

The Importance of Gender Ideology and Identity: the Shift to Factory Production and Its Effect on Work and Wages in the English Textile Industries, 1760-1850

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Contents

List of Tables	i
List of Figures	ii
1. Historiography and Theory	1
2. Sources	34
3. Cotton	58
4. Wool	103
5. Silk, Flax and Lace	159
6. Conclusion	210
Appendices	222
Bibliography	245

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Textile manufacture in England had always employed a high proportion of women and this continued to be the case during the period 1760-1850. However, these industries underwent dramatic changes in both the nature and location of production, and women's employment opportunities altered. Whilst in some cases technological advances reduced the strength required to perform a given process, making women more attractive to employers, this was not always the case. Urbanisation and factory production increased trade union influence, which often acted to the detriment of women's access to well-paid occupations. The long standardised hours worked away from the home typically required of factory workers made it harder for women to combine textile work with the mothering and domestic responsibilities expected of them. As well as making it harder for women to work throughout their life, this discouraged investment in human capital of females by both themselves and their parents. Ideological resistance to women