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A DETECTIVE'S EYE ON SCRAPS OF 16th CENTURY CLOTHING

The scraps that this article is about were excavated from a moat in the town of Groningen in the North of the Netherlands. The moat was only open for twenty years at the end of the 16th century and was used during that time as a landfill for the town's waste.

Nearly 2800 textiles were excavated. In order to consolidate the various parts of a find that were still *in situ* but whose sewing thread had decayed, I have developed a method for wet preliminary examination. Even before the object was rinsed in water, dirt was removed as much as possible, while the find was carefully examined. Where seams had been present, I kept the adjoining pieces together by here and there placing a stitch with thin polyester thread. In this way a great deal of evidence was gathered.

The finds are the left-overs, mostly too small for any use, from tailors and seamstresses. Everything that was still of any value was destined for reuse. Apart from children's clothes and some parts of panels or sleeves too much worn out for reuse, no garments or dresses are found. Some fragments still show how a new pattern piece was cut out of a reusable piece of material in such a way as to just avoid a hole.

Many scraps only tell us about the material and some show traces of seams and linings. Nevertheless, with the help of written sources and pattern-books, a conscientious look for the smallest details can reveal interesting features from 16th century clothing habits. As the use and reuse of the material covers a considerable space of time, at least half a century, not much can be said about the dating of the material.

The material

As linen has decayed, only wool and silk could be recovered. Of the woven fabrics, the majority is wool in tabby weave; most of these are medium weaves. Also 2/1 and 2/2 twills are found, the finer 2/2 twills with warp and weft both of smooth, thinly spun yarn. A few mixed weave twills in wool and silk have survived.

Worsted woollen fabrics in fine weaves were excavated, mostly with a plied warp, about 22 threads per cm. In some cases the worsted woollen fabric was a ribbed weave, apparently a precious material, because it was often in combination with rests of silk yarn.

The finds show considerable differences in quality. The common people wore clothes made from 'lappen' and 'land-sticken'. These were woollen fabrics, mostly of native wool woven in the region. Also a large quantity of wool/linen mixed fabrics in tabby weave turned up. These remnants, from which the linen warp has decayed, can be divided into coarse and fine weaves. The finer ones served often as linings. In the rare occasions that linen was excavated, it was found as a (inter)lining between two layers of wool, but preservation was not possible. Once a piece of paper was used as interlining. A few small woollen items of peculiar weaves are found, different from all other weaves.

Among the finds are about 150 fragments of worsted satin, all in 4/1 weave. In the final quarter of the 16th century, worsted satin must have been a significant part of dressmaterial, whereas in this region in the early-16th-century satin was hardly used. Among textiles, excavated in Groningen, from the beginning of the century only two satin fragments were recovered. Also in the inventory and the account-book dated halfway the century from the tailor Jan Douwes (see the next chapter) no satin is mentioned. From the finds it is obvious that satin was less strong than cloth: the satin remains show numerous rips and tears. Whereas in cloth there are no rips, only wear because of long use, these ripped satin pieces were less suitable for reuse.

Silk satin was recovered in three instances, woven very closely in 7/1 satin weave. Besides one piece of woollen damask (1T4), four fragments of silk damask were found, all in 4/1 weave. The biggest one (17T23) has a floral motif, with alongside it a fancy pattern woven in, which is known as pseudo-kufic. Such a pattern was derived from the textiles from the Middle East where silk fabrics were adorned with mottoes in Arabic script (Kufic). This suggests that our damask-find was of Italian manufacture. Also silk velvet is found, partly in strips, cut on the bias. But most of the silk is woven in plain weave, often 'pinked' which means that it is decorated by pricking in a pattern of small holes (see Fig. 7)

Needlework, Tailors and Seamstresses

Many finds display tailoring as a highly skilled trade, that must have been practised by expert professionals, who had received a thorough training. While tailors made new

garments, it was the job of seamstresses not only to mend the wear and tear of clothing but also to refashion old clothes and make new clothes out of the reusable rests of old ones.

Most people had not the skill to make or to remake the intricate clothing; hence most clothes were made outside the home¹. Orphan girls were taught to sew, so they would later be able to make a living. From written documents of the guilds we know quite a lot about the regulations covering the tailoring trade. The trade of seamstresses was not organized; therefore much less is known about their work. Since many people were unable to afford new clothes, there was a lively trade in second-hand ones. This was the realm of the second-hand-clothes dealer, usually women. They bought up old clothes and mended or altered them, after which they sold them as ready-to-wear garments. The traces of reuse on many finds and the precision with which most repairs were carried out suggest that many of the items excavated in Groningen had passed through the hands of seamstresses and old-clothes dealers.

The small needle-holes in cloth indicate that the seams are sewn with tiny stitches with only 2 or 3 mm seam-allowance. This was possible not only because the cloth is so firmly woven that it doesn't tear, but also because the panels were sewn together with lining and interlining, which made them pretty strong. By making a reconstruction of a boy's doublet and breeches this way of sewing by hand turned out to be a very tough job, which commands respect for the contemporary tailors.

