

TECHNOLOGY AND THE GROWTH OF TEXTILE MANUFACTURE IN MEDIEVAL SUFFOLK

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INTRODUCTION

IN THE 13th century the Suffolk economy was progressive by English standards. The county was reasonably wealthy and densely populated: the Lay Subsidies of 1327/32 record a national average of 5.5 taxpayers per square mile, compared with 7.7 in Suffolk, while in the 1334 Lay Subsidy assessed lay wealth per square mile averaged £11.2 in England, compared to £14 in Suffolk. Pastoral farming was highly, and arable moderately, intensive, judged by the high level of land values and of output per acre, and by the composition of livestock. Finally, Suffolk recorded the highest density of markets and one of the highest densities of small towns in the country, although the estimated proportion of urban dwellers (*c.* 15 per cent) was slightly below the national average (20 per cent).¹

By the early 16th century the Suffolk economy had increased markedly in importance. In 1515 assessable lay wealth averaged £90.4 per thousand acres (and therefore ranked seventh among English counties), well above the English mean of £66. The fourfold increase in Suffolk's assessable lay wealth between 1334 and 1515 was one of the highest recorded growth rates in England.² The density of taxpayers recorded throughout East Anglia in the Lay Subsidies of 1524/5 was still comfortably above the national average, and around one third of the male adult population was engaged in trade of some description.³ In 1334 Suffolk had contained five of the wealthiest 100 towns in England, yet by 1524/25 it contained ten such places: by the 1520s around one third of its residents lived in towns. The greatest gains in relative wealth within the county were recorded in south Suffolk and on the clays of east Suffolk.⁴

The explanation for this shift in the balance of economic power during the later Middle Ages is uncontroversial. As Roger Schofield commented over forty years ago, high levels of wealth in the 1330s correlated closely with the local capacity for grain production, whereas 'by the early 16th century the greatest lay wealth may have been associated with other commodities, such as wool and cloth'.⁵ The success of the east Suffolk economy was based mainly upon fishing, tanning and dairying, as it gradually built a national reputation for the quality of its cheese and butter, while that of south Suffolk was founded upon the emergence of textile manufacturing. In the 13th century this area had contained just three cloth-producing centres (Bury St Edmunds, Clare and Sudbury), none of which ranked in the first league of English textile towns. However, by the 1350s the county accounted for an estimated 3.5 per cent of English domestic output and over 13 per cent by the 1460s, at which date it produced more cloths than any other county.⁶ Commercial textile manufacture was concentrated in the three southern hundreds of Babergh, Cosford and Samford, and it was unknown in many other areas of the county: for example, in 1467 south Suffolk accounted for 73 per cent of all domestic cloth production in Suffolk, led by Hadleigh and Lavenham.⁷ In the 1330s these two places had scarcely justified the status of 'town', and their cloth was little known, yet in 1524/5 they ranked 27th and 15th respectively among England's wealthiest towns.⁸ Thus the evidence from Suffolk confirms the close correlation between cloth manufacture and high levels of regional economic development. The success of textile manufacture in Suffolk has been attributed to a number of factors: the technological benefits of the fulling mill, an entrepreneurial spirit among local people, the availability of a suitable labour force, established commercial networks, and a canny ability to spot shifts in fashion and adapt production for the mass market.

FULLING MILLS AND TEXTILE TECHNOLOGY

The purpose of this brief article is to consider more closely the role played by technology in general, and the fulling mill in particular, in the development of textile manufacture within Suffolk. Fulling is the process of shrinking the fibres of the cloth after weaving, thus increasing its strength and density, before dyeing and finishing.⁹ It was traditionally undertaken by immersing and kneading the cloth in troughs full of water and scouring agents, but the process could be mechanised by harnessing water power to drive wooden hammers to beat the cloth.¹⁰ Many schoolchildren were once weaned on the belief that technological developments were central to the growth of English textile manufacturing in the Middle Ages, as represented by the introduction of the fulling mill and an influx of Flemish weavers. In the 1330s Edward III encouraged disaffected Flemish weavers to settle in England and he also introduced a sizeable duty on the export of English wool to the Continent: a political manoeuvre which suddenly gave indigenous cloth makers a critical economic advantage over their foreign – especially Flemish – competitors.¹¹ Historians have also argued that the competitive edge of English manufacturers was further sharpened by the invention and spread of the fulling mill, which reduced costs by mechanising a process previously undertaken manually.¹²

