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Technological Development in Late Saxon Textile Production: its relationship to an emerging market economy and changes in society

Philippa A. Henry

Introduction

The process of change from domestic textile production in early Anglo-Saxon England (5th - mid-7th century) to the more commercially based, organised industry of the late Saxon period (late 9th - 11th century) is a long and complex one. These changes form a vital part of the continuum which reached its zenith in the late Medieval period when the wool and textile industry created much of the wealth of England.

The importance of this industry in late Medieval England is well documented. In contrast, its genesis in the late Saxon period has received little attention. Although documentary sources are few the archaeological evidence is substantial.

An examination of this evidence indicates that from the beginning of the tenth-century changes in weaving technology were taking place culminating in the introduction of the faster, more efficient horizontal treadle loom during the eleventh-century. This changing technology coincides with the emergence of new urban centres and a more commercially based market economy. In addition, for the first time documentary sources refer to the role of men in the weaving process hitherto the province of women. When examined together it becomes clear that technological development in late Saxon textile production is inextricably linked to the changing needs of and roles in society, and the emergence of a market economy.

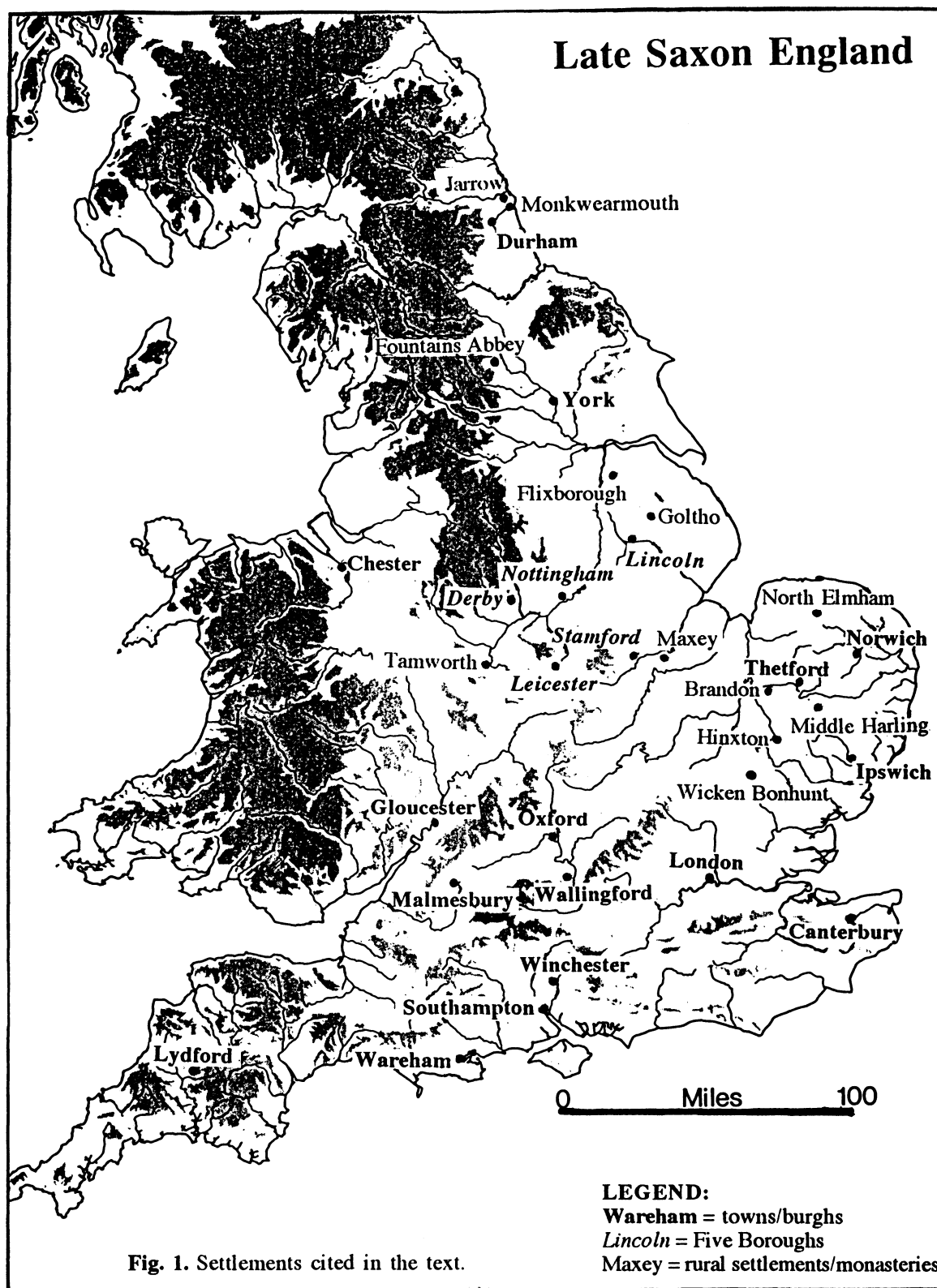
Textile Production - Developments and Change