Not only the seams, also the way garments are finished shows professional skill: collars and skirts of doublets, the facings giving the garment its good shape, the trimmings along borders and even the patches covering holes.

The parts of a garment are carefully cut, and often, when the cloth wasn't broad enough, a pattern was replenished with a piece of the same weave. Pattern-books such as the tailor Juan de Alcega's 'The Libro de Geometria'² show this technique.

However, the linings we found were often put together from different weaves.

We know a lot about tailoring from the inventory (made up 22 January 1560) and the account-book of the well-off widower Jan Douwes, tailor in Leeuwarden (also a town in the North of the Netherlands)³. The inventory mentions his personal belongings, the dresses of his deceased wife and his shop's stock at the moment he died. In the account-book the many bills, unpaid by his clients, from 1552 onwards



Fig. 1. Decoration with two embroidered velvet strips (17T39).



Fig. 2. Anonymous, De Lakenhal van 's Hertogenbosch, 1530. Collectie Noordbrabants Museum's Hertogenbosch, inv. nr. 01596.

are registered. He noted down the name of the customer, what garment he had made, the amounts and the price of the materials used, when appropriate, the price of buttons and silk sewing thread and of course how much he charged for

¹ B. Panhuysen, *Maatwerk. Kleermakers, naaisters, oudkleerkopers en gilden (1500 – 1800)*, Amsterdam 2000, p. 328.

² J. de Alcega, *Libro de Geometria, Pratica y Traça*. Facsimile R. Bean Carlton (ed.), *Tailors Pattern Book 1589*, Bedford 1979.

³ B. Rozema-Frühnicht, G. Arnolli, *De nalatenschap van Jan Douwes, kleermaker te Leeuwarden. Een archiefstuk uit 1560*, [in:] *Kostuum 2006, Jaaruitgave Nederlandse Vereniging voor Kostuum, Kant, Mode en Streekdracht*, 2006, pp. 5-20.

making the garment. This is an abundant source of information about what people wore, more than can be told here.

Costume-historic identification, luxury and decorations

Though the finds brought to light many interesting features, the initial assumption that particular costume-historic statements could be made, didn't come true. It was impossible to identify a larger object, based on the small scraps. In some cases however the fact that parts of a find were put together before rinsing, really disclosed important details. By this method so many (parts of) hoses could be saved that much can be said about their construction and comparisons could be made. Also a mitten, once lined with fur, composed of seven small pieces of cloth, could be identified. In this way different parts of garments gave us a look in their construction, as will be dealt with further on.

Worsted satin occupies the second place among the weaves. In most cases it is not possible to establish how it was used at the garment. When several parts of a single find are of different satin weaves, this is indicative of reuse of the fabric as a lining.

From written documents is clear that satin weave was used for outer parts as well as for linings. In the inventory from 1543 one Albertus Pigijs mentions: een fluweelen tabbert mit satyn gevodert and een zwarten tabbert gevodert met zwart zye satyn⁴. In the same inventory also a taneyte satyne palsrock⁵ is mentioned. This manscoat's obviously had an outside made of satin.

A few times velvet could be discovered among the finds. Worth mentioning are the strips of velvet, cut on the bias, found with needleholes along the edges or still sewn on with silk yarn. Once a strip of voided velvet (=cut in a pattern) was found. Sometimes the velvet-strip is decorated with rows of silk stitches. This matches with the supply the tailor Jan Douwes had in his shop: viiff ellen fluweelen boort duym breedt driemael duer stickt⁶. By a law from 1550 it was forbidden for ordinary people to wear velvet apart from only three small strips along a border⁷. An other inventory, of the deceased miller's widow Maria Dirksdochter, mentions: ... met ront flouwelen boordeken and een graeu lijffgen ... mit 3 boorden om den hals. Jan Douwes'deceased wife had had een leackens tabbart met een ronde fluellen boort...⁸. The finds also confirm the observance of this law.

⁴ C. H. de Jonge, *Bijdrage tot de Kennis van de Noord-Nederlandsche Costuum-Geschiedenis in de eerste helft van de XVIIe eeuw, deel I, het mannencostuum*, Utrecht 1916, bijlage II, blz. XLIX,L and blz. LXIX.

⁵ Velvet (black) tabard lined with (black silk) satin.

⁶ A strip of velvet long 3,40 m and broad 2,6 cm with 3 lines of silk stitch.

⁷ *Rozema en Arnolli*, 2006, 9. *Ontleend aan thoe Schwartzenberg en Hohenlansberg, Groot Placaat en Charterboek van Vriesland*, Leeuwarden 1768-1795, deel III, 208

⁸ A round velvet border; a grey bodice...with 3 borderstrips round the neck; a cloth gown with a round velvet border.

