fastening from Konstanz, Fischmarkt: Schnack, *Konstanz*, p. 31-32, pl. 33-35 or Volken, *Archaeological footwear*, fig. 209, 229.

⁷¹ Volken, *Archaeological footwear*, p. 148, 322.

⁷² See Volken, "Arming shoes of the fifteenth century" in this volume.

turning the front foot a slight bit inward, which prevents slipping while making big steps even on wet grass.

III.5. The gloves

In the 12th to 14th century gloves are in most cases depicted white or yellow like the ones Walpurgis wears⁷³ or in Codex Manesse⁷⁴. This might be a hint that the leather they used was specially tanned, or more exactly cured, with Alum or fats, for example a Glacé or chamois leather⁷⁵. Before the invention of Chrome-tanning the typical leather used for gloves was Glacé tanned⁷⁶. The tanning methods have a big influence on the characteristics of leather, for example colour, stretch, subtlety, flexibility, strength but also the probability of surviving in the soil⁷⁷.

Quite a lot of different groups of people are depicted with gloves such as riders, swordsmen, craftsmen, falconers, noblemen and noblewomen but also, quite common in marginals, apes⁷⁸. The use of gloves seems to have been more widespread than the archaeological record suggests. In contrast to thousands of shoes and boots we have only a handful of remaining gloves or mittens from the period⁷⁹. This again might be a clue to the tanning or curing method being alum or fat based because vegetable tanned leather, which is the preferred material for shoes, is much more likely to be preserved in the soil⁸⁰. Unfortunately, after lying in the ground for several hundreds of years most leather is brown or black and has undergone changes in chemistry so the original tanning methods are no longer detectable.

The reconstructed gloves shown in fig. 10 are crafted by Holger Heid⁸¹. They are made of vegetable tanned stag hide and sewn with pitched linen thread. The edge decoration

⁷³ Ms. I.33, fol 32r, 32v, the same applies for priest and scholar, see for example fol. 2v below, where the decoration of the flap with embroidery along the edge and a pendant or tassel at the tip is visible.

⁷⁴ For example: Cod. Pal Germ. 848, fol. 395r.

⁷⁵ Although Sumach, a vegetable tanning agent, also results in very bright cream or white colours, Sumach nevertheless had to be imported from the Mediterranean. See also the differentiation of the trades of “Rotgerber” and “Weißgerber” in medieval times: Bravo, Trupke, *100 000 Jahre Leder*, p. 22.

⁷⁶ Hegenauer, *Fachkunde*, p. 64.

⁷⁷ Gräf, *Lederfunde*, p. 43-44.

⁷⁸ For example: Cod. Pal Germ. 848, fol. 69r, 190v, 395r; Apes: Willemsen, *Honderden*, fig. 39-41.

⁷⁹ Willemsen 2015, 179-193 lists 24 finds from the Netherlands which might date to the 14th century. In addition, a high number of gloves and gauntlets survived in collections without the influences of the soil: Redwood, *Gloves*, p. 45.

⁸⁰ Cured or “pseudo-tanned” leathers only survive under special conditions such as secondary tanning in bogs, salinity, deserts or ice: Gräf, *Lederfunde*, p. 17.

⁸¹ Thank you very much for allowing me to show this beautiful work.

is a fingerlooped ribbon made from silk dyed with madder and a simple tin pendant at the tip.



Fig. 10: The gloves. Reconstruction and photo: Holger Heid.

III.6. Headwear

Although Walpurgis wears no veil, what she does wear in all images is a green schapel with golden dots around her head. This item of clothing is very hard to see, even in the hi-resolution scans provided open access by the Royal Armouries Leeds or the great facsimile Royal Armouries Edition⁸². For clarification, a graphic rendering of a photograph is shown, which the author took when looking at the manuscript in natura (Fig. 11).

⁸² High-resolution scans: <<https://collections.royalarmouries.org/archive/rac-archive-391002.html>> [latest access 27.06.2017]. Facsimile edition: <<https://shop.royalarmouries.org/limited-edition-i.33-manuscript-facsimile.html>> [latest access 27.06.2017]. This might be due to the incorrect reprint of colours of the first and last page of the manuscript, which are darker than the rest due to traces of wear and tear. The calibration of colours in the scans does not seem to take this into account.



Fig. 11 Graphic rendering of Walpurgis head wearing the schapel (After: Ms. I.33, fol. 32r above). Drawing: Julia Gräf.

The schapel is a very common headdress in the Codex Manesse worn with or without veil⁸³. It is always noblewomen and noblemen, who wear it. In several pictures of Codex Manesse you can see thin strands of cord tingling down the back of the head which suggest that this kind of schapel is probably a headband which is fastened with a knotted cord⁸⁴. Both in London and in Magdeburg fine tablet woven bands, made from green silk and brocaded with silver thread in the forms of dots or crosses, were found from late 13th century deposits⁸⁵. The one from the grave of a landgrave from Hessen in St. Elisabeth in Magdeburg was still attached to a silk mesh hairnet which shows that this kind of band is common for headwear.