What is the evidence to support the argument that such technologies explain the success of textile manufacture in England's premier county? Before *c.* 1300 the extent of commercial textile manufacture in Suffolk was largely limited to the boroughs of Bury St Edmunds, Clare and Sudbury. By the 1340s there are clear signs that production had both increased and begun to spread to places such as Hadleigh and Lavenham, but the main expansion occurred during the later 14th century.¹³ This chronology indicates that the imposition of an excise duty on exports of English wool did stimulate some cloth manufacture in Suffolk. However, the main stimulus to production was undoubtedly the explosion of the mass market for textiles after the Black Death of 1348–49.

The discernible correlation between Edward III's policies and some growth in the manufacture of Suffolk textiles in the 1330s and 1340s is unlikely to have been a coincidence, and therefore it might owe something to the arrival of Flemish weavers. Unfortunately, this claim cannot be proven, because no reliable record of immigration exists from this period. Lists of aliens resident in the county do survive from the 15th century, and these certainly reveal plenty of immigrant Flemings. However, most lived in coastal ports working as beer brewers and hat makers, and hardly any were involved in cloth making. Consequently, most historians have dismissed as a myth the popular theory about Flemish weavers.¹⁴

There is, however, strong evidence in the 13th and 14th centuries for the wider influence of Flanders on aspects of the Suffolk economy and society. The ports of Bruges and Damme were a popular destination for exports of local grain, notably rye, and Flemish ships and merchants were frequent visitors to the county's ports and shores. Some architectural features of Suffolk buildings copied Flemish styles.¹⁵ Given this general context of frequent contact, and given that Flanders was also the leading centre for the production of high-grade textiles in north-west Europe, it is plausible to suppose that textile manufacturers in Suffolk copied the latest fashions in patterns and warps, producing cheap cloths in the Flemish style. Hence it is more likely that Flemish weaves exercised a greater influence upon Suffolk clothmaking than Flemish weavers.

What evidence is there for the contribution of the fulling mill to Suffolk's success in clothmaking? Eleanor Carus-Wilson once famously argued that the water-powered fulling mill – invented in the late 12th century and established widely during the course of the 13th century – was central to explaining both the shift of the English textile industry from towns to the countryside and its greater competitiveness against foreign manufacturers.¹⁶ However, her powerful hypothesis was subsequently challenged by Edward Miller, who argued that these changes were the consequence of a variety of factors, among which the spread of the fulling mill did not feature importantly.¹⁷ His stance was supported by A.R. Bridbury, who pointed out

damningly that the spatial distribution of the fulling mill did not correspond closely with those areas where rural textile manufacturing took root: for example, it proliferated in South Wales (where there was little manufacture), but was largely absent from East Anglia, an important centre.¹⁸

Although Carus-Wilson's belief in the importance of the fulling mill initially attracted strong criticism, recent work has been more supportive of her position. For example, Robert Gottfried is enthusiastic about the contribution of 'the new fulling machine' to the development of clothmaking in medieval Bury St Edmunds, although he fails to substantiate his claim, and Larry Poos has shown conclusively that earlier historians underestimated the actual number of fulling mills in medieval Essex.¹⁹ R.A. Pelham's work had suggested that only six mills were established there,²⁰ but, using local sources, Poos counted 31 fulling mills in 27 locations. As most of these were located in the clothmaking area of north Essex, Poos concluded that their distribution is a sensitive barometer for the existence, chronology and location of the local textile industry, thus offering qualified support to Carus-Wilson's hypothesis. Similarly, the number of fulling mills in medieval Suffolk has been underestimated. The works of Pelham, Campbell and Bartley identified four mills recorded before 1349, and one between 1350 and *c.* 1500,²¹ but detailed local research has so far revealed a total of 25 recorded fulling mills in medieval Suffolk (Table I). When taken together with Poos' work on Essex, this discovery qualifies Holt's observation that the fulling mill 'was a rarity in eastern England'.²²