Though the law referred to ordinary people only, this decoration can also be seen on the clothing of the well-to-do. The piece of fine ribbed fabric (17T39), a precious material, shows two strips of velvet along the bottom seam of what presumably has been a gown (Fig. 1) The strips are sewn on and embroidered with silk yarn, now light brown, but once in different colours, it must have been splendid.

A cheap and easy way to make a nice bordering along the wrists, collars and skirts of garments is with piccadills. They are made by doubling and tabbing an oblong piece of cloth, and when done with a different color it will give the garment an elegant look, accessible for everyone. There are lots of piccadills among the finds, small as well as larger ones (see Fig. 3).

Another way of embellishing garments is with small silk braids. A large number of these braids were excavated, woven in a variety of patterns, often in (combination with) cardweaving. The smallest are woven with only two cards, the broader ones in complicated techniques. Sometimes they are still sewn on the cloth, covering a seam. But braids were also, as paintings show, richly applied on divers garments as a splendid adornment. Of course, such a find didn't occur. In some cases a piece of cloth is found where obviously a braid was removed.

The iconography and the written sources suggest that in the 16th century even the common people wore colourful clothes. On the picture "de Pachthof" by Jan Brueghel de Oude, where a master and his wife pay a visit to the tenant and his family, we see these two well-to-do people clad in black, while all the others wear different colours. Shades of red predominate, but also a great deal of blue and green is worn. The picture of the clothmarket in 's Hertogenbosch (Fig. 2) shows a similar image: On the market-stalls the red colour appears most and many yellow, white, green and blue items are on display. Only one black piece can be seen.

Black materials were expensive because of the elaborate dyeing methods, and hence reserved for people of higher social standing. The black worn in contemporary portraits is not a sign of protestant austerity, as was often believed in the 20th century, but it was worn by scholars and protestant clergy as a sign of their dignity, while the wealthy merchants had themselves portrayed in black as an indication of cosmopolitan self-confidence⁹.

All finds now are brown, the colour of the soil, but originally they must have been of bright colours such as red, yellow, green and blue. The colour of some objects was analysed with the HPLC-PDA method. The piece of woollen damask mentioned above, is now black but traces are found of luteolin, so probably its original colour has been yellow. In some small scraps, still a bit red, indeed madder has been identified and in one case the dye stuff cocheneal was used.

⁹ J. Groeneweg, *Over zwarte kleding in de Gouden Eeuw en een langdurig misverstand*, [in:] *Jaarboek 1999, Stichting Textielcommissie Nederland*, Amsterdam 2000, pp.10-25.

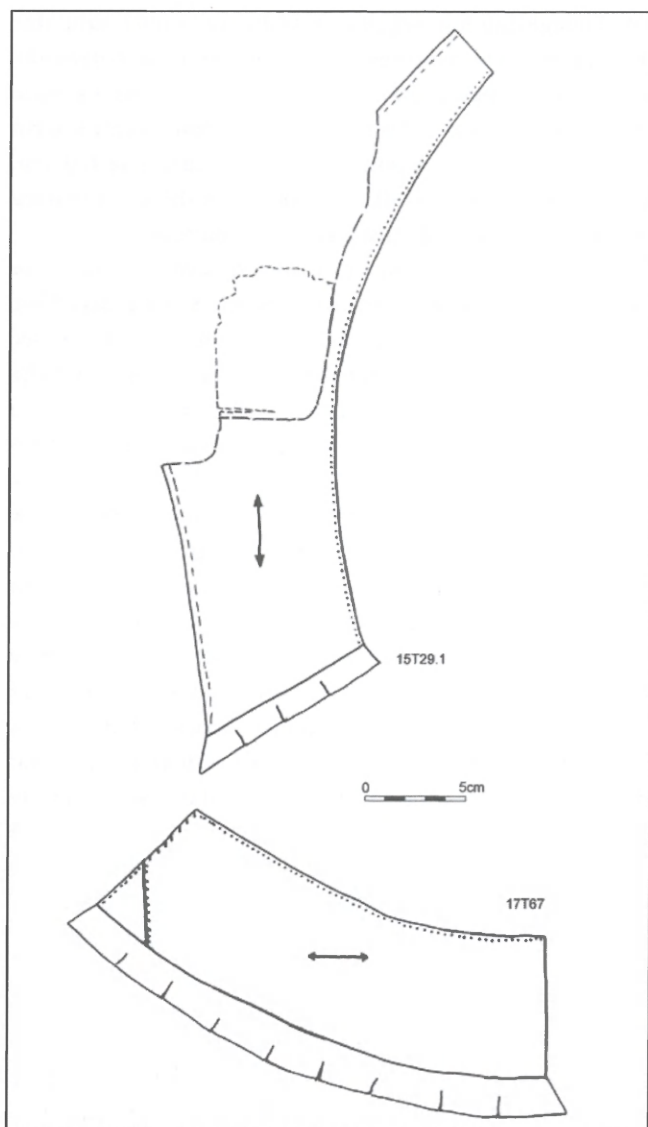


Fig. 3. Two fragments (15T29 and 17T67) of doublets with piccadills.