Most of the evidence for development and change in late Saxon textile production comes from the large urban centres such as York, London and Winchester. The smaller centres of Gloucester, Lincoln, Thetford and Ipswich, and increasingly rural settlements, such as North Elmham and Middle Harling, Norfolk also provide valuable information. By comparing this with the data from middle Saxon villages (Maxey, Northamptonshire; Wicken Bonhunt, Essex and Hinxton, Cambridgeshire), high status rural sites (Flixborough, Humberside and Brandon, Suffolk) and trading centres (Hamwic [Southampton], Ipswich, York and London) (fig. 1), it is possible to detect change and a probable increase in craft specialisation.

During the middle Saxon period most textile production was carried out in rural domestic contexts as seen at Maxey, Wicken Bonhunt and Hinxton (Fig. 1). The whole process from fibre preparation to finished product concerned the entire family, and processes such as spinning were a constant feature of rural domestic life.

As well as domestic production, specialist workshops were common on large estates as evidenced from both historical and archaeological sources. Charlamagne's letter to Offa in 796 (Herlihy, 1990, 91) refers to the production of woollen cloaks which were probably produced on Offa's estates and exchanged for goods from Charlamagne's kingdom. The relatively large quantity of textile production equipment excavated from Brandon and Flixborough suggests that extensive textile working was undertaken on estates in an organised way. At Flixborough textile production equipment makes up almost 10% of the recorded artefacts which when compared with other sites of the period is substantial (Walton Rogers, pers. comm.).

All the current evidence points to an increase in this embryonic specialisation in the late Saxon period, but now based largely in the new urban centres. Domestic and estate



production however, remained a vital aspect of rural life as is clearly evidenced in the archaeological record. At Sparkford (now Back Street, St Cross in Winchester), which was a village during the late Saxon/early Norman period, a row of loom-weights from a warp-weighted loom (fig. 2a) have been excavated from an eleventh-/twelfth-century context interpreted as a weaving shed (Hedges, 1978, 29-39). In addition, evidence of structures also interpreted as weaving sheds have been found on estates like Goltho in Lincolnshire (fig. 1) (Beresford, 1987).

With greater specialisation it is possible that textile working gradually came under the control of financiers or merchants. The sheep bone record indicates that sheep were being slaughtered at an older age, thereby being bred for their wool. This is verified by entries in the Domesday Book (Hinton, 1990, 129). The Domesday Book also shows that by 1066 fleeces were regularly transported over large areas in England and Continental Europe (Hinton, 1990, 129). Certainly the number of flax heckle and woolcomb teeth, and spindle-whorls excavated from urban sites suggests that the wool and flax was being brought in for combing and spinning rather than being prepared in the rural environment in which the fleece was produced and the flax grown. The distribution of fibre preparation equipment across urban sites indicates that a put-out system was implemented where those preparing and spinning fibres were employed on a piece-work basis. This further points to the external control of the wool source.

The procurement of dyes, particularly those that were imported or acquired from outside the immediate locality of a centre, required considerable organisation and financial outlay. This again suggests that dyeing was under the control of financiers, merchants or dye-house operators. Dye-houses, and at a slightly later date, fulling facilities were probably owned and/or controlled by individuals who either rented out the facilities as required, or dyed and finished the yarn and cloth using their own workforce. At a slightly later date, in the twelfth- and thirteenth-centuries large ecclesiastical estates and religious houses are known to have controlled fulling mills, for instance Durham and Fountains Abbey (fig. 1). At Winchester finds of tenter hooks, used to stretch fabric after fulling, were centred in one area of the city (Goodall, 1990, 234-35) suggesting centralised industrial zones, obviously of necessity near a good water supply.