The reconstruction follows the weaving details and measurements of the London find, but is brocaded with dots of gold thread (Lahn) to match the colours depicted in the Ms. I.33. The back is lined with green silk cloth to secure the weaving, a simple braided band of green silk provides the fastening (Fig. 12).

⁸³ For example: Cod. Pal Germ. 848, fol. 110r, 178r.

⁸⁴ For example: Cod. Pal Germ. 848, fol. 178r, 217r.

⁸⁵ Crowfoot, Pritchard, Staniland, *Textiles*, p. 131.



Fig. 12 The schapel. Reconstruction and photo: Julia Gräf.

Walpurgis hair falls in curls well over the elbows. She wears no headscarf or veil but open hair. Nevertheless, hair never falls naturally in the neck and over the arms like it is depicted here. This might be a pictorial convention comparable to Codex Manesse where women are always shown in a semi-view profile, have long blond hair and similar waves and curls⁸⁶.

For the reconstruction, the author gathered the front strands of hair together in the neck, which is an easy method, but not proved by images.

IV. COMPARISON TO MEN'S GARMENTS IN MS. I.33

Men's clothes in the late 13th and 14th century are rarely floor-length. A depiction of a cleric and his scholar in the Codex Manesse is the exception with garments the same length as the women's⁸⁷. Noblemen usually wear ankle-length cottas and surcots while the cottas of lesser people like the peasants shown killing a nobleman in Codex Manesse reach just over the knee⁸⁸. The way the garments of priest and scholar in Ms. I.33 are depicted suggests that they do not wear a surcot over their cotta. There are no colour differences (except for the hoods) and there is less fabric gathered between their legs, only one tail is visible instead of two⁸⁹.

⁸⁶ For example: Cod. Pal Germ. 848, fol. 46v, 63r, 70v, 178r, 190v, 204r, 217r, 395r. A comparison with three-dimensional statues could bring further hints to typical hairstyles of the period.

⁸⁷ Cod. Pal Germ. 848, fol.75v.

⁸⁸ See the difference on: Cod. Pal Germ. 848, fol. 188r.

⁸⁹ See for example: Ms. I.33, fol. 18r, 32r.

A shorter garment is much easier to gather, because the whole hem is already lifted from the floor. If the cotta is not wide enough, only the legs should be freed a little bit more, but the hem circumferences of preserved men's garments were similar to those from women and range from about 200 to well over 400 cm⁹⁰. So indeed, it is easily possible to fight in a contemporary ankle-length dress without further gathering. Care is needed only to not bend in the knees or forward too much as that might lead to the hem sliding on the floor and increases the risk of stepping on it.

The pictorial evidence suggests that men's cottas might as well have slits in the front and back which are interpreted as riding slits and improve the mobility⁹¹. And while the sword and bucklerists in one image of Codex Manesse don't have slits in their tucked-up tunics, the ones in a second image do⁹². Please note also, that the ones without slits seem to have shorter cottas and are shown without headwear or schapel⁹³.

V. DATING OF THE MANUSCRIPT

It is difficult to further narrow the date of the manuscript with the help of existing garments, as there are so few and they have their very own dating problems. Some items of fashion in the middle ages are quite long-lived and for example shoes or the surcot with small armholes occur with only minor changes over long periods of time. Nevertheless, there are some hints: buttons on sleeves start to occur at the end of the 13th century, the shoe decoration occurs mainly in the decades around the year 1300, fringed hems, scallops or dagges become more common in the 14th century and the overall appearance of Walpurgis and her clothing resembles that of women depicted in manuscripts of the early 14th century like the Codex Manesse.

Major changes in fashion occur in the second half of the 14th century with more pronounced and tight-fitting garments but this trend is not yet visible in the manuscript and especially in the women's clothes.

What the author does want to exclude is that Ms I.33 is a hoax-manuscript which was written in later times (because it resembles younger Rapier treatises). The painter clearly

⁹⁰ Kragelund 11/12th century 250 cm; Moselund 11/12th century 248 cm; St. Franziskus, Assisi 13th century 254 cm; Fernando de la Cerda 13th century ca. 200 cm; surcot Fernando de la Cerda 13th century ca. 200 cm; Cangrande I. della Scala 12/13th century ca. 490 cm; Bocksten 14th century ca. 300 cm; Rudolf of Habsburg beginning of 14th century 152 cm; Herjolfsnaes D10594 14th century 300 cm; mantle of Jan Zhorelecky 14th century 480 cm (plaited); Herjolfsnaes 14/15th century: D5674 type 1a ca. 270 cm; D10579 type 1a 310 cm; D10583 type 1b 425 cm; D10584 type 1b 333,5 cm; D 10585.1 type 1c 202 cm: See: Kania, *Kleidung*, p. 277-279, 282-284, 294-295, 298-300, 302-303, 344-346, 348-349, 353-359, 431-433, 441-446.