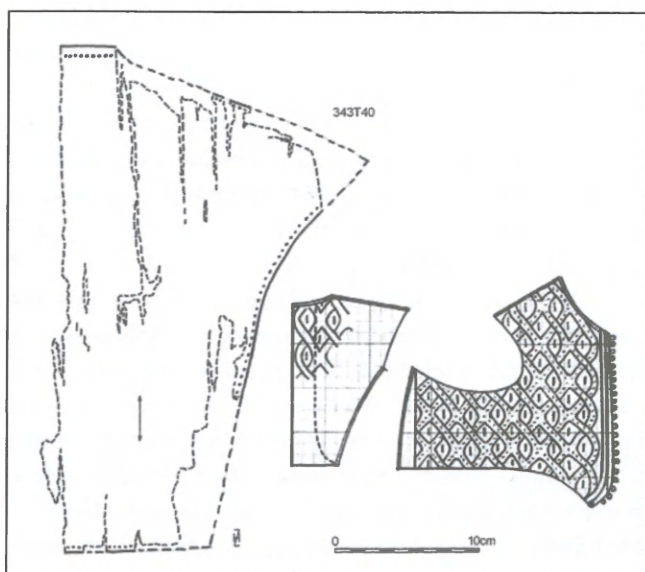


Fig. 4. Satin backpanel of a doublet (343T40) and patterns of back- and frontpanel by J. Arnold (*Patterns of Fashion. The cut and construction of clothes for men and women 1560-1620*, London 1985, p. 79).



Fig. 5. Gowns, leaving the skirt in sight and a padded roll for fastening the loose sleeve. After F. Deserps 1562: S. Shaunon: *The Various Styles of Clothing. Fascimile of the 1562 edition*, Minneapolis 2001 and H. Norris, *Tudor Costume and Fashion*. New York 1997.

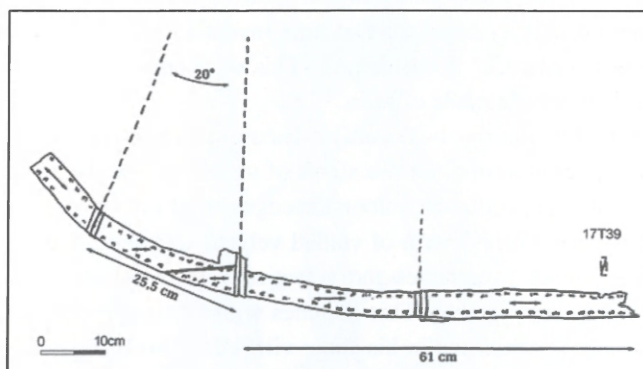


Fig. 6. Reconstruction of the gown from a part of the seam (17T39)

The colour-analysis of a knitted baby jacket showed four components: cocheneal and madder for red, weld for yellow and woad for blue, which is very unusual. Mostly only two dyestuffs were used for a mixed colour. The reason could be that the once dyed jacket, when it was old and patched and the colour had faded, was dyed anew in the rest of a dyebath. Another form of reuse!

Men's clothes

Because there are practically no large parts found of adult's clothing, the recovery of the right front panel with part of the collar, parts of the skirt, a sleeve and some other small fragments of a good-sized man's doublet (55T1) is a special event. Front, sleeve and skirt are made of cloth. The doublet and the frontpart of the skirt were lined with a mixed fabric of wool and linen and the skirt had an additional linen

interlining. The many threadbare pieces of supple wool in tabby weave probably have belonged to the lining of the back. In the sleeve a linen lining was found. The 16 cm wide skirt was edged with a small strip of cloth. The seam of the waist turns a bit downwards to the centre of the front. There is no fastening, except for a small eyelet with traces of yarn in the tip of the lower frontpart. Such an eyelet can be seen at different 16th century doublets, as studied and drawn by Janet Arnold. Possibly there have been hooks and eyes on the now lost lining. In Wijster, not so far away from Groningen, a body from the 16th century was found in the peat bog¹⁰. The clothing, among which a doublet resembling the above mentioned, was well preserved. Here also the fastening was missing, the linen lining had decayed, but impressions of hooks and eyes remained. The model of the Groningen doublet is plain rather than elegant. This, together with the coarse material, makes it likely that its owner was a commoner. More often smaller parts of doublets were found, sometimes decorated with piccadills along the skirts and the wrists (Fig. 3).

Different parts of doublets in satin weave of comparatively large dimensions were excavated. One larger piece is half a back panel (343T40) (Fig. 4). The peculiar form of this panel is caused by the seam from the shoulder to the waist. This seam indicates a cut that stresses the visual effect of broad shoulders and a narrow waist. Other pieces include parts of front- and backpanels (54T73 and 25T4) and sleeves (54T147 and 45T19). These parts could have been the lining as well as the outside of a doublet. With certainty the wrist-part of a sleeve (55T2), excavated with the seam still closed, had a satin outside and a woollen lining.

