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Summary : Textile manufacture in the Czech Lands in the 13th-15th centuries: understanding textile production on the basis of archaeological finds

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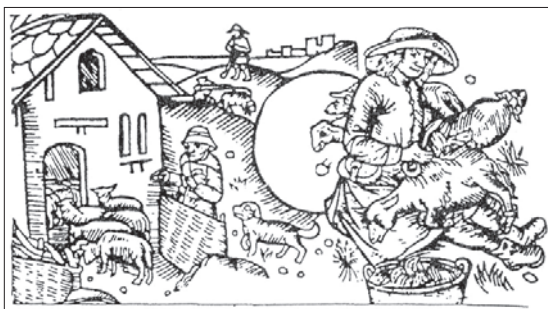
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XII. SUMMARY

TEXTILE MANUFACTURE IN THE CZECH LANDS IN THE 13TH-15TH CENTURIES. UNDERSTANDING TEXTILE PRODUCTION ON THE BASIS OF ARCHAEOLOGICAL FINDS.

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This publication is a revised version of a dissertation of the same name, defended in 2004 at the Institute for Prehistory & the Early Historical Period of the Philosophical Faculty of Charles University, Prague.

I. Introduction

This publication provides a summary of current archaeological knowledge of textile production in the High and Late Middle Ages, which in its structure, approach and the types of source material used builds on an earlier treatment of early medieval textile manufacture (*Březinová 1997*). The work concentrates mainly on the areas of Bohemia, Moravia and Czech Silesia, but makes abundant use of information gained during research into the historical development of textile production elsewhere in Europe.

The study is divided into thirteen chapters. *Chapter II* provides an overview of Bohemian, Moravian and European research into the historical development of textile production. *Chapter III* is an overview of the sources applicable to the study of textile manufacture, in which the greatest attention is devoted to archaeological sources, although of course written and iconographic source material is also considered. Attention is also given to experimental archaeology, particularly valuable in investigating production approaches and processes. The lengthy *Chapter IV* contains an inventory of published archaeological finds from Bohemia, Moravia and Czech Silesia that relate to textile production (textile fragments and textile implements). Each of the sub-chapters concludes with an evaluation that characterises the individual finds assemblages and their contribution to textile research. *Chapter V* is devoted to the actual process of textile production in the Middle Ages, from the structure and organisation of the textile industry in the society of the time, through the textile raw materials employed, specific textile-related technological approaches and the types of tools used, to the uses to which textile products were put. *Chapter VI* considers imported textile products, the opportunities for the recognition of such among archaeological textile finds, and finds of such from the Czech Republic. *Chapter VII* provides a brief summary of the knowledge available to date regarding Early Medieval textile manufacture, to which an overview is attached of the major changes that occurred in textile production from the 13th century onwards. *Chapter VIII* brings a closing summary of the information currently available on textile production in the Czech Lands in the 13th-15th centuries. A glossary of basic textile terminology is given in *Chapter IX*, while *Chapter X* lists all of the sources and literature used and referred to. The closing three chapters, *XI*, *XII* and *XIII*, provide

descriptions of the illustrations, summary and illustrations.

II. Research into the historical development of textile production

Archaeological research into the manufacture of textiles and the evidence for this provided by archaeological finds does not have a particularly long tradition in the Czech Republic; this can certainly be ascribed to the fact that the remains of textiles and wooden textile-working tools have always appeared only very rarely in this environment.

Hardly any attention at all has been paid to textile production in prehistory, with the exception of technological identifications and the occasional publication of a few textile fragments of prehistoric age. Textile production in the Early Middle Ages has attracted comparatively greater attention from researchers, this clearly being due to the fact that a whole range of evidence documenting textile manufacture is known. The most significant contribution to our understanding of textile production in the Great Moravian period has been made by *Marie Kostelníková*, who in the 1970s-1990s expertly processed and published textile finds from the most significant Moravian sites (Mikulčice, Staré Město, Rajhrad and Břeclav-Pohansko). To date, the last detailed treatment of Early Medieval textile production on the basis of archaeological finds from the Czech Lands is the author's own diploma thesis, subsequently published (*Březinová 1997*).

Textile manufacture - or the evidence for such - in the High and Late Middle Ages has hitherto been of interest to only a small number of archaeologists, almost always in the context of processing the excavations of medieval middens, which have also yielded a certain quantity of textile fragments. The only study to provide a more complex consideration of medieval textile production in this period, based on an analysis of textile finds from Plzeň (Pilsen) and Opava, was that by *Jitka Staňková* (1966).

Medieval textiles, or fragments thereof, do not come from archaeological excavations alone. A relatively large quantity of surviving textiles comes from graves and the tombs of historical figures, while a large number of unique medieval textiles are also to be found in ecclesiastical or museum collections. Research into those textiles that were imported into the Czech Lands, and into their quality, material, point of origin and dimensions, is diametrically opposed to research into the small textile fragments found during normal archaeological excavations, and in recent years has developed very quickly, in particular thanks to the efforts of *Milena Bravermanová*, who has gradually processed the luxury textiles from the

royal tombs at Prague Castle (e.g. 1995; 1997; 1999; 2000; 2002).

III. Overview of sources

The study of the historical development of textile production is based on a range of sources, and in particular on archaeological finds of textiles and objects used at some point in the production process. Surviving depictions of working practices, mentions of the textile industry recorded in medieval written material, ethnographic parallels and the results of textile experimentation are all also employed.

The data brought together in the author's work come primarily from two groups of source material – archaeological finds made in the Czech Republic and elsewhere in Europe, and period illustrations.

IV. Inventory of archaeological finds documenting textile production in Bohemia, Moravia and Silesia

The inventory of archaeological finds of textiles and textile-working tools has been compiled on the basis of information drawn from publications of archaeological excavations appearing in selected monographs and periodicals. In several cases the inventory also contains finds that have yet to be published; these however are textiles that the author herself has subjected to detailed, professional analysis.

This is a selective, working inventory, which does not contain every single piece of textile or item of textile equipment found, because a series of such finds have not yet been published, and in some cases need not have been recognised in the archaeological material. The aim of compiling this inventory of archaeological finds documenting textile production in Bohemia, Moravia and Silesia has not been to itemise each and every textile fragment or piece of tool; rather, the idea has been to create a suitably representative sample of finds linked to the production of textiles and datable to the 13th-15th centuries, an evaluation of which might bring new information on, for examples, the types of textile products in use, the frequency of textile finds in the archaeological record, the frequency of the occurrence of textile fragments in particular types of feature, the types of textile-working tools in use or the attention paid to textile finds during the processing of archaeological excavations.

Archaeological textile finds

Textile finds have been classified alphabetically by place of discovery (site). The data drawn from the relevant publications and describing the find are set out as follows:

SITE (former district)

- *Localisation*: a more detailed description of the findspot, indicating excavation, trench or layer.
Feature type: a more detailed description or indication of the feature from which the find comes.
Textiles: an indication of the textile type, whether it is woven, knitted, netting or any other kind of textile product; a description of the state of preservation of textile; in brackets, the acquisition or inventory number of the find.
Technological analysis of the textile: number of pieces of surviving textile; the dimensions of the individual pieces, the colour, weave, thread count or number of threads in the warp/weft (first/second system of threads) per 10mm, twist in the warp/weft (first/second system of threads), the thickness of the threads in the warp/weft (first/second system of threads), the textile raw materials, other data.
Interpretation: An interpretation of the original function of the textile, given only for a very small number of finds.