⁹¹ Kania, *Kleidung*, p. 140-142, fig. 62-65.

⁹² Cod. Pal Germ. 848, fol. 190v, 204r.

⁹³ Cod. Pal Germ. 848, fol. 204r.

knew the drawing conventions and fashions in the 13th and 14th century and especially the specific garments and methods of draping which were worn by women of the day. It is unlikely that he got the opportunity to paint Walpurgis after older drafts, because of the exceptional pose she is showing.

Summa summarum the clothes Walpurgis wears, support the thesis that the images in the manuscript were painted in the end of the 13th or the early years of the 14th century⁹⁴.

VI. CONCLUSION

Even though we do not know the origin and the exact dating of the manuscript yet, it is for sure, by her wearing a surcot and a schapel, that the woman depicted is a noblewoman.

And she can fight in her clothes undisturbed, this seems to be of such high importance to the author, that she breaks in these images the contemporary conventions not to show her legs. Whether she breaks it socially or at least pictorially remains disputable. This is not an allegorical or mythological depiction like the one from a manuscript from France which shows Amazons fighting in a very impractical style of ungathered dresses⁹⁵. And it is not a typical depiction of the Saint Walburga either. On a wallpainting in the church of St. Nikolaus in Dornstadt (Auhausen), Bavaria, dating to 1340/50⁹⁶ she is shown in a typical pose with her attributes the grainspikes, and these are missing from our Walpurgis⁹⁷.

Walpurgis is fighting equally with the men in the manuscript, she has her own ward and even wins her fight against the cleric who allegedly knows all the counters and technics against the *generalis*, the common fencers (fig. 13)⁹⁸.

⁹⁴ See for example: Forggeng, *Introduction*, p. 2; Cinato, *Development*, p. 488-489.

⁹⁵ Valenciennes, Bibliothèque Municipale, BM Ms 320, fol. 44r.

⁹⁶ <https://commons.wikimedia.org/wiki/File:Dornstadt_St._Nikolaus_505.JPG?uselang=de> [latest access 27.06.2017].

⁹⁷ Saint Walburga (ca. 710-779/80) was an Anglo-saxon nun and abbess of Heidenheim, who together with her brothers Willibald and Wunibald christianised Southern Germany in the 8th century. Walpurgis was canonized on 1st of May 870, with the bones translated to the abbey Eichstätt, which got the patronage of St Walburg later. To illustrate her noble origins the early depictions often show her in the dresses and crown of a noblewoman, often with a book in her hands, since the 15th century the depiction as a Benedictine nun is predominant. Because of the alleged miracles of saving a little child with the help of three grainspikes from starving and the discharge of holy oil from her shrine in Eichstätt since the 11th century, her saintly attributes are grainspikes and oil flask. See: Braunfels, *LCI*, p. 585-588.

⁹⁸ Ms. I.33, fol. 1v.



Fig. 13: Walpurgis fighting the priest. Reconstruction: Julia Gräf, Roland Warzecha; photo: Susanne Warzecha.

The authors work on this topic is still at the beginning and what is presented here is work in progress. There are quite a lot of riddles still unsolved, many pictorial sources still to be compared⁹⁹ and therefore probably some things to change in the reconstruction in future times.

VII. BIBLIOGRAPHY

VII.1. Primary sources

Leeds, Royal Armouries, Ms. I.33: “Tower Fechtbuch” aka “Walpurgis Fechtbuch”, Southern Germany ca. 1300 <<https://collections.royalarmouries.org/archive/rac-archive-391002.html>> [latest access 27.06.2017].

Wien, Österreichische Nationalbibliothek, Cod. vindob. 2759: “Wenzelsbibel”, Band 1, Wien 1390-1400 <<http://www.handschriftencensus.de/11115>> [latest access 27.06.2017].

Heidelberg, Universitätsbibliothek, Cod. Pal Germ. 848: “Große Heidelberger Liederhandschrift” aka “Codex Manesse”, Zürich 1304-1340 <<http://digi.ub.uni-heidelberg.de/diglit/cpg848>> [latest access 27.06.2017].

⁹⁹ For example, a lot of marginals in manuscripts dating to the 14th century, which show sword and buckler fencing.