It is not surprising that men's breeches were not discovered, because after discarding, the large pieces of material with hardly a seam were still available for reuse. We have found several gathered and pleated fragments, probably once sewn at a waistband, but it was not possible to identify them as part of a specific garment.

Women's clothes

What is said above about men's breaches also applies to the long women's skirts, reaching from the waist to the feet. Though small, some remnants, hidden at a first look, may contain characteristics of this kind of dress.

The find 15T40 consists of several parts. Three pieces of rather thin 2/2 twill, now with many traces of wear, but once a fine, supple material, are gathered along the selvedge. Within a thick, doubled piece of cloth. 2 cm wide and 40 cm long, obviously part of the waistband, the same gathered twill is found, cut off just below the gathering. Over 23 cm however, instead of the twill and also cut off, three pieces of the

same weave as the band itself are visible, with two seams. On these seams tiny pieces of a silk cardwoven braid are discovered. These remnants indicate that the skirt was partly made of twill, but that at the front three parts were made of the cloth mentioned above, the seams decorated with a small silk braid. Presumably a loose gown was worn over the skirt, leaving only these frontparts of the skirt in sight (Fig. 5).

On pictures the gowns are frequently decorated with one or two strips along the bottom and the sides of the front. The find 17T39, mentioned above in the section about luxury (see Fig. 1), might have been part of such a gown. The gown was made of a worsted ribbed fabric, lined with linen of which small particles could be discovered, decorated with two strips of velvet. Underneath it was finished with a small strip of cloth to protect the fine ribbed weave. At the backside of the find the seams and the seam-allowances show where the parts were put together (Fig. 6). Here the direction of the weft of the rib weave is visible, and one part shows that it is cut in a round form. By drawing the parts of this backside in the right position and elongating the seams the pattern can (partly) be reconstructed, just enough to recognize it as a gown.

Another feature is what seem small puffed sleeves. These parts of the dress are padded and cover the fastening places of the loose sleeves. The piece of silk (26T13), of which alas a portion is cut away, could have been part of such a dress-part. When the pleats are folded in and the seam is closed around a padding, it forms a roll as shown in fig. 5. The small woollen strap still attached for fastening the loose sleeve confirms this. Loose sleeves were used in women's clothing, partly perhaps because they more often needed replacement than the garment itself, but also because in this way the look of the garment could be changed by choosing another set of sleeves¹¹. This seems to be confirmed by the find of 15 (parts of) sleeves with wear and tear spots. In the inventory and the account-book of Jan Douwes loose sleeves are also mentioned.

It is not certain what a piece of pinked silk (45T21) has been a part of (Fig. 7). Is it the rest of a woman's chemise or a man's shirt? On pictures, when no a collar is worn, we see men as well as women wearing plain underwear, sometimes decorated around the neck. In this case we assume that the silk belonged to a woman's undergarment. The find shows part of a neck finished with a strip, cut on the bias, that is sewn and decorated with three rows of silk stitches. Where the silk material is torn away, 8 cm of the strip has remained and is supplied with three small silk tassels. Probably the strip reached to the closing at mid-front.

Children's clothes

Children's clothing provided a richer source of information. These clothes often were made of reused material, and when worn out, they were not suitable for another reuse.

¹⁰ S. Y. Comis, *Zestiende-eeuwse wollen en leren kledingstukken uit het veen bij Wijster*, [in:] *Van Rendierjager tot Ontginner. Nieuwe oudheidkundige ontdekkingen in Drenthe*, XIII, (eds.) W.A.B. van der Sande, V.T. van Vilsteren, Assen 1998, pp. 171-197.

¹¹ J. Arnold, *Patterns of Fashion. The cut and construction of clothes for men and women 1560-1620*, London 1985, pp. 39, 44.



Fig. 7. Part of a pinked silk undergarment (45T21).



Fig. 9. Baby's bodices (343T33) and (48T3, made of four different satin weaves).