Dating: Dating, taken from the publication
(reference to the publication of the find)

The inventory of archaeological fabric finds contains data on 285 textiles datable to the 13th-15th centuries. These textiles come from 43 localities, or 56 specifically localised sites, in Bohemia, Moravia and Silesia.

The entire assemblage of textiles brought together here can be divided into three groups by the presence, absence or level of technological analysis conducted, and which both characterises the textile and at the same time has a major impact on its value as evidence. A complete technological analysis has been carried out on 251 (88.1%) of the total of 285 textiles. Partial analyses comprise, in the great majority of cases, only data as to the weave employed, and have been conducted (published) for 14 of the textiles (4.91%). No details beyond the mention of the mere presence of textile remains were given in the cases of 20 of the finds (7.01%).

The most useful data for the study of the historical development of textile production are brought by those textile finds that have undergone detailed, expert processing and evaluation. In the assemblage considered here, such finds are represented by 251 textiles from 11 sites.

Plzeň (Pilsen)

It is from excavations in Plzeň that the greatest number of medieval textiles in the Czech Republic come

– in all, 156 assorted textiles from 11 features datable to the 14th-15th centuries.

The largest and best processed assemblage of medieval textiles comes from the fill of well 1 on Solní ul., which was found to contain 75 fragments from 73 different textiles, and which has been dated to the first half of the 15th century. The great majority (90%) of the assemblage comprises woollen fabrics made in a plain weave, with a maximum thread count of 20 threads per 10mm in both directions, and with a preponderance of reverse (Z/S) twists in both thread complexes. Traces of fulling survived in around 7% of the fabrics, which of course does not mean that only this low number of fabrics originally underwent fulling. It is more likely that the intensive use of the textile products concerned and their long-term deposition in the ground led to the loss of their characteristically felt-like surfaces, which is the only means by which the presence or absence of fulling can today be ascertained. In addition to the plain weaves in the woollen fabrics, in two cases only there is a more complex weave – the four shaft twill weave (2/2).

Some of the wool fragments were subjected to detailed chemical analyses, thanks to which in two instances it was possible to establish their original colour and the dyestuff employed (*Rubia tinctorum* and *Caesalpinia brasiliensis*). A further analysis applied to the wool fragments was the measurement of the thickness of individual wool fibres, and the establishment of the type of wool used. It was found that most of the fabric was made from wool with 8–12 µm thick fibres, and with technical parameters matching domestic and imported wools. No clear statement can be made as to whether these textiles were made in local workshops from imported raw materials, or were imported as finished products, as it is known that both options were viable and practiced in the Czech Lands, and from the technological perspective (weave, thread count, twist) it is impossible to differentiate local products from those from various other European cloth-working centres.

Rare finds are represented in the assemblage from Solní ul. by two strings, one made from black and brown horsehair and the other, which survives in a very fragmentary state, from plant fibres. The horsehair string was made on a band loom, and is unique not only in the raw material used, but also in the fact that it was part of a silk fabric in satin weave, the two elements together forming a hard, horsehair-stiffened belt.

In addition to the 66 woollen fabrics, 1 fabric from plant fibre and 1 horsehair material, the assemblage from Solní ul. also contains 5 silk textiles. Three of these were made in plain weave, one in a 5-end satin

weave and in one case the find was of a twisted cord of two silk threads. All of the silk fabrics come from foreign textile workshops, but no precise determination of their origins is possible.

The second-largest assemblage comes from two wells at nám. Republiky 33/232, and comprises 78 fragments from 40 different fabrics, all dating to the 14th-15th centuries. The great majority of the finds consist of woollen, generally unfulled, fabrics made on a plain weave. In addition there are six examples of fabric made with a three shaft twill weave (2/1) and a single instance of a four shaft twill weave (2/2). A particularly interesting find in this assemblage was a fabric on a plain weave, made from horsehair.

Another large assemblage of woollen textiles was recovered from two wells at Perlová ul. 1/83. The fill of well 1, dated to the mid-15th century, yielded 12 fragments of 12 different textiles, while that of well 2, dated to the broader period of the 14th-15th centuries, contained 7 fragments of 7 different fabrics. In this assemblage two there is a clear predominance of woollen material, in half of the cases fulled fabrics made on a plain weave. Only in two cases was a more complex weave identified – a three shaft twill (2/1).

The textiles from Perlová ul. also include two unusual wool finds – a fragment of knitwear and a piece of fabric made on tablet. Knitted textiles and stiff fabrics represent different types of medieval textile product which, while certainly widespread, are found only very occasionally in the archaeological record. Another unusual find was that of a fabric with surviving stitching holes, evidence for its originally having belonged to a larger piece of material, probably an item of clothing.

The last of the larger textile assemblages from Plzeň comes from Pražská ul. 5/79, where a total of 32 fragments from 15 different materials were recovered from well 1. All of the finds are woollen, half of them fulled, on a plain weave.

Prague

A well investigated within the framework of excavations at Celetná ul. 553/I in the Prague Old Town yielded a total of 33 assorted textiles preserved in the form of 115 fragments. More than half of these textiles (21pcs) were woven fabrics, of which 13 were on a plain weave, 7 on a twill weave and 1 survived only as the threads of a single complex without binding. Of the wool fragments, a fabric with surviving stitch holes is particularly interesting; the arrangement of the holes indicates that the fabric was originally part of a piece of clothing, most likely a sleeve.

In addition to the woollen fabrics, 10 fabrics were found that had been made from plant fibres, most likely flax. One of these was made on a twill weave (2/1), and the remainder on a plain weave.

Also interesting were two silk fabrics, which are evidently not of local provenience. Both are made on a plain weave with a thread count reaching a very high 25–50 threads per 10mm. One of these fabrics is a remnant of a thin, brown-gold band or lining, made from a strip of material stiffened with a thin later of wood and decoratively wound, twisted silk cord.

A small, brown and pink banner made of a very fine and dense silk fabric is a unique find. While its original function as a small banner is evident, it is not possible to say for what precisely this object was used – whether for example it was a child's toy, part of a sculpture of some kind or something completely different.

The textile assemblage from Národní třída 37/II in the Prague New Town comprises 9 different textiles, surviving in the form of 21 fragments. The great majority of the assemblage comprises fabrics made from plant fibres, probably linen, made on a plain weave. Only one of the fabrics is wool, made on a twill weave (2/1).

The assemblage as it survives is exceptionally rich in fabrics made from plant fibres, and is in fact the only known assemblage from the Czech Republic in which such fabrics outnumber the otherwise ubiquitously more numerous woollen fabrics. The good preservation of the plant fibres was evidently caused by conditions arising by chance within the pit, and which might by contrast have been highly unsuitable for the survival of animal wool fibres.