With a probable increase in financiers and merchants, weavers would have become progressively dependent on others for the supply of raw materials. This meant they would increasingly have lost control of the sale of their own output and with it the profits. A situation that was in contrast to rural, domestically produced cloth where the weaver probably had far more authority over the whole process - from fibre to the sale of the finished product.

With greater specialisation would have come less individual involvement in each process of textile production. Without a doubt this will have had an effect on the workforce in both losing control of production and feeling less involved in the product as a whole. In addition, with specialisation there appears to have been a switch in urban contexts from female to male weavers. Rabbi Solomon Izhaqi (1040-1105) writing in eleventh-century France, refers to men weaving which corroborates the supposition (Walton Rogers, 1997, 1827). Documentary sources state that women remained the spinners of yarn (Herlihy, 1990, 77 & 95). In urban contexts however, their traditional role as weavers was taken from them except for domestic cloth production. This again must have had an effect on the social structure of textile producers and the population as a whole.

With all these changes came a change of production technology. In the late ninth-century two-beam vertical looms (fig. 2b) are introduced into urban centres as evidenced by single-ended pin-beaters (fig. 3) an essential tool for this loom-type, used for separating tangled

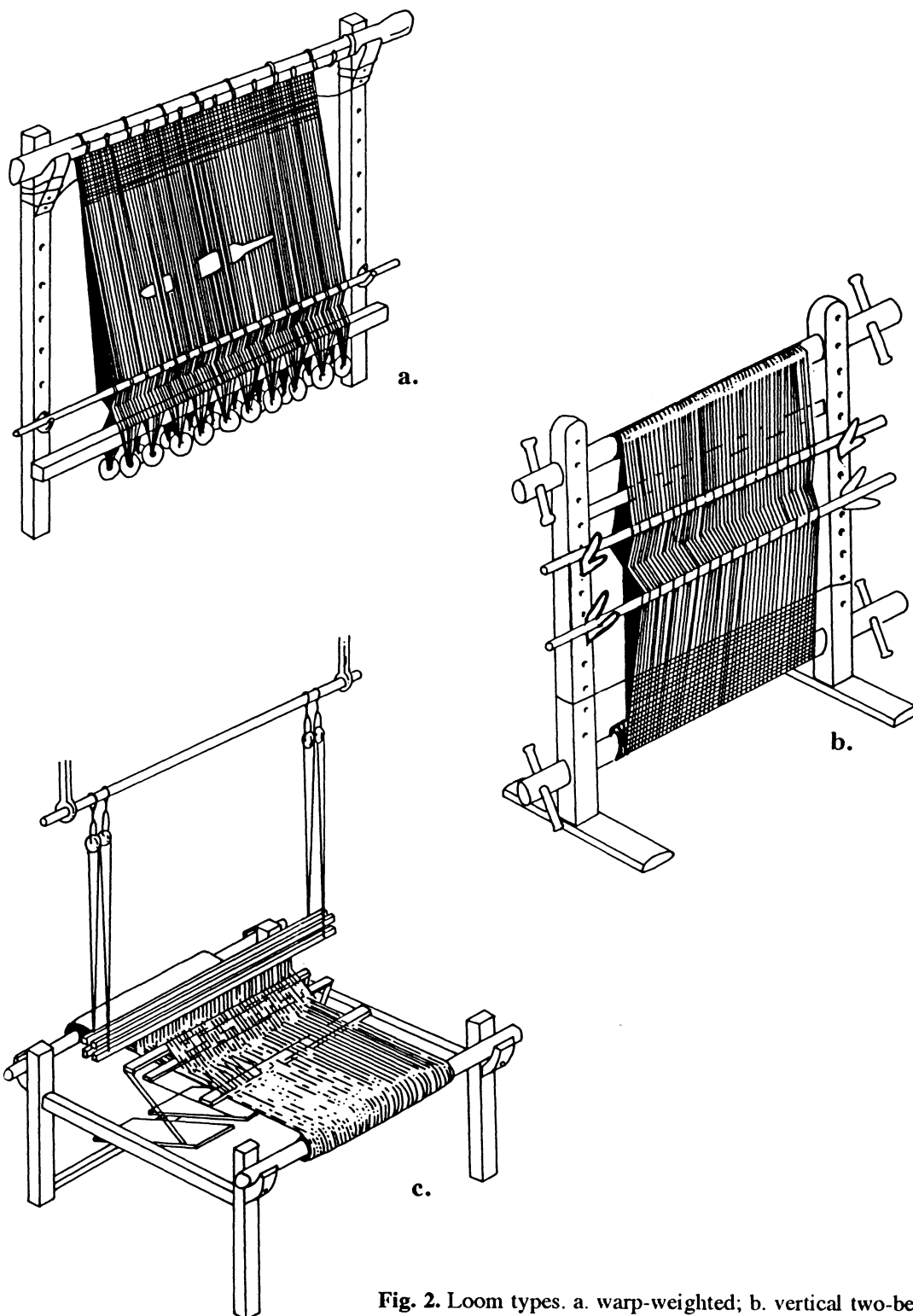


Fig. 2. Loom types. a. warp-weighted; b. vertical two-beam; c. horizontal treadle (after Keene 1990).

warp threads and beating in weft threads. The pin-beaters from Thetford, a late Saxon foundation, are almost exclusively single-ended ones (Rogerson and Dallas, 1984, 170-75; Dallas, 1993, 158-64).

In contrast, during the eleventh-century loom-weights and double-ended pin-beaters (fig. 4), both synonymous with the warp-weighted loom (fig. 2a), virtually disappear from the urban archaeological record. From the extensive excavations at Winchester, York and London relatively few loom-weights and pin-beaters have been excavated when compared to those found on earlier settlement sites in rural areas. Only one loom-weight was found at Winchester, dated to the late ninth-/early tenth-century (Brown, 1990, 226). At York the number of excavated weights declines considerably from the mid eleventh-century. Only thirty-four weights were recovered from the extensive excavations at Coppergate for instance (Walton Rogers, 1997, 1753). In London twenty weights have been excavated from the late Saxon settlement (Pritchard, 1984, 65-66). Pin-beaters show a similar paucity and eventual decline.