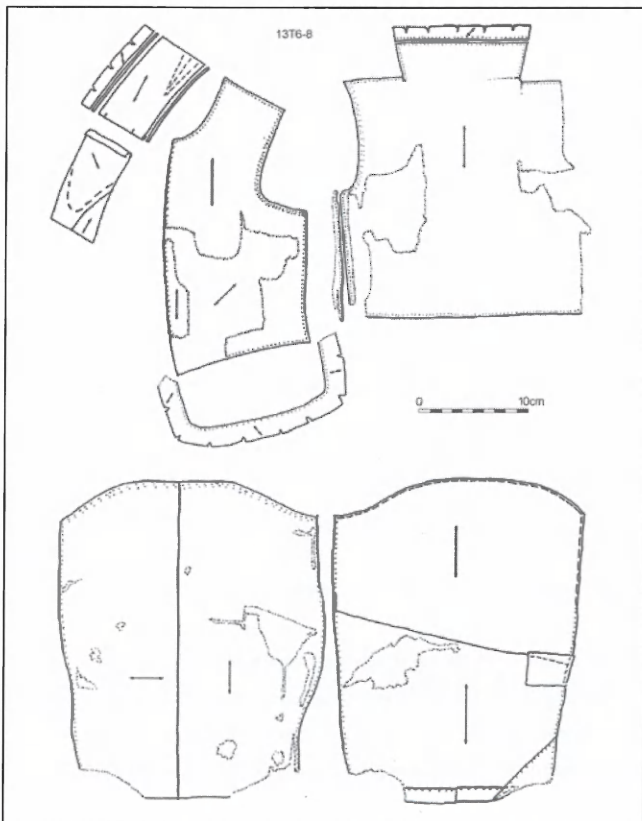


Fig. 8. The boy's doublet (13T6).



Fig. 10. A helmet-like shaped hat (54T128) with on one side a turned-up flap, lined with pinked silk .

Among the finds are boy's doublets, the two parts of a boy's breeches, several front and back panels of bodices and some sleeves.

The doublet (13T6) (Fig. 8) is very small, and confirms what Anne Buck writes about boys being clad in a doublet from the age of two¹². The find consists of the outside of the backpanel and the right frontpanel with a lining and a vestige of a linen interlining, a collar and the piccadills of the skirt. Only one sleeve is preserved, consisting of four different weaves, the outside as well as the lining of two weaves. The little doublet looks very uncomfortable to wear not only because it has, just as the adult's ones, an upright outside, the lining on the bias, and an interlining, which makes it very stiff, but also because the collar is a remarkably stiff feature. Nearer inspection brought to light that this big broad and thick collar was also a reused one, formerly part of an adult's collar. Between the outside and the lining, there was a third woollen layer on the bias. From this layer a piece was cut away in the corner, to make room for a fold in the outside layer. In this way the collar was made narrower, fitting to the width of the backpanel's collar. At the inside of the collar the lining was sewed over all. Besides this the collar had piccadills and within the seams small strips perhaps in a different colour as a decoration. The colour-analysis of the doublet indicated madder, woad and weld but too little to make clear statements about the colours, but possibly the doublet itself has been brown. As in the lining only weld is discovered, obviously this was dyed yellow. Because so much of this doublet remained and also both parts of the breeches, a wide model with legs just covering the knee, a reconstruction could be made.

A nearly complete knitted baby's jacket was excavated. The jacket had no fastening, from which we may conclude that the baby was swaddled around the torso. The free arms can be deduced from the worn and patched areas beneath the armpits, which show that the child, as was usual in those days, strolled about in a walker with its arms above the top edge. Perhaps it was this baby who wore the smallest one of the three children's hose, only 20 cm high with a foot-length of 8 cm and red in colour. It has a hole at the toes, worn out because the baby must have been walking on tiptoe.

Like the jacket, also the three small satin bodices of which only the frontpanels were found, were closed on the back, but most likely these had buttons. One of these bodices (48T3) was carefully made of four different satin weaves (Fig. 9).

Hose

Though knitted stockings were already known in the second half of the 16th century, and even excavated here, most people still wore hose, leg coverings made from woven material. Besides four complete and three more or less complete hose, a very large number of fragments were found. Among

these are many feet, countless times patched up before the leg part, still fit for reuse, was cut off. All hose have the same basic shape. The leg part was cut on the bias, and the back seam is doubled with a broad seam allowance to prevent tearing. This sort of seam was only applied in hose. The triangular gussets show a wide range of variation. The soles also have different shapes and mostly the material of the soles is of a different, sturdier weave than the leg part. The length of the soles of 24 hose could still be established. The longest was 27 cm, comparable to European shoe size 42, and the smallest 8 cm. The majority range between 16 cm and 25 cm.

Most hose were made from coarse to medium material (6-12 threads per cm) in tabby weave. The lion's share of the population apparently wore thick, somewhat stiff hose, stitched with linen yarn. The hose made of twill were stitched with silk yarn with a decorated seam along the gussets. In one case a remnant of a linen lining was found inside a hose.

To fasten the hose, garters were used. The long strips of tabby weave which looked as if they had once been tied in a knot, may have served as garters. In one case a broken strip of silk velvet was found, still with its bow intact. Possibly this has been a garter. This 2,5 cm wide strip, cut on the bias, was decorated with a small cardwoven silk braid in the middle and two silk cords along the edges. Together with a twill hose with silk stitching it might have been a smart covering of the leg.

Knitwork

The Groningen knitwear finds are notable not only because of their quantity but also by the top quality of the knitting. Not everyone had learned to knit, in Europe the 16th century knitting was done by trained craftspeople. Many knittings as caps and stockings were imported from England¹³.