Opava

The fills of middens and pits in Kolářská ul., ul. Mezi Trhy and Kotlářská ul. have yielded a total of 28 fragments of various textiles, the great majority of which it has been possible to date to the 14th-15th centuries. Over half of the textile assemblage comprises woollen, in the main unfulled, fabrics on a plain weave. Woollen fibres on more complex weaves also appear, however – in one case a three shaft twill (2/1) weave, and in a grand total of six cases on a four shaft twill (2/2) weave.

Within the assemblage as a whole, two unique finds are woollen fabrics made on two types of small, manual loom – the band loom and the tablet loom. An almost 500mm long and 20mm broad fabric, woven on a band loom with alternating round and elongated apertures on a plain, repped weave (with double warp threads) has been dated to the 13th century. The second fabric, 19mm wide and woven on a system of 22 tablets with four corner apertures, has been dated to the 15th century. Both of these items are evidence for very practical textile products, the appearance of which among archaeological finds is however relatively rare. It is however necessary to bear in mind

that the main, important property of these fabrics, straps and linings was stiffness, meaning that there must have been a generous use of more rigid textile raw materials of plant origin (flax, hemp) in their manufacture, but also that the remains of such raw materials survive only occasionally in this country.

During the professional processing of the wool fibres several fragments were subjected to detailed chemical analysis, with the use of dyes (*Rubia tinctorum* and *Indigofera tinctoria*) being demonstrated in two cases.

In addition to the wool fabrics, the Opava assemblage also contains two fragments of silk fabric, on a four shaft twill weave. These fabrics were clearly not a product of local craftsmanship, and must therefore be regarded as goods imported from abroad. Their fragmentary state of preservation and the absence of any kind of decoration, however, makes it impossible to ascertain their origin.

All of the surviving textile fragments from Opava are of small dimensions, which means that it is virtually impossible to ascertain their original functions, shape or cut. Only in one case can an interpretation of a surviving textile be advanced – a heavily worn (walked down) woollen insole, the shape of which copies that of a human foot.

Tábor

Two layers from a waste pit at no. 220 in Tábor have yielded an assemblage of 30 fragments from 18 different fabrics, dated to the turn of the 16th century. This is a somewhat unique assemblage, which in addition to ten common, fulled woollen textiles on a plain weave also contains three cotton textiles on a plain weave and five linen textiles on a plain weave, of which four retain traces (holes) indicating that they were embroidered. These surviving indications of embroidery on linen are evidence for what was during the Middle Ages a relatively common method of decorating textiles, the survival and recognition of which in archaeological textiles from both rural and urban environments is however rare – the Tábor finds are essentially the only such case known from the Czech Republic.

The greatest number of medieval textile fragments surviving in the Czech Republic come from waste pits (middens) and wells, which however after the loss of their original function also often served for the deposition of rubbish. Textile fragments, most of small dimensions, entered such contexts either in the role of hygienic aids (fulfilling the role of modern toilet paper), or were simply thrown away as trash. The great majority of such textile fragments are the remains of fulled and unfulled woollen fabrics on a plain weave, with a thread count of up to 20 threads per 10mm on

both warp and weft, this thus representing the common and widely-used standard of production among local textile workers. The almost complete absence of textile products made from plant fibres is not evidence that particular textile raw materials were more highly favoured, but rather a reflection of the fact that plant fibres survive very poorly, and so very rarely, in the ground. It is thus not possible to state that the most commonly found woollen fabrics were therefore also the most commonly produced and used textile products, as we presently lack a knowledge of materially different fabrics that were surely in widespread use at the same time, despite their not surviving to be studied.

In addition to wool fibres on a plain weave, almost every larger assemblage also contains textiles with more complex weaves – three and four shaft twills – albeit in far smaller numbers. It seems highly likely that all of these fabrics, made on plain and twill weaves, were made on horizontal looms. While there is no direct evidence for such a claim, because from the technological perspective it is virtually impossible to determine loom type from these weaves, for the urban environment – from which the greatest percentage of the surviving fragments come – it is common use of this complex and efficient loom type is generally assumed.

The finds of silk fabric remnants – with several pieces appearing in every large textile assemblage – are surprising. It is almost completely certain that these are the products of foreign textile workshops, albeit that in most cases they are products of a lower order (plain weaves, absence of patterning), and in no known instance do they represent the top-quality products of the silk industry of the time. On the basis of the small pieces found, it is not possible to determine where they were made, in what form they came to the Czech Lands (as completed fabrics or finished textile goods?), or by what means they reached those users who subsequently threw them away as rubbish. Their mere presence in middens from urban environments indicates, however, that the more expensive and more luxurious textile products of the day were not accessible solely to the highest social classes. This fact is well demonstrated at Solní ul. in Plzeň, which lies immediately adjacent to the city walls. Written records attest that this area was known as Kolářská ul. (lit. ‘Wheelwright’s St.’), and was occupied by wheelwrights, smiths, a carpenter, a mason and a linen dealer. The waste layers of well 1 in this craftsmen’s quarter yielded 5 silk fabrics, predominant among which is a luxurious horsehair band covered by a silk fabric on a complex, satin weave.

The interpretation of the original functions of the textile fragments recovered has been possible for on-

ly a small number of finds (pouches for coins, belts, a hat). The great majority of fragments preserve no details or characteristic elements allowing for a better knowledge of their original function, or of the shape or cut of the product from which they come; on a few fragments the holes left by stitching have been identified, which is evidence that the surviving pieces were originally part of a product made from sewn material, most likely an item of clothing of some kind.

Archaeological finds of textile-working tools

Finds of textile-working tools can be divided into six groups by the type of implement concerned (spindle whorls, shears, spindles, weaver’s swords (rods), mesh needles, stamps for imprinting fabrics). Taking these groups as a framework, finds of such items are listed here alphabetically by findspot (site). The specific data drawn from their publication has been arranged thusly:

SITE (former district)

- *Localisation*: a more detailed description of the findspot, indicating excavation, trench or layer.
- Feature type*: a more detailed description or indication of the feature from which the find comes.
- Tool*: the type of tool concerned (spindle whorl, shears, spindle, weaver’s sword (rod), mesh needle, stamp for imprinting fabrics); in brackets, the acquisition or inventory number of item.
- Dimensions and description*: the number of pieces; the material from which the tool was made, shape, state of preservation, dimensions: length (*d.*), width (*š.*), height (*v.*), diameter (*ø*), weight (*hm.*), further data; numbers in italics indicate single items (in cases of a larger number of finds from the same site).
- Dating*: Dating, taken from the publication
(*reference to the publication of the find*)

Spindle whorls

Spindle whorls occur in abundance as archaeological finds, and can be dated to a wide range of periods from prehistory to the Early Middle Ages. During the High and Late Middle Ages their frequency in the archaeological record declines markedly, but they nevertheless continue to be the second most numerous finds groups (after textile fragments) related to textile production.

The inventory draws together data on 144 spindle whorls from 36 sites. For 54 of these there is a detailed description of the object, including the material used, the shape, diameter, height, aperture diameter, and in several cases also the weight. For 69 examples only

the material from which the spindle whorl was made is indicated, while for the remaining 21 objects no detailed information is available.