TABLE I: RECORDED FULLING MILLS IN MEDIEVAL SUFFOLK

<i>Location</i>	<i>Year of earliest reference</i>	<i>Value</i>	<i>Source</i>
Barton Mills	1284		SROI, HD1538/88, m.7
Blakenham	1289	17s.	Chibnell 1951, 132
Cavenham	1397	10s.	TNA, C136/47/27
Chattisham	1306		<i>Proc. Suffolk Inst. Archaeol.</i> , X (1900), 333
Clare (Ashen)	1388	60s.	Thornton 1928, 187
Dedham (Flatford)	1388		<i>Cal. Inq. Misc.</i> , V, 133
East Bergholt	1384		<i>Inq. Post Mortem</i> , XVI, 56
Flixton			John Ridgard, personal communication
Fornham	1385		SROB, E3/15.9/1.5 m.14
Hadleigh	1305	100s.	Hervey 1905, 152
Hintlesham	1324		<i>Catalogue Anc. Deeds</i> , II, 198
Hollesley	1295	46s.	Holt 1988, 156
Glevering	1403	33s. 4d.	<i>Proc. Suffolk Inst. Archaeol.</i> , XX (1930), 204
Icklingham	thirteenth century		Gransden 1963, 122
Ipswich	<i>c.</i> 1400		Amor, forthcoming
Kersey	1383	66s. 8d.	<i>Inq. Post Mortem</i> , XVI, 114
Lackford	1396	126s. 8d.	SROB, E3/15.12/2.2
Layham	1383	60s.	SROB, E3/2/7
Nayland	1329		<i>Catalogue Anc. Deeds</i> , II, 226
Newton	1424	6s. 8d.	<i>Inq. Post Mortem</i> , XXI, 406
Orford	1304		TNA, SC6/1003/3
Sudbury	1382		<i>Inq. Post Mortem</i> , XV, 223
Ufford	1433	26. 8d.	SROI, HD1538/395/1
West Stow	1458		SROB, 449/2/556
Wood Hall	1337	66s. 8d.	Holt 1988, 156

Table I presents every reference to a fulling mill uncovered by two active historians during three decades of general research into medieval Suffolk. Future research will undoubtedly uncover more references, although it seems unlikely that the list will lengthen greatly. All these mills are assumed to be watermills. They are also seigneurial mills, because no references to private mills built and run by peasants or textile workers have been discovered. There is no evidence that landlords exploited their fulling mills directly, employing people to full either their own cloths or those of others for a fee, and all simply leased the facility for an annual rent. Unfortunately, these annual rental values are not always recorded, but the extant values range from 6s. 8d. per annum (Newton) to £6 6s. 8d. (Lackford). In general, these Suffolk values are low, and that of the fulling mill at Blakenham was less than the value of the grain mill. This supports Holt's argument that many fulling mills tended to be built where (or when) grain mills were unprofitable, rather than because they offered a significant source of profit. We know little about the people who leased the mills, although they were probably skilled fullers rather than amateurs or middlemen.