Among the finds there are no complete stockings, only three top-parts were recovered. These stockings were finely knitted: about 35-26 stitches and 43-39 rows on 5x5 cm. All three are knitted in the round and have a 'seam': in every row a purl stitch that indicates the mid-back of the stocking. From the way stitches are decreased and increased can be derived that two of the stockings were as 10 cm above the knee in length. The third stocking (17T14), knitted from still beautiful and soft wool, has got a new destination. After being cut open along the 'seam', it was carefully hemmed, while in the centre also an opening was made and edged all around. Its dimensions suggest that it served as a shoulder covering for a swaddled baby. More knitted children's clothing are the child's jacket mentioned above and a child's stocking with a ribbed heel (17T27).

In the paragraph about women's clothing loose sleeves have been described. These were often made of woven material. But among the finds are also loose sleeves in knitwear.

¹² A. Buck, *Clothes and Child, a Handbook of Children's Dress in England 1500-1900*, Bedford 1996, p. 81.

¹³ I. Turnau, *History of Knitting before Mass Production*, Warszawa 1991, pp. 24-46.

One of these sleeves (15T17) is finely knitted with a small lip at the top by which it could be pinned to the garment. This indicates that it belonged to a woman's wardrobe. Another one (30T2) is just a tubular knitting of coarser yarn and without any marks. As a sleeve of the same shape and knitting was found on board of the *Mary Rose*, Henry VIII's flagship, a men's world, sunk in 1545, we may assume that this one was also a man's sleeve, not used to beautify but for the purpose of warming. The third sleeve, also coarse and tubular knitted, has woven repairs and is badly damaged.

All four gloves are in women's sizes, but only two of them have the same fine knitting as the stockings and have a fantasy border with purl stitches around the wrist. From one glove (54T18) a part of this border is singed and the gap is repaired with a piece of twill, still red in colour. The careful way this repair was performed, cut with tiny scallops along the bottom, suggests that the gloves were red and very precious for a not well-to-do owner. The other two gloves are coarser, without decorations and the woollen yarn was mixed with goathair. A nearly undamaged mitten (15T15) in a man's size has a wide cuff over the wrist. The structure of the knitting is very compact, so presumably the mitten has been full, fit for heavy-duty.

At an earlier excavation in 1993 a knitted cap has been found, a beret as was worn by many scholars in the 16th century, of which I have made a reconstruction. In that way it was easy to recognise a piece of knitwork as the remnant of such a knitted beret (54T92). It is knitted in the round, with a doubled border, after which the shape was made by first increasing and further on decreasing till the top. The beret is heavily full as was the custom to do with this kind of headgear, to fix the form and make it weatherproof.

A remarkable feature of the knitwear is that two gloves and the stocking with the ribbed heel were started at the top of the fingers and the toes. This may be the method that evolved from the earlier nålebinding from which the technique of knitting is derived. As long as only stocking-stitch was used, a square in ribs was used to form the heel. I tried to knit this heel in both directions and found out that the correct form only could be obtained from the toe upward. A better shape of the heel was only possible after the discovering of purl knitting. In this way these finds are an addition to the history of knitting.

Headgear

Apart from the knitted beret described in the last paragraph, many remains of headgear were recovered: caps of woven material of different shapes, and divers models of felthats.

From the four original sections of a bonnet made of red silk velvet two are left, with the woollen lining and remnants of a fur trimming (17T24). The seams are covered with narrow, tablet-woven silk braids. There is a remnant of a woollen cord to fasten the bonnet under the chin. Another section similar to those of this bonnet was found, of worsted ribbed

fabric with a woollen lining and a small piece of velvet ribbon (39T7). Probably the seams once were covered with velvet, that was taken away for reuse. Of a third bonnet (44T4) two sections were found, made of satin with remnants of a linen lining and small remains of fur. As a fourth piece in satin of the same shape was excavated, we may assume that this kind of bonnets was a common feature among the population in town. Often children are portrayed with this sort of bonnets.

Also two skullcaps were found. One of these (45T22) is complete; it was made of four triangular sections of worsted rib weave, lined with wool of two different weaves. Around the edge are some remains of fur. Of the other skullcap (54T75), the fragments of the four sections are still attached at the top, the seams covered with a thin, unusual kind of silk ribbon.

One small cap has a 'pillbox' model (17T25). The outside is made of a worsted ribbed weave, the lining, still reddish in colour, is of woollen cloth. The bottom of the cap is a circle. The outside of the part around the head is cut in one piece, on the bias, with the seam at the backside. The lining is cut in two parts with the grain. The small part that covers the forehead, has the warp in a vertical direction. In the other part, around the head, the warp, that stretches less than the weft, is horizontal. This makes the whole thing pretty stiff. At the seam between bottom and side are remnants of silk yarn, where probably a decoration of silk braid was removed.

The peculiarities of the remnant of a knitted beret were discussed in the preceding section.