It is not known why the two-beam loom superseded the warp-weighted one. It may be that estate owners, who were already employing the two-beam variety on their estates, now had a stake in textile manufacture in urban centres and introduced a loom they were familiar with. An eleventh-century documentary source, the Gerefa, lists an inventory of equipment required for the efficient running of a rural estate, including equipment used for spinning and weaving. The document lists the components of a vertical loom but there is no mention of loom-weights, thus suggesting that two-beam looms were still being used (Hedges, 1980, 134-37).

In the late tenth-century another loom-type, the horizontal treadle loom (fig. 2c), made its appearance for the first time in north European contexts. Both documentary and archaeological evidence verify its introduction. Rabbi Solomon (mentioned above) states 'that the men wove with their feet', i.e. on a treadle loom (Walton Rogers, 1997, 1827). Tenth- and eleventh-century artefacts associated with horizontal treadle looms are increasingly excavated from urban centres throughout northern Europe; from Gloucester (Hedges, 1979, 191-92) and York in England, Gdansk in Poland, Novgorod in Russia and Haithabu in northern Germany (Walton Rogers, 1997, 1763-66).

It is assumed that greater skill was required to weave on a horizontal loom, this in fact is not the case except for very complex weaves. The skill came in its warping which was very time-consuming. Once warped however, weaving was considerably quicker than on a warp-weighted loom, possibly by up to six times (Nahlik, 1965, 100). This undoubtedly will have contributed to the move from the vertical loom-type to the horizontal loom when weaving became a trade and was no longer a purely domestic activity. The main advantage of the horizontal loom was then that cloth could be produced more rapidly.

Another factor to consider is that the horizontal loom takes up more space and is not very portable, it thus requires a permanent workshop base. In contrast, the vertical loom-types take up little space and are portable. To me this difference is the greatest indicator of organised specialised production, which requires considerable financial outlay to run, logically suggesting therefore, that a more permanent workshop base would be desirable.

In addition to loom-type developments, a change in weave-type preference becomes apparent. Four-shed twills (fig. 5) are the norm in north European contexts from the Bronze Age but by the late tenth-century they gradually become less common in the archaeological record. In their place, three-shed twills (fig. 6) start to appear with greater frequency throughout northern Europe.