The dates recorded in Table I indicate the earliest known record of each mill, rather than the date of its construction: the latter is seldom known. For example, it is likely that the mill at Sudbury was already operational by 1290,²³ but the first reliable reference dates from 1382. Hence we cannot identify the main phases of fulling mill construction with any claim to accuracy. However, Edward Miller acknowledges that the number of fulling mills probably increased during the course of the 14th century, when rising wage rates enhanced the importance of labour saving devices, a development which enhanced the competitiveness of English producers.²⁴ More recently, John Langdon has shown clearly that the number of recorded fulling mills in England rose steadily during the second half of the 14th century, thus

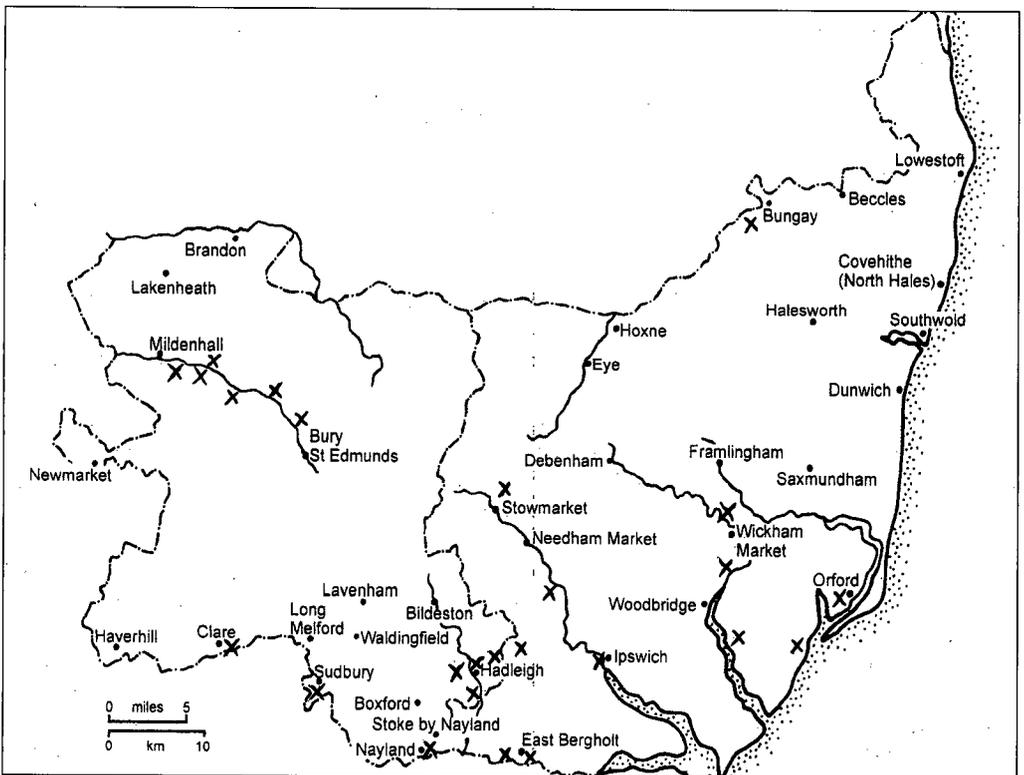


FIG. 2 – The location of documented fulling mills in medieval Suffolk.

corresponding closely to the period when the rural industry was expanding most rapidly.²⁵ Fulling mills increased in number in north Essex after *c.* 1350.²⁶ Given this background, it is likely that the increase in recorded Suffolk mills after 1350 (15, compared with 10 recorded before 1350) reflects a genuine rise in the number of fulling mills, mainly through the conversion of struggling grain mills. There is clear evidence that at least three Suffolk mills – Cavenham, Lackford and Ufford – were new constructions in the second half of the 14th century.²⁷

The map (Fig. 2) confirms that the distribution of fulling mills corresponded broadly with the main clothmaking areas in the south of the county. However, the correlation is not particularly strong. Firstly, the actual density of mills in this area is not especially high, and we can be confident that a number of important centres of production, such as Bury St Edmunds, Lavenham, Long Melford, Needham Market and Stowmarket, contained no fulling mills at all. Secondly, the absence of fulling mills from the estates of Bury St Edmunds Abbey is significant.²⁸ The abbey was the major landholder throughout the textile areas of south and west Suffolk, and possessed the capital resources necessary to construct mills, but it clearly did not regard the investment as worthwhile.