The material used to make the spindle whorls is, therefore, known for 123 pieces. Most commonly, in 92 instances, the spindle whorls were made from fired ceramic clay. In 70 of these cases they were made intentionally of shaped and fired clay; 18 examples were made from the base sherds or the bulge of a ceramic vessel, and 4 were made from the handles of ceramic lids. At least 3 ceramic spindle whorls had glazes of various colours on their surfaces.

The second most numerous group of spindle whorls of known composition comprises those made of stone. In all, 13 examples are known from stone of types not more closely identified, along with 8 made of talc (2 of which had an admixture of chlorite), 1 of sandstone and 1 of gypsum.

Other materials occur only in a few instances – 5 of the spindle whorls were made of china clay mass, 2 of glass meld and 1 from an animal joint bone.

Diameters, generally measured across the broadest point of the spindle whorl, are known for 52 examples. The measured values range from 12–80mm, with more than half of the known diameters falling in the 20–30mm range.

The heights are given for 27 spindle whorls, and the values measured range most commonly from 8–20mm.

The diameter of the aperture for the stem is known for 24 spindle whorls, and was most often in the 6–10mm range; in only 2 instances did it exceed 10mm.

Information regarding the weight of the spindle whorls is known in only 14 cases, and the range here is a broad 3–45g.

Interesting data have come from observations as to the finds contexts from which the spindle whorls come, and how they are dated. Information on the precise location of the finds is given for 99 spindle whorls; the great majority (88 pcs) come from assorted features in medieval deserted villages – most commonly from village farmsteads, but also from yards, manors or the moats of fortified manors. The objects date to the 13th to first half of the 16th centuries, but most commonly come from the 14th and first half of the 15th centuries. This fact, together with the absence of spindle whorls in the urban *milieu*, seems to confirm the assumption that spinning wheel use expanded in connection with the development of the urban textile (cloth) trade, while hand spinning with the spindle and spindle whorl persisted longer in the rural, village *milieu*.

Shears

The inventory contains all of the shears reported in the publications of medieval research monitored, but it is not possible to state with certainty which objects were actually used for the shearing of sheep's wool, and which were used for more mundane purposes in the household. The indicia that would make such distinctions possible are as yet unknown, and it is not clear whether certain shears were strictly limited in their use anyway – for example, whether they were used exclusively for shearing sheep, or whether they might also have been used for other purposes. Period depictions of sheep fleecing suggest that the shears used for this purpose attained greater dimensions, and would have been less practical for scissors used for other purposes, but a determination as to the exact dimensions or ranges of lengths applicable for the scissors/shears used for various purposes is not provided, and seems not to be possible.

The inventory lists a total of 35 iron shears from 14 sites. For 20 of these the lengths are given, and range from 90–270mm; 2 examples measure less than 100mm, 8 are 100–200mm long and 10 exceed 200mm in length.

The earliest known shears recovered date to the turn of the 13th century, but the great majority of the finds are dated to the 14th-15th centuries.

The findspots of the shears are given in 30 instances; in 22 cases they come from layers and features in medieval deserted villages, and 6 come from excavations of fortified manors, again within the framework of medieval deserted villages. Two examples come from rural, fortified farmsteads, 1 from a castle and 1 from an urban environment.

As noted above, it is not possible to say with certainty which shears were used for shearing sheep and which were not. Because, however, most of the finds come from features in medieval deserted villages, where sheep breeding may be assumed, it may also be presumed that at least some of the examples given were indeed used for removing wool.

Spindles

A wooden item that in its shape and dimensions matched the description of a spindle, or the shank thereof, was recovered from a well in Klatovy and has been dated to the turn of the 16th century. It has been included in the inventory as the only example of its type even though this interpretation of its original function is not entirely certain. There is, however, no way to either prove or disprove that this item really was used as a spindle in spinning textile fibres.

Weaving swords (rods)

The only wooden object that, given its shape, might have been a weaver's sword (rod) of the kind used in weaving on a vertical loom to separate the warp threads, comes from a settlement feature in Čáslav dated to pre-1300. The use of the vertical loom can be assumed with some degree of certainty during the 13th century, so it is likely that this wooden fragment really is a relict of weaving.

Mesh needles

A fine, bronze mesh needle used in the production of fine, thin, decorative netting comes from the 14th century, and was found at the Lobkowitz Palace at Prague Castle. Netting, like embroidery, was a favourite pastime for girls and women of the higher social classes at that time, so the finding of a mesh needle may be regarded as evidence for such activity having been performed by one of the residents of Prague Castle.

Stamps for imprinting fabric

Two cylindrical, wooden stamps dating to the turn of the 15th century, and used for printing colours onto finished fabrics, comprise a unique find on a European scale. This is the only evidence known from archaeological finds for such activity, which would have been part of the completion process for finished textile products, as traces of printing have not been identified on any surviving fragments from this country.

V. Textile production in the Czech Lands in the 13th-15th centuries

An overview of the various textile processes and, in particular, tools and equipment used for these, based primarily on data obtained from archaeological finds but complemented by further information drawn from iconographic, written and ethnographic sources.

The structure and organisation of textile production

Textile production in the first half of the 13th century was entirely the same, in both the tools and techniques used as well as in the way in which it functioned within society, as that of the earlier period. Revolutionary changes, which influenced the technology and the productivity of textile production, came around the middle of the 13th century, when – evidently in connection with the German colonisation and deliberate settling of foreign, specialist craftsmen – new, better types of textile-making tools arrived in the Czech Lands, along with a knowledge of specialisations, which divided hitherto fairly universal textile production into cloth working and linen drapery, with all the different processes they employed. At the same time, in conjunction with the general transfor-

mation of the whole of contemporary society, a clear division appeared between the urban textile craft and rural textile-making, with the latter long retaining the character of a domestic (cottage) industry.

The most significant branch of medieval textile making was cloth-making, that is, the production of fulled, wool fabrics, which was associated with the urban *milieu*. The cloth trade was one of the first to be organised into guilds, which led to specialisation and division of labour that in turn conspicuously improved both productivity and the quality of the finished goods. Wool blenders, carders and combers all contributed to cloth production through working on the preparation of the woollen raw material. Spinners devoted themselves to making yarn, and were most commonly members of the rural classes from villages close to the town, supporting themselves by spinning for one or several cloth-making workshops. The production of woollen fabrics, which included not only weaving but also sizing and constructing the warp, was the province of the weavers. Fulling and the finishing of completed cloth were important elements in cloth-making, and were the work of fullers, teasers and cloth cutters. Cloth production either concentrated in a single workshop, where craftsmen of all the various specialist types worked and production was continuous in one place, or saw the various specialist tasks distributed among separate workshops (with the craftsmen organised into different guilds), all of which co-operated on the work. The raw materials with which the cloth-makers worked came either from coarse-wooled sheep bred locally, or were imported from western Europe, where sheep were bred with finer and better quality wool.

The various cloth-making crafts were organised into guilds; the earliest cloth-makers' guilds known in the Czech Lands are those recorded at Jihlava (1360) and Rychnov nad Kněžnou (1378). Guilds of particular specialised crafts within the cloth trade appeared somewhat later, among the earliest being the Cloth Cutters' Guild known to have existed in Prague in 1399.