- New York, Pierpont Morgan Library, MS G. 24.: possibly Tournai ca. 1350
 <<http://corsair.themorgan.org/cgi-bin/Pwebrecon.cgi?BBID=76974>> [latest access 27.06.2017].
- Oldenburg, Landesbibliothek, LBO CIM I 410: “Oldenburger Sachsenspiegel”, Rastede 1336 <<http://digital.lb-oldenburg.de/ssp/nav/classification/137692>> [latest access 27.06.2017].
- Valenciennes, Bibliothèque Municipale, BM Ms. 320 : „De Rerum Naturae“, France 1275-1290
 <http://www.enluminures.culture.fr/documentation/enlumine/fr/BM/valencienne_s_264-01.htm> [latest access 27.06.2017].

VII.2. Secondary Literature

- Anthore Baptiste, Soline and Baptiste, Nicolas, “Constriction – Construction, a short history of specialised wearing apparel for athletic activities from the fourteenth century to nineteenth century”, *Acta Periodica Duellatorum* 5/2 (2017), 73-95.
- Binard, Fanny and Jaquet, Daniel, “Investigation on the collation of the first Fight book (Leeds, Royal Armouries, Ms I.33)”, *Acta Periodica Duellatorum* 4/1 (2016), 3-22.
- Braunfels, Wolfgang, ed., *Lexikon der christlichen Ikonographie. Bd. 8. Ikonographie der Heiligen Meletius bis zweihundvierzig Märtyrer* (Rome, Freiburg, Basel, Wien: Herder Verlag, 1976).
- Bravo, Guiseppa A. and Trupke, Juliana, *100 000 Jahre Leder. Eine Monographie* (Basel, Stuttgart: Birkhäuser Verlag, 1970).
- Cinato, Franck, Development, “Diffusion and Reception of the “Buckler Play”: A Case Study of a Fighting Art in the Making”, in Jaquet, Daniel, Verelst, Karin and Dawson, Timothy, eds., *Late Medieval and Early Modern Fight Books. Transmission and Tradition of Martial Arts in Europe (14th–17th Centuries)* (Leiden: Brill, 2016), pp. 481-546.
- Crowfoot, Elisabeth, Pritchard, Frances, Staniland, Kay, *Textiles and Clothing 1150-1450. Medieval finds from excavations in London: 4* (London: Boydell Press, 2001²).
- De Dillmont, Thérèse, *Encyclopaedie der weiblichen Handarbeiten* (Dornach/ Elsass 1893).
- Forgeng, Jeffrey L., “Introduction. Royal Armouries MS. I.33”, in Forgeng, Jeffrey L., ed., *The Medieval Art of Swordmanship. A Facsimile and Translation of Europe's Oldest Personal Combat Treatise. Royal Armouries MS I.33* (Union City: Chivalry Bookshelf, 2003).
- Fransen, Lilli, Nørgaard, Anna and Østergård, Else, *Medieval garments reconstructed. Norse clothing patterns* (Aarhus: Aarhus University Press, 2011).
- Gräf, Julia, *Lederfunde der Vorrömischen Eisenzeit und Römischen Kaiserzeit aus Nordwestdeutschland* (Rahden/ Westfalen: Verlag Marie Leidorf, 2015).
- Groenman- van Waateringe, Willy and Velt, L. M., “Schuhmode im späten Mittelalter, Funde und Abbildungen”, *Zeitschrift für Archäologie des Mittelalters* 3 (1975), 95-119.

- Hegenauer, Hans, *Fachkunde für lederverarbeitende Berufe* (Essen: Verlag Ernst Heyer, 2001⁸).
- Kania, Katrin, *Kleidung im Mittelalter. Materialien – Konstruktion – Näbtechnik. Ein Handbuch* (Köln, Weimar, Wien: Böhlau Verlag, 2010).
- Lutterloh, Maria Aloisia, *Der Goldene Schnitt* (Lindau/Bodensee: Verlag Lutterloh-Lindau, circa 1949).
- Østergård, Else, *Woven into the Earth. Textiles from Norse Greenland* (Aarhus: Aarhus University Press, 2004).
- Redwood, Mike, *Gloves and Glove-making* (Oxford, New York: Shire Publications, 2016).
- Schnack, Christiane, *Die mittelalterlichen Schuhe aus Schleswig Ausgrabung Schild 1971-1975. Ausgrabungen in Schleswig*. (Neumünster: Karl Wachholtz Verlag, 1992).
- Schnack, Christiane, *Mittelalterliche Lederfunde aus Konstanz (Grabung Fischmarkt)* (Stuttgart: Konrad Theiss Verlag, 1994).
- Volken, Marquita, *Archaeological Footwear. Development of shoe patterns and styles from Prehistory till the 1600's* (Zwolle: SPA Uitgevers, 2014).
- Volken, Marquita, “Arming shoes of the fifteenth century”, *Acta Periodica Duellatorum* 5/2 (2017), 25-45
- Willemsen, Annemarieke, *Honderden... Van Hand tot Hand. Handschoen en wanten in de Nederlanden voor 1700* (Zwolle: SPA Uitgevers, 2015).