Thirdly, mills were also clustered in areas with little or limited commercial clothmaking, most notably the southern Sandlings between Woodbridge and Orford. This was an area of poor soil, and so the relative unimportance of grain locally might have encouraged the conversion of grain to fulling mills. Finally, we might expect to see the revenues from fulling mills increasing in the 14th century as the volume of cloth to be fulled rose in line with the rapid growth in output. Unfortunately, the evidence for changes in values over time is very thin, but that which exists is not positive. The rental from Lackford mill fell from £6 6s. 8d. in 1396 to around £5 in the early 15th century, although it had regained its former level by the end of the 15th century; the rental value of Hollesley mill contracted from 46s. in 1295 to 20s. in 1425;²⁹ while that at Hadleigh remained constant at £5 in both 1305 and 1377.³⁰

CONCLUSION

This article has revealed that there were more fulling mills in medieval Suffolk than historians had previously realised. Their presence must have made some contribution to minimising the rising costs of textile manufacture in the period of labour shortages after the Black Death. This was an especially important consideration for Suffolk producers, who operated at the lower end of the market where profit margins were tight. However, fulling mills were not established in large numbers; many important textile centres functioned without them and most mills generated modest profits. Thus, overall, there is insufficient evidence to argue that the introduction of the fulling mill was a major factor behind either the emergence of textile manufacture in the county or its subsequent success. The spatial distribution of fulling mills reflects the location of the textile industry rather than explains it. Indeed, it is possible that many of the cloths produced in Suffolk were lightly fulled, or not fulled at all.³¹ Similarly, there is no evidence that a wave of immigrant weavers introduced groundbreaking techniques of manufacture to the region.

These findings might indicate that 'technological' factors were unimportant in the industrial development of late medieval Suffolk, and therefore point to the influence of broader social and economic factors in explaining its remarkable success. While this is true of the most obvious and prominent forms of technology, we should not underestimate the importance of more subtle technical influences. For example, the existence of a pool of technical know-how in textile manufacture in and around places such as Clare, Bury St Edmunds and Sudbury meant that the workforce was well enough equipped to respond promptly to developing opportunities when the textile market began to expand after the 1330s. Then, over the ensuing decades, local artisans were sufficiently enterprising to develop the style of their product in response to new

markets, which must have involved the evolution and refinement of techniques, and a canny ability to imitate and reproduce fashions cheaply. Producers in south Suffolk were especially successful in adapting and refining their product, because they were either more enterprising or were subject to fewer institutional shackles (or both) than those in other areas which did not enjoy the same levels of success.

Another subtle 'technological' factor behind the success of the Suffolk industry was the evolution of its organisational structure. As late as the mid 15th century, producers in south Suffolk were essentially Jacks-of-all-trades, intimately involved with most stages of cloth production and marketing, while actively maintaining other economic interests such as agriculture.³² Yet by the early 16th century the industry was dominated by a few wealthy clothiers, who organised production through an emerging outwork system to specified standards of quality, while retaining a direct interest in the marketing of the cloth. This system of production and distribution was well suited to the structure of the expanding export trade between the 1460s and the 1520s, and its emergence constitutes a form of technological development.

Hence 'revolutionary' forms of technology, such as the introduction of new mechanical devices or a huge influx of immigrants bearing new techniques, were far less influential than 'evolutionary' forms in explaining the diffusion of the textile industry in medieval Suffolk. The basic techniques of clothmaking changed little during this period, but there were influential changes to the way the industry was organised and also subtle changes in the style of cloth. The former emerged in response to the higher financial risks involved in the export trade and the growing need to impose some form of quality control of the finished product. The latter are impossible for the historian to recover, but we should not underestimate the skill and innovation required to produce cheap versions of luxury cloths, or to create stylish cloths based on different patterns, widths of the weave, and/or the texture of the finish. Such small, incremental, changes probably emerged spontaneously, and were developed or discarded according to taste and the response of the market.³³