Cloth production took place across the Czech Lands, albeit that there were fairly conspicuous regional differences in the numbers of workshops, productivity and quality of goods produced. Among the most important centres of the cloth trade were Brno, Broumov, České Budějovice, Chrudim, Jičín, Jihlava, Jindřichův Hradec, Litomyšl, Louny, Olomouc, Plzeň, Rychnov nad Kněžnou, Tábor, Žatec and Žlutice.

Cloth-making in the Czech Lands was oriented primarily towards meeting local demand for textile goods, although the written record suggests that a considerable volume of goods was exported too. It is also known that in the 14th and 15th centuries Czech

cloth was sold at markets in Bavaria, Poland, Lower Austria, Hungary, the German lands, Russia and the Balkans.

Another important branch of contemporary textile making was the production of fabrics from plant fibres, primarily flax, generally referred to as linen manufacture. This was based mainly in rural areas and smaller towns, especially in montane and sub-montane regions (e.g. in the Czech-Moravian Highlands, the foothills of the Krkonoše or Giant Mountains and in the Jeseníky Mountains), where flax grew well. During the 14th century linen-drapers began, as representatives of independent craft guilds, to penetrate into the great royal towns as well. Evidence for the beginnings of the linen-weavers' guilds dates back to the start of the 14th century, among the oldest such guilds being those in Česká Lípa (1382), Šumperk and Olomouc (pre-1442).

Linen production remained for a long period a single process that took place in a single workshop, with the significant use of female domestic workers supplying such workshops with yarn. Specialisation into particular activities (similar to that in cloth-making) led to a division into weavers, flax bleachers (grassers) and riplers around the end of the 14th, and in particular during the 15th, century.

In addition to the two basic branches of textile-making, i.e. cloth-making and linen-drapery, other specialised crafts also gradually developed, for which evidence in the Czech *milieu* comes in the main from the 14th century. These included, for example, the production of fabric with a linen warp and cotton weave (fustian), flock-working (in which a spinning material was prepared from the lowest quality short fibres that fell out during cloth combing), the making of knitwear, netting and braids and various types of decorative cords and bands woven either by hand or on small looms, the making of felts from animal hair etc. Dyers, too, were a separate branch, colouring either yarns or, more often, completed fabrics for cloth-making and linen workshops. Another branch of the textile industry sometimes classified among the artistic crafts was embroidery, oriented primarily towards ecclesiastical, ceremonial and luxury garb for the wealthiest clients. Czech figural embroidery, showing religious motifs in the main, was in the 14th century among the best embroidery in Europe.

It may be assumed that domestic textile production continued for a considerable period in rural areas, meeting the essential textile demands of families. As in earlier times, the various component activities of textile-making here took place throughout the year, depending on the current state of agricultural work. It is in such domestic production, too, that traditional tools (e.g. the hand spindle and vertical loom) are pre-

sumed to have survived in use the longest, well after they had been supplanted by better equipment in the organised craft. The rural population, women in particular, were also an irreplaceable and indispensable source of the huge volumes of yarn required, spinning to meet orders from the weaving workshops.

In addition to the urban crafts and the rural environment, some activities linked to textile production can also be assumed to have taken place in the loftiest of circles, particularly among women. This was not, however, mass production of any sort, but rather hobbyism, especially as regarded embroidery, the making of fine decorative nets or the weaving of narrow bands on small, manual looms. Embroidery was particularly widespread in ecclesiastical circles too, where it was it was in monastic houses in particular that ecclesiastical vestments were decorated.

Textile raw materials

Natural fibres of two kinds were used in medieval textile manufacture – plant fibres (flax, hemp, nettle, cotton) and animal fibres (sheep's wool, animal coats, horsehair and silk). Most textile raw materials were of domestic origin, although cotton and finer, better quality types of sheep's wool were imported into the Czech Lands from abroad, most often in prepared form ready for spinning. Likewise, silk was always imported, but most often as prepared fabrics or even as finished goods.

Common flax (Linum usitatissimum)

The history of flax cultivation and the evidence for same in the archaeological record from prehistory to the Early Middle Ages have been the subject of detailed summaries in a series of studies (e.g. *Opravil 1981*; *Opravil 1983*, 206–210; *Opravil 1984*, 35–40; *Kostelníková 1981*, 47–52; *Březinová 1997*, 125).

The cultivation and processing of flax in the Czech Lands in the Middle Ages is also supported both by the written record – from which it is known that flax was grown in particular in the climatically favourable conditions of the montane and sub-montane regions such as the Czech-Moravian Highlands and the foothills of the Krkonoše (Giant) Mountains. In the archaeological record evidence for flax processing comes from the relatively large numbers of seed cases and seeds known from the 13th-15th centuries, such as have been recovered from, e.g., Sezimovo Ústí, Opava and Brno, which however do not indicate the extraction of textile fibres but rather pressing for oil. The remains of linen textile fibres and finished linen textiles also appear in the archaeological record, although in comparison with, for example, woollen fabrics, their numbers are low. This is caused by the lower durability of linen fi-

bres, which are more easily and more rapidly broken down after deposition in the ground.

Hemp (Cannabis sativa)

The origins of the cultivation and use of hemp and the evidence for same in the archaeological record has been summarised in a number of earlier studies (e.g. *Opravil 1983*, 207–210; *Opravil 1984*, 40–44; *Kostelníková 1981*, 52–53; *Březinová 1997*, 125).

As with flax, achenes and fragments of the fruit of hemp have been found in the archaeological record of the Middle Ages, being known from, for example, Brno, Most, Sezimovo Ústí, Opava and Olomouc, evidence for the extraction of oil. Remains of hemp fabrics or other textile products are recovered only very rarely; from the Czech *milieu* the only securely identified example is a small fabric fragment from Opava.

Nettle (Urtica dioica)

The use of nettle fibres in textile production is known from mentions in the written sources, but thus far this raw material has not been recognised in archaeological textile materials from the Czech *milieu*.

Cotton (Lana arborea)

The favour in which cotton fibres were held, and their more conspicuous use, began to grow in Europe during the 14th and particularly the 15th centuries. Initially the fibre was not spun, and was used primarily as stuffing in various clothing elements. From the second half of the 14th century cotton weft threads began to be made, which were used in mixed textiles such as fustian with a linen warp. A boom in the European cotton trade was brought about in particular by the increasing use of the spinning wheel from the 15th century onwards, this making it considerably easier to spin short cotton fibres; previously, their manual spinning had been extremely complicated. As a result, both half-cotton fustians and pure cotton fabrics began to be made to a greater degree. Although cotton was at this time grown in Europe, the quantities produced were insufficient to meet demand; raw cotton was therefore imported into Europe, primarily from eastern India, Syria and North Africa. The cotton trade was ruled by Venetian and Genoese merchants, who distributed the raw material that they obtained to textile workshops across Europe.

Cotton textiles appear only very rarely among archaeological finds from Western, Northern and Central European sites dated to the 13th-15th centuries. From the Czech Lands, the only examples known to date are the fragments of 3 pure cotton fabrics recovered from a midden at Tábor. This may be explained both by the fact that cotton fibres, like all plant fibres, quickly degrading once in the ground, and by the fact

that prior to the 15th century cotton production was not extensive – rather, it was complementary to, and a diversification of, common linen and cloth production. The large-scale development of cotton production is a phenomenon of the Early Modern period.