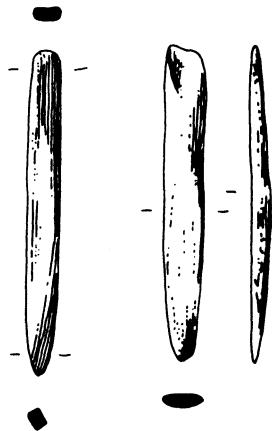


Fig. 3. Single-ended pin-beaters from Winchester (after Brown 1990).

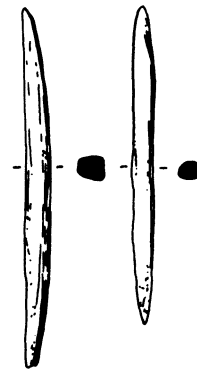


Fig. 4. Double-ended pin-beaters from the City of London (after Pritchard 1990).

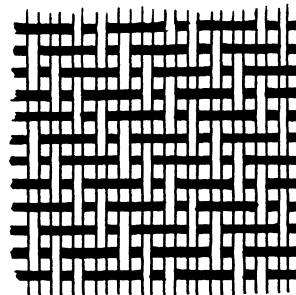
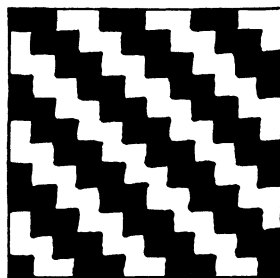


Fig. 5. Four-shed twill.

Three-shed twill requires a slightly more complex warping technique than the four-shed twill, and although experimental work has shown that three-shed twills can be woven on the warp-weighted loom the use of a horizontal treadle loom speeds the process, necessary to a successful market-economy. In addition, it is far easier to weave a three-shed twill on a two-beam loom than a four-shed one. The increase of single-ended pin-beaters in the archaeological record corresponds with an increase in three-shed twills. It is likely therefore that this loom-type and a change in weave-type preference are connected.

Finally, fabrics with a combination of Z- and S-spun yarns (fig. 7) increase, particularly in tabby-weaves. It has been suggested that Z/S fabrics relate to fulling; the spin in both systems lies in the same direction (fig. 8), which makes fulling and finishing cloth easier. This too points to a change in production practices.

Social, Economic and Political Considerations

The social, political and economic developments of the middle Saxon period (mid-7th to mid-9th century) paved the way for the changes that took place from the 850s onwards. Briefly, middle Saxon England saw a rise in the power of the church and kings when large estate centres become more evident, for instance Jarrow/Monkwearmouth, Tyne and Wear was an extremely powerful ecclesiastical estate centre (Cramp, pers. comm.), as was the large Mercian royal estate at Tamworth, Staffordshire (Rahtz and Meeson, 1992, 1-5). These centres not only controlled a great deal of land, but also the production and consumption of the region, they thus had enormous power.

In addition, the middle Saxon period saw the rise of emporia - trading centres with mints largely controlled by kings via their representatives. Each kingdom had its own centre e.g. the main ones were: Hamwic - Wessex; London - Mercia; York - Northumbria; Ipswich - East Anglia; Sarre for Canterbury - Kent (Richards, 1991, 43-45). Their principal role centred around long distance trade both from the continent and beyond. Production was carried out but textile manufacture appears to have been mainly of a domestic nature. The evidence from Hamwic and Ipswich certainly suggests this.

The continuing growth of centralised power enabled King Alfred of Wessex to repel the Scandinavian incursions in the latter decades of the ninth-century. The resulting peace and division of England, in which the House of Wessex controlled Wessex and the Scandinavians controlled the Danelaw, correlates with the onset of urban based centres, increased craft-specialisation and by the latter decades of the tenth-century a well formed market-economy.

Urbanisation was a relatively rapid process, although it has to be remembered that the vast majority of the population still lived in the rural environment and that some urban centres were very small. In Wessex, Alfred and his successors established a system of burhs which were to act as both defensive enclaves and market-centres. These were established in several ways: i. in existing centres - Winchester; ii. in the confines of Roman forts - Gloucester; iii. on fortified promontories - Lydford and Malmesbury; iv. in new centres - Wareham, Wallingford and Oxford (fig. 1). The Danelaw had a largely scattered settlement structure with fewer large centres, of which York was the most important. Other centres of importance in the Danelaw include Chester, the Five Boroughs - Derby, Lincoln, Leicester, Stamford and Nottingham, and the towns of East Anglia - Norwich, Thetford and Ipswich (fig. 1) (Hinton, 1990, 72-81; Richards, 1991, 46-57).