It is frustratingly difficult to weigh the overall importance of technology in explaining the diffusion of textile manufacture in East Anglia with any claim to accuracy. Unravelling and isolating technological factors from the tangle of other conditions and causes is hugely challenging, not least because they tended to operate interdependently. Hence it is not easy to segregate the influence of technology from that of the prevailing economic conditions, because the incentive for cloth workers to innovate was influenced by shifts in markets and relative factor prices. Similarly, the propensity and capacity of cloth workers to innovate was also influenced by other factors, such as the perceived and actual rewards that clothmaking brought to family income and well-being, as well as by the degree of specialisation of function within the industry, and the proportion of the workforce engaged therein.³⁴ This in turn was shaped by broader socio-economic structures, such as the presence of a dense population, many smallholdings and pastoralism. The simple question 'why did textile manufacture thrive in Suffolk?' does not have a simple answer.

ACKNOWLEDGEMENTS

I am grateful to David Dymond for sharing the fruits of his research with me: he generously placed his card index of references to fulling mills in Suffolk at my disposal to supplement my own collection of references. Nick Amor and Lyn Boothman also answered specific enquiries about Stowmarket and Melford respectively.

NOTES

- 1 Bailey 2007, 67–86, 149–51.
- 2 Schofield 1965, 504.
- 3 Pound 1986, 5, 127.
- 4 Bailey 2007, 284–89.
- 5 Schofield 1965, 507.
- 6 The best treatments of the textile industry in medieval Suffolk are: Tawney 1927, 262–91; Thornton 1928, 143–79; Dymond and Betterton 1982; Britnell 2003, 86–99; Amor 2004, 414–36; Bailey 2007, 157–59 and 269–76.
- 7 The National Archives, E101/343/2. My thanks to Nick Amor for a copy of his transcription of this document.
- 8 Bailey 2007, 279; Palliser 2000, 765.
- 9 Bridbury 1982, 17.
- 10 Bailey 1989, 171–72.
- 11 Tawney 1927, 263.
- 12 Carus-Wilson 1941, 39–60.
- 13 Britnell 2003, 87–90; Bailey 2007, 269–73.
- 14 McClenaghan 1924, 6; Redstone 1902, 195–98; Dymond and Betterton 1982, 2.
- 15 Hybel 2002, 219–47; Bailey 2007, 165, 169; Martin 1998.
- 16 Carus-Wilson 1941, 39–60.
- 17 Miller 1965, 64–82.
- 18 Bridbury 1982, 16–25; see also Holt 1988, 152–56; Langdon 2004, 2–3.
- 19 Gottfried 1982, 95–96; Poos 1991, 61–63.
- 20 Holt 1988, 154.
- 21 Holt 1988, 154; Campbell and Bartley 2006, 286.
- 22 Holt 1988, 155.
- 23 Amor 2004, 429.
- 24 Miller 1965, 82.
- 25 Langdon 2004, 40–42.
- 26 Britnell 1986, 157.
- 27 Bailey 1989, 177. That at Lackford is implied by a comparison between Gage 1838, 35, and Suffolk Record Office, Bury St Edmunds, E3/15.19/2.3; and that at Ufford a comparison between Suffolk Record Office, Ipswich, HD1538/395/1, courts held between 1433 and 1435, and HD1538/400.
- 28 Grandsen 2007, 288–316.
- 29 *Inquisitiones Post Mortem*, XXI, 385.
- 30 Bailey 1989, 308; Holt 1988, 156; Hervey 1903, 152; Mate 1984, 351.
- 31 Holt 1988, 154–56.
- 32 Amor 2004, 422–27; Britnell 2003, 88–89; Bailey 2007, 274–76.
- 33 Langdon 2004, 66–67.
- 34 Langdon and Masschaele 2006, 77–81; Wrigley 1988, 126–27.

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