Sheep's wool

The remains of medieval woollen products have been very well investigated, as fragments thereof comprise the greatest percentage of all textiles surviving from the period. A range of studies have been given over to research into, as well as the history and means of, the processing of sheep's wool (e.g. *Maik 2001*; *Nahlik 1964*; *Tidow 1989*; *Tidow 1990*). In Czech archaeological contexts, too, woollen fabrics make up the majority of the textiles found.

Animal pelts

The animal pelts used for textile production were obtained from thick-haired creatures such as dogs, cats, rabbits, goats, beaver etc. Animal hair is similar in nature to sheep's wool, but does not have those excellent qualities that made wool one of the most highly-favoured textile raw materials. Short animal hair was difficult to spin, and it was most often used as a raw material for making felts, as is shown by finds of felt fragments from a range of sites in Germany and Poland. Thus far, no textile product made from an animal pelt is known to have survived in the Czech *milieu*.

Horsehair

Horsehair is long and flexible, and as a rule is of equal thickness whether from the tail or the mane. The hairs are very sturdy, and were thus used to make tapes and straps where this quality was particularly important, and indeed essential. Horsehair was generally not spun, but used like separate threads, but was sometimes spun to be used as stiffening for wool or linen thread.

The use of horsehair in the Middle Ages is known from archaeological finds of the 14th-15th centuries. Horsehair fabrics made on the band loom have been recovered from a well in Solní ul., Plzeň, while a fragment of horsehair fabric on a plain weave has been found in the same city at nám. Republiky 232. Finds of horsehair textiles are also known from other European sites, e.g. Gdansk in Poland.

Silk

The historical development of silk-working, the earliest evidence for same and in particular the trade in silk fabrics have provided the subject matter for a large quantity of specialist literature, not only abroad (see *chapter VI.1.*) but also in the Czech Republic (e.g. *Liščák 2000*; *Charvát 1994*, 112–115; *Březinová 1997*,

125–126). The production of silk textiles is beyond the scope of this work, as it was not made in the Czech *milieu* as the climatic conditions were not suitable for rearing silkworms. Silk – either raw or more likely in the form of silk fabrics – was always imported during the Middle Ages.

Textile technology

The results of ethnographic research into vernacular textile culture in relatively recent times can usefully be employed to obtain information regarding the methods and techniques used in textile manufacture during the Middle Ages. An active knowledge was long retained in the conservative rural *milieu* of a range of textile techniques and stages in the manufacturing process, and of the tools used, that was the same or only slightly altered from the forms used in the Middle Ages and, in some cases, even earlier times.

Technological approaches to textile production can be divided into several phases: the acquisition of raw materials and preparation thereof (retting, grassing, rocking, breaking, scutching and combing for plant fibres, shearing, loosening, carding and combing for wool fibres), the production of yarns and threads (spinning with a hand-held spindle or on a spinning wheel, the plying of stronger threads and winding), weaving, non-weaving techniques (knitting, netting, felt making) and the preparation of finished textiles (bleaching, pressing/mangling, dyeing, printing, fulling, napping/teaseling, cutting and embroidering).

Textile-working tools and production equipment

As is the case with the technological approaches, so too the necessary tools can be divided into several groups. Tools used to prepare the fibrous material include ripples, mallets or mashers, breakers, shakers and hackles, used in the preparation of plant fibres, and shears, drapers' bullets, carding brushes and combs, used in processing sheep's wool. Mashers, breakers and shakers are known from European archaeological finds.

Spinning equipment includes the hand-held spindle, with a folding shaft and spindle whorl wound onto this, the spinning wheel, the distaff, winding implements, reels, bobbins, and windles. Among the most commonly archaeological documented tools are spindle whorls, which exhibit quite considerable variability in shape, size, weight, decoration, aperture diameter and material. The question as to when their appearance in the archaeological record comes to an end is extremely important for the history of medieval textile production. Spindle whorl finds are a common phenomenon throughout the Early Middle Ages, until the mid-13th century. From the second half of the 13th century onwards spindle whorl occurrence falls

off markedly, and there are no longer the conspicuous accumulations of large numbers of these objects at single sites. After 1300 spindle whorls do not appear among the finds from royal boroughs; they are known in no great numbers from medieval deserted villages, the seats of the minor nobility or smaller, tributary towns, where they persist until the first half of the 16th century. These data, which match data from neighbouring countries, are a reflection of changes in the technology and organisation of yarn making, whereby spinning with the hand-held spindle disappeared first in towns, where specialised cloth-making concentrated, and made use of the better quality yarn produced on the spinning wheel. Manual spinning remained the primary method of domestic yarn production in rural areas.

Among the tools for weaving are those on which a heddle was used for the interlacing of the warp and weft threads, and thus to create fabrics – the vertical loom, the horizontal, foot-treadle (floor) loom, the warp-weighted loom, the tablet loom and the band loom. The most important weaving apparatus used in the period under study was the foot-treadle loom with a horizontally set warp; individual wooden parts of such looms have been found at a series of European medieval sites, and allow its more massively widespread use in European textile production to be assumed from the second half of the 13th century onwards.

The great majority of non-weaving techniques make use of small wooden or metal tools – needles, pins, frames – that, however, remain known only to a limited degree from the archaeological record.

A range of wooden tools and equipment was used in the finishing of completed textiles, e.g. vats, frames, wringers and fulling apparatus, stamps, drapers' brushes, cloth-cutting shears, almost none of which are known from the archaeological record. The utterly unique discoveries of printing stamps and napping brushes are among the exceptions.

Tools erroneously ascribed to textile manufacture

In the archaeological literature, both in the Czech Republic and abroad, two objects appear that appear to have been associated in some way to textile production, but which in fact had other functions.

The first such case is that of “weaving combs”, narrow, bone items with long teeth set very close together that appear across the whole of the broader territory of Central Europe in the 12th-14th centuries. Ascertaining the original function of these combs in particular is extremely difficult, because no similar objects are depicted in period illustrations, and nothing about them is apparent from ethnographic evidence either, but some functions can, especially given the characteristic shapes of these objects, be

ruled out. The long, closely-set teeth of the comb make it impossible that fibre or even thread could have been pulled between them, since doing so would as a rule lead to undesirable damage to the textile raw material. These items are in reality more likely to have been used in hairdressing, when the long teeth would have been ideal for keeping the required hairstyle in place.

The other items which appears to have been linked to textile-working techniques are 'threaders', known from finds of the 9th-12th centuries. These are small, smooth, bone implements with an obliquely truncated point, which however were actually used not to knit threads and thus produce knitwear, but rather in the manufacture of bast shoes, or in weaving baskets and mats from various plant materials.

Seals

Seals are objects that, while not related to textile production, are closely associated with the finished products of textile-making; they show the origin, quantity and quality of the goods to which they were affixed. They are generally small, and comprise two discs 10–55mm in diameter, joined by a thin band, with the relevant information stamped into their obverses. The great majority were made of lead, but tin and wax examples are also known. Seals were used above all in the international and regional textile trade, most often for cloth, where they were used on whole skeins of finished fabric. The use of similar seals for other goods (e.g. spices, precious metals and some food-stuffs) is also known, but they were most commonly to be found on textile goods. Seals also made it possible to indicate fabrics in detail, guarding against damage or devaluation.