In virtually all the urban excavations undertaken, for instance at Winchester, London, York, Thetford, Norwich, Lincoln, Gloucester and Durham¹ the late Saxon features include workshops displaying a wide variety of craft-specialisation e.g. of pottery-making, leather-working including tanning, wood-turning, bone-working, all aspects of textile

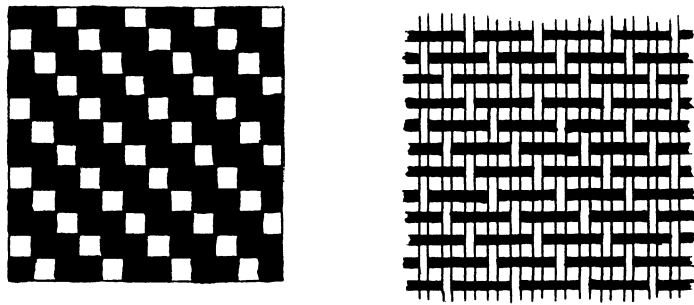


Fig. 6. Three-shed twill.

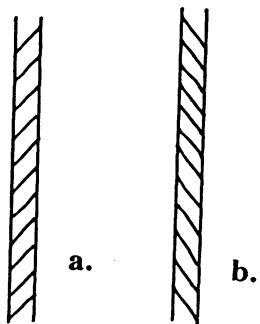
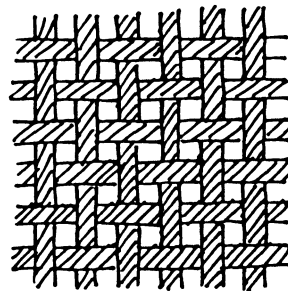


Fig. 7. Spin direction. a. Z-spun (clockwise spin);
b. S-spun (counter-clockwise spin).

Fig. 8. Z/S spin (Z-spun warp, S-spun weft).



production, glass-making and metal-working. The raw materials associated with many of these crafts illustrate the interdependence between the urban centres and their rural hinterland (Hinton, 1990, 64-105; Richards, 1991, 43-57).

Although historical sources are few the Burghal Hidage, the Anglo-Saxon Chronicle and the Domesday Book do give valuable information of the nature of urban systems and structures and support the archaeological evidence. In addition, town charters, wills and ecclesiastical documents are also useful for information of land grants, tenement plots, guilds etc.

Conclusion

How then can we use the evidence for social, political and economic change in late Saxon England to enhance our knowledge of developments and changes in textile production?

We have seen that from the late ninth-century the rise of urbanism increased bringing with it a higher level of craft-specialisation. Craft-specialisation necessarily gave impetus to a market-economy, which necessitated increased agrarian activity to feed the growing body of less self-sufficient craft-specialists. In addition, the rural community produced many of the raw materials necessary to maintain the urban crafts. Increased food and raw material production probably meant a greater incidence of full-time farmers and miners etc., who in their turn would need to acquire from the newly formed markets many of the goods they had hitherto produced themselves. The net result was a gradual interdependence between the urban and rural populations, and the need for an organised market-economy to service this interdependence.

An understanding of such processes and changes helps to put the developments and changes in textile production into perspective. It provides a logical answer for the need to develop and adopt a technology that would speed up the production process, i.e. the horizontal treadle loom. It also enhances our awareness for the need to organise processes such as fibre preparation, spinning, dyeing and finishing in a more centralised manner.

In effect the study of social, political and economic factors when combined with the study of changes in textile production helps to put those changes into context. It thus enlarges our knowledge and understanding of the textile industry during the tenth- and eleventh-centuries. It also provides powerful evidence that the genesis for the medieval and early modern wool trade and textile industry can be placed in the late Saxon period.

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Notes

¹Winchester - Biddle, 1990; London - Vince, 1990; York - YAT Fascicules; Thetford - Rogerson and Dallas, 1984; Dallas, 1993; Norwich - Wade Martins, 1983; Ayres, 1987; Margeson, 1993; Lincoln - Mann, 1982; Gloucester - Heighway et al, 1979; Durham - Carver, 1979.