The Groningen excavations yielded the remains of 20 felt hats, some of them almost complete or of reconstructible shapes. The crowns of the hats might be rounded or flat, and the brims range from narrow to broad. The most common model turned out to be that with a rounded crown and a narrow brim. A number of models presumably evolved from folding over or cutting off the brim. One hat (54T128) has a helmet-like shape with on one side a turned-up flap, which is lined with pinked silk and finished with a silk fringe (Fig. 10). A deviating shape is a small felthat of the pill-box model.

The underside of the brim of some felt hats was lined and often finished with a silk edging made by card-weaving or finger-plaiting. Also (parts of) loose linings were recovered. Most are of silk; only once a woollen lining was encountered and in one case traces of a linen lining. Given the variation in shape and quality of the felt and the linings, the hats must have come from a broad sector of the population. It is curious that the finds prove that lined brims are quite normal, but when I went through the Rijksmuseum in Amsterdam, where so many pictures show people with felt hats, I couldn't find a single hat with a lined brim. Only the portrait by Rembrandt of one Frederick Rihel on Horseback(1663)¹⁴ shows the officer's hat finished with a silk edging.

¹⁴ In the National Gallery London.

Conclusions

The close dating (1575 – ca. 1595), together with the large quantity and good quality of the recovered material, has contributed in various respects to our knowledge of 16th-century textiles and their use.

The method of preliminary investigation, while still wet, has brought to light evidence about the positions of pattern parts, sewing techniques, repairs and linen linings, which otherwise would have been 'thrown out with the rinse water'.

The traces of reuse show that textile recycling was commonplace in all strata of society and not necessarily a sign of poverty.

Costume-historical research was possible only to a limited extent, because of the fragmentary condition of the

garment remains. As the remains of children's clothing were comparatively complete, conclusions could be drawn about dress customs in relation to youngsters.

Most of the finds are scraps of plain fabric in tabby weave, but enough fabrics were excavated that refer to the well-to-do who could afford to wear clothes of complicated weaves and expensive material.

The textile material is linked to its social-historical context and to the occupational groups of tailors and seamstresses.

The knitted items have revealed a transitional phase in the evolution of knitting.

Streszczenie

W mieście Groningen na północy Holandii wykopano prawie 2800 tkanin pochodzących z końca XVI wieku. Przeważają wyroby wełniane wykonane w splocie płóciennym, skośnym lub satynowym. Zachowało się również kilka jedwabnych fragmentów w splocie adamaszkowym. Większość z nich, to pozostałości wykonane z materiałów wtórnych. Kupcy obracający odzieżą z drugiej ręki skupywali stare ubrania, naprawiali je lub przerabiali, a następnie odsprzedawali jako gotowe do noszenia wyroby.

Metoda polegająca na konserwacji połączeń ściągów przed płukaniem znalezisk pozwoliła ujawnić istotne szczegóły dotyczące odkopanych strojów. Na ich podstawie, z pomocą źródeł pisanych i książek zawierających wzory, udało się odtworzyć interesujące zwyczaje dotyczące ubioru.

Poza połową męskiego kaftanu w dużym rozmiarze, nie znaleziono innych większych części odzieży dla dorosłych. Czasem jednak, na znalezionych skrawkach zauważyć można małe i niedostrzegalne na pierwszy rzut oka elementy wystarczająco charakterystyczne, aby w odkrytym fragmencie rozpoznać pozostałość ubioru.

Łatwiejsze do rozpoznania okazały się ubranka dziecięce. Były one często wykonane z używanego materiału. Wśród tych znalezisk wyróżnić można kilka przednich

i tylnych części staników, chłopięce kaftaniki i prawie kompletną, dzianą kurteczkę niemowlęcą. Zachowane fragmenty kaftanika i spodenek były wystarczająco duże, że umożliwiły rekonstrukcję stroju.

Dziane pończochy nie upowszechniły się jeszcze w XVI wieku i najczęściej noszono rajtuzy wykonane z tkanego materiału. Zachowało się wiele fragmentów takich tkanin. Były one po wielokroć łątane, aż wreszcie obcinano nogawki, które nadawały się jeszcze do przeróbki. Wszystkie mają ten sam podstawowy kształt. Nogawka była cięta po skosie, zszyta z tyłu charakterystycznym podwójnym szwem.

Dziane znaleziska z Groningen są dzianinami wysokiej jakości, wykonanymi przez wykwalifikowanych rzemieślników. Są tam między innymi rękawy, części pończoch, fragment dzianego beretu, rękawiczka z jednym palcem i cztery rękawiczki pięciopalczaste. Ciekawe wydaje się to, że część rękawiczek robiona była od czubka palca lub kciuka, metodą wywodzącą się od ściegu igłowego.

Odkryto również liczne pozostałości nakryć głowy: czapki wykonane z tkanych materiałów oraz różne modele filcowych kapeluszy, część z nich prawie całkowicie zachowana.