Lead seals are common archaeological finds in Western and Northern Europe. They appear from the second half of the 13th century onwards, and were still in use as late as in the 19th century. They are difficult to date because morphologically they are very similar, and in most cases the stamped data does not include a year. Seals are most often found during excavations in old, important trading centres – over 8,000 have been recovered in London, for example – but large numbers have also been yielded by investigations of shipwrecks.

Seal finds from Central Europe are small in number, with only 10 pieces known to date from Bohemia and Moravia – from Olomouc, Rokštejn Castle, České Budějovice, Prague Castle and Most. This does not, of course, mean that goods with seals from abroad did not reach this country. The volume of traded goods certainly never reached that in the Western and Northern European ports and trading centres, but there is evidence from written records that materials

from the important workshops of the day were exported to the Czech Lands.

The use of textile products

One of the most important uses of textiles was in the making of clothing and the most diverse assortment of clothing accessories, with a whole range of specialised crafts developing that were devoted them – among them the tailors, seamstresses, furriers, milliners, cap makers, veil makers etc. Dress was a very important, everyday item that served not only to cover the body and protect it from inclement weather, but also as an attribute of social standing, the membership of a particular group etc.

The development of clothing and period fashions is a separate, voluminous subject that has formed the focus of many expert studies (e.g. *Kybalová 2001*, 72–220; *Kybalová 1996*, 25–51; *Petráň 1985*, 855–886; *Kybalová, Herbenová & Lamarová 1973*, 113–136; *Bravermanová 1997*, 72–82; *Herbenová 1953*, 408–423; *Wagner, Drobná & Durdík 1956*, 9–24; *Zíbrt 1892*; *Winter 1893*).

From surviving period illustrations, paintings, sculptures, woodcuts and written mentions, it is known that textiles also had an important place in the home – they were used to make sheets, covers and cushions with slips, covers for straw, cloths, towels, woven hangings, carpets, wall-hangings, swaddling, baby slings, pouches, bags and sacks for food and small items. Textiles were also important in the transport of various other goods or items, and were used to run up assorted sacks and kit bags, as well as for canvases on vehicles or sails for ships. Textiles also found broad application in agriculture and in various production processes, e.g. in mills, mints, mining, pottery workshops, or as the binding for manuscripts. Textiles even accompanied a person after death, being used as coffin linings or as winding sheets for interring the dead.

The great majority of archaeological textile finds come from middens or wells, which also served secondarily for the deposition of waste. In the vast majority of cases, for small textile fragments it is not possible to identify any markers as to their original function or appearance. Their deposition in waste layers does, however, attest in a certain way to their secondary use. Arranging waste pits, in most cases in the rear, undeveloped parts of plots, was fairly common in urban environments from the second half of the 13th century onwards. Toilets were generally built over waste pits or filled-in wells, so it is highly likely that small scraps of textiles were used as hygienic requisites, fulfilling the same function as toilet paper today. It is certain that originally these textiles, or the products made from them, served the entirely differ-

ent purposes for which they were made. Once their utility was at an end, they were then or cut up into small scraps, and used for personal needs.

A considerable number of features are known from archaeological excavations in urban *milieux* that were used for the deposition of general and faecal waste. It is interesting that textile fragments have been found in only a relatively small number of these (e.g. in comparison with the situation at other European urban sites). This may be explained either by the widespread use of hygienic requisites made from plant fibres, especially flax, that have disintegrated without trace in the ground, or that not only textile scraps but also other materials were used for the same purpose, e.g. moss, or sheets of paper, the remains of which have again decomposed.

The only practical use of textile products for which there is archaeological evidence comes from pouches for coins, the remains of which can be reliably identified. It is interesting that in all the cases where the textiles surviving on coins have been analysed, they were textiles made from plant fibres, and fabrics on a plain weave. Unfortunately there are still too few such cases to allow more general conclusions to be drawn from this.

A specific example of evidence for the use of textiles as an aid in the production process comes from the fabric on a plain weave that is often found on the backs of the heating tiles from Dutch stoves after 1500. From ethnographic analogies it is clear that in the pottery workshop fabrics served as an aid in manipulation, making it easier to work with fragile objects while they were drying and being placed in kilns.

VI. Imported textile products

The trade in textiles was an important element of international trade throughout the Middle Ages. From the written sources especially it is known that luxury silk, high quality woollen and linen fabrics, made in important textile production centres both within and beyond Europe, were expedited to the Czech Lands.

Establishing manufacturing sites from surviving medieval fabrics

The medieval textiles that survive today come either from the archaeological excavation of medieval stratigraphy and features, from the contents of the graves of significant historical figures, or from assorted collections in which they were kept for centuries as treasure. Establishing their places of origin is somewhat difficult, and for the small fragments yielded by archaeological research almost impossible.

It is virtually certain that silk textiles were of foreign provenience, because in the Middle Ages silk was

not made or worked in this country, and expensive, patterned fabrics were not woven here. Identifying the specific place in which the silk was made is difficult, but thanks to the well-researched development of silk-making in various centres, and the mapping of the patterns and techniques employed there, it is possible for most such textiles to state the country or even city of origin after a technological and art-historical investigation.

For the textiles made from plant fibres and sheep's wool that come from archaeological excavations, the situation is far more complicated. A technological analysis of a surviving textile fragment does not allow its place of origin or making to be ascertained, as the level of the common cloth and linen-drapery crafts was more or less equal from the technical and technological point of view across all of Europe, and there are no typical indicators that might make it possible to classify a specific piece as coming from a specific production centre.

For woollen textiles there is one criterion that makes it possible to distinguish textiles of domestic provenience from imported goods, the metrological analysis of the wool fibres. This method does not allow a specific place of production to be identified, but can indicate the presence of imported wool or finished fabrics at a site – an important fact that makes it possible to archaeologically support the international wool and cloth trade documented in the written sources. The metrological analysis of wool fibres is being used in the processing of the large assemblages of medieval textiles from Poland, Germany and Russia, but is not yet common in this country.

Imported fabrics among Czech archaeological finds

The archaeological excavation of medieval layers and features has yielded only a small quantity of the silk or cotton fragments that can with certainty be regarded as imported. Thanks to their fragmentary nature it is not possible to identify specific places of production, but their presence in waste layers in urban contexts brings the important knowledge that the use of expensive, imported, primarily silk textiles was not strictly limited to the highest social classes.

A considerable quantity of medieval silk textiles is preserved in assorted museum, church and private collections. The most significant, largest, and in a European context unique assemblage of such textiles comes from the royal tombs in St Vitus' Cathedral at Prague Castle, from which they were removed in 1928 in connection with the completion of the cathedral and repairs to the tombs of the Kings of Bohemia (*Gollerová-Plachá 1937; Bravermanová & Koblrová 1992; Bažantová 1993; Bravermanová 2000; Bravermanová & Lutovský 2001*). These textiles have absolutely no

relation to textile production in the Czech Lands, and therefore fall outside the scope of this study.