Bibliography

Archaeology of York Fascicules, London and York: Council for British Archaeology for York Archaeological Trust.

Ayres, B. *Excavations at St Martin-at-Palace Plain, Norwich, 1981* East Anglian Archaeology 37, Gressenhall: Norfolk Archaeological Unit, 1987.

Beresford, G. *Goltho: the development of an early medieval manor c. 850-1150*. London: English Heritage Archaeological Report No 4, 1987.

- Biddle, M. (ed.): *Object and Economy in Medieval Winchester i*, (Winchester Studies 7, ii.i), Oxford: Clarendon Press, 1990.
- Brown, D. "Weaving Tools", in Biddle, M. (ed.): *Object and Economy in Medieval Winchester i*, (Winchester Studies 7, ii.i), Oxford: Clarendon Press, 1990, 225-232.
- Carver, M.O.H. "Three Saxo-Norman Tenements in Durham City", *Medieval Archaeology* 23, 1979, 1-80.
- Dallas, C. *Excavations in Thetford by B.K. Davison between 1964 and 1970* East Anglian Archaeology 62, Gressenhall: Norfolk Archaeological Unit, 1993.
- Goodall, I. H. "Tenter Hooks", in Biddle, M. (ed.): *Object and Economy in Medieval Winchester i*, (Winchester Studies 7, ii.i), Oxford: Clarendon Press, 1990, 234-235.
- Hedges, J. W. "Back Street, St Cross (Site 650) - Loom-weights", in Collis, J.: *Winchester Excavations: Excavations in the Suburbs and Western parts of Town*, Vol. II - 1949-1960, Winchester City Museum, 1978, 29-39.
- Hedges, J. W. "The Textiles and Textile Equipment", in Heighway, C.M., Garrod, A.P. and Vince, A.G.: "Excavations at 1 Westgate Street, Gloucester", *Medieval Archaeology* 23, 1979, 190-193.
- Hedges, J.W. *Textiles and Textile Production in the Dark Age Britain*, (unpublished M.Phil., University of Southampton), 1980.
- Heighway, C. M., Garrod, A. P. and Vince, A. G.: "Excavations at 1 Westgate Street, Gloucester", *Medieval Archaeology* 23, 1979, 159-213.
- Herlihy, D. *Opera Muliebria: Women and Work in Medieval Europe*. New York: McGraw-Hill, Inc., 1990.
- Hinton, D. A. *Archaeology, Economy and Society: England from the fifth to the fifteenth century*. London: Seaby, 1990.
- Mann, J. E. *Early Medieval Finds from Flaxengate* The Archaeology of Lincoln, Vol. XIV-1, London: Council for British Archaeology for Lincoln Archaeological Trust, 1982.
- Margeson, S. *Norwich Households: Medieval and Post-medieval Finds from Norwich Survey Excavations 1971-78* East Anglian Archaeology 58, Gressenhall: Norfolk Archaeological Unit, 1993.
- Nahlik, A. *Tkaniny wsi wschodnioeuropejskiej, X-Xiii w* (Acta Archaeol. Lodziensia 13), Lodz. 1965.
- Pritchard, F. "Late Saxon Textiles from the City of London", *Medieval Archaeology* 28, 1984, 46-76.
- Rahtz, P. and Meeson, R. *An Anglo-Saxon Watermill at Tamworth: Excavations in the Bolebridge Street area of Tamworth, Staffordshire in 1971 and 1978* Research Report 83, London: Council for British Archaeology, 1992.
- Richards, J. D. *Viking Age England*, London: Batsford/English Heritage, 1991.
- Rogerson, A. and Dallas, C. *Excavations in Thetford 1948-59 and 1973-80* East Anglian Archaeology 22, Gressenhall: Norfolk Archaeological Unit, 1984.
- Vince, A. G. *Saxon London: An Archaeological Investigation*, London, Seaby, 1990.
- Wade Martins, P. *Waterfront Excavation and Thetford Ware Production, Norwich* East Anglian Archaeology 17, Gressenhall: Norfolk Archaeological Unit, 1983.
- Walton Rogers, P. *Textile Production at 16-22 Coppergate (AY 17/11)*, York: Council for British Archaeology for York Archaeological Trust, 1997.