VII. A comparison of Early and High Medieval textile production in the Czech Lands

Our knowledge of technological approaches, tools used and the organisation of textile production in Early Medieval society is based in particular on the rich finds of objects made from organic materials (textiles and wooden tools), which come mainly from the northern reaches of Western, Northern and Eastern Europe, from Scandinavia and from England (of the extensive literature see e.g. *Tidow 1995, 372–376; Maik 1991; Kamińska & Nahlik 1958*), as well as from the not particularly numerous mentions that survive in the written record and, again to a limited extent, period illustrations. A brief outline of textile production at this time is given below, based on a range of studies in which question of Early Medieval textile production have been dissected in detail.

Both plant and animal fibres were used to make textiles. Among the plants used were flax, hemp and nettle, while animal fibres included sheep's wool, pelts, horsehair and silk. All of these raw materials were of domestic origin, with the exception of silk, which was imported – probably in the form of prepared fabric. Textile raw materials were processed through the crushing, grassing, breaking and combing of flax stems, hemp and nettle, or the carding of wool, to provide a high-quality, fine fibrous material that was then spun with the aid of the manual spindle with spindle whorl into the yarn needed to produce textiles. The latter were made primarily by weaving, knitting, crocheting or diamond work. In the final phase, textiles were finished by bleaching, dyeing, printing and fulling. All of the production processes listed required a quite considerable number of assorted tools and aids, which can be divided into several groups. The first group comprises those needed for preparation of the fibrous stuff: mashers, breakers, shakers and shears. The second group comprises tools used in making yarn: spindle whorls, spindles, distaffs and windles. The third group comprises weaving tools, and includes in particular the vertical loom, the band loom and the tablet loom, the weaver's sword, loom weights and shuttles. The final group encompasses tools used in textile techniques other than weaving: netting needles, pins, hooks, wooden frames. (Detailed treatments of Early Medieval textile making in the Czech Lands are provided by, e.g., *Březinová 1997; Kostelníková 1973; Kostelníková 1985; Stará-Moravcová 1966; Stará-Moravcová 1966a*).

Textile production in the Early Middle Ages was a cottage industry by nature, the vast majority of the

population being reliant for supply on their own strength and raw materials. Not until the beginning of the 13th century can the more widespread, specialised production of textiles be assumed in the *Czech milieu*. All of the activities associated with textile production are extremely time-consuming, and it can with certainty be said that they were part of the everyday life of medieval people. "Textile" work took place all year round, the priority assigned to it depending on the rhythm of agricultural labour. The main, most important and at the same time most time-consuming part of the process of fabric production, specifically spinning and weaving, took place in winter.

While the work associated with the preparation of textile raw materials and spinning itself clearly took place in every household, the weaving of the fabric took place on a vertical loom – a relatively complex piece of apparatus that was probably held in common by several families. Either the weavers would have arranged a rota amongst themselves and woven for the needs of their own families, or everything would have been woven by selected weavers, who would then have divided the results of their work among the various families in some way. The making of textiles with smaller apparatus (weaving on the tablet or band loom, crocheting, knitting or diamond work), treatments of fabrics and the sewing of clothes would evidently have been done within individual families to meet the needs of their own members.

Members of the highest social classes did not directly contribute to textile manufacture themselves, as thanks to their status other opportunities for obtaining the textile products required were open to them. There is evidence in the written record that taxes were in part collected in goods, amongst which were fabrics or completed clothing. From the surviving written sources we also know that castle and ecclesiastical centres made use of the labour of the unprivileged. In 1057, for example, the evidence states that 30 girls worked to supply the needs of the Litoměřice Chapter, in textile production. Another option open to members of the upper and more powerful classes was to buy fabric in the market. In addition to "common" linen, hempen or woven material they could, thanks to active trade links with other areas, also buy expensive, luxury fabrics.

Textile products had an important place in the life of the medieval man, accompanying in almost all areas of his endeavour. The main use of fabrics was in clothing and the elements thereof. In addition, however, fabrics were widely used in the household, in agriculture and in various crafts. From the different ways in which textile remains have survived, it is known that textiles served, for example, as covers for sharp metal objects, as seals for potters' wheels and as shrouds for the dead or coffin linings.

The archaeological evidence for textile products in the Early Middle Ages in the Czech Lands is not overly abundant. Textile tools are represented by, in addition to the numerous but on a broader scale unassessed assemblages of spindle whorls, the isolated Moravian finds of two hackles from Břeclav-Pohansko, a single spindle shaft from Brno-Líšeň, three weaving tablets from Staré Město u Uherského Hradiště and five netting needles from Mikulčice. Finds of textile remains are more numerous – the literature cites more than 600 textile fragments, for the most part small fragments surviving on metal objects. While these are very small, and only some have been subjected to technological analysis, it is possible thanks to their evaluation to form an idea of the products of domestic, or home, textile manufacture, which are preserved predominantly in the grave goods from rural cemeteries. Such fabrics were most often made from flax or sheep's wool, and were predominantly woven on a plain weave. A notable portion of the finds, however, provide information on the existence of luxurious, imported fabrics, the relicts of which survive in the graves of the Early Medieval nobility.

The structure and organisation of textile production in the 13th-15th centuries is considered in *chapter V.1.*, for which reason what follows is only a summary of the most important changes that conspicuously differentiate textile making in the Early Middle Ages – characterised by domestic self-sufficiency – from the later period, for which specialised crafts are typical.

The most conspicuous and earliest changes took place in the production of woollen fabrics (cloth), which concentrated in the newly emerging towns in the second half of the 13th century. A class of craftsmen was forming, who could devote themselves to their work alone, and who were not bound to agricultural obligations, while new knowledge of specialisations and the division of labour came from incoming foreign craftsmen and, last but not least, knowledge was spreading of new production apparatus – the spinning wheel and the foot-treadle loom. As a result of all of this, cloth-making became a highly productive and rapidly expanding craft that not only supplied local markets but also produced for export.

The manufacture of other types of textile goods, i.e. fabrics made from plant fibres and various unwoven textiles, did not undergo such a rapid development, and for a long time – until the 14th century – remained somewhere between cottage industry and specialised craft. Under the influence of successful cloth (drapery) production, however, here too there was gradual specialisation and the division of labour into particular production stages, while new, more productive equipment was also introduced.

The old tradition of domestic and fully self-sufficient textile making was retained longest among the common folk in the countryside, and it was here too that changes in technology and tools permeated most slowly.

VIII. Summary and conclusion

This study provides a summary of the knowledge available to date regarding textile production in the 13th-15th centuries, such knowledge having been obtained primarily on the basis of archaeological finds. The main aim has been to describe all of the possible types of finds that relate to textile production. The recognition of these is evidently very important for the broader archaeological community, as they offer new opportunities for the interpretation of a range of the predominantly wooden items that appear ever more often in medieval archaeological material, and which during processing remain unidentified or unremarked upon. Considerable attention has been paid in this work to archaeological textile finds, which in the vast majority of cases take the form of small, brown fragments, the value of which as evidence appears to be very low. Analyses of larger textile assemblages, however, shows that a careful technological evaluation can contribute greatly to an understanding not only of the various production processes employed, such as spinning, weaving, felt-making or knitting, but also of the variability of the textile products that were undoubtedly a part of the everyday lives of people in the Middle Ages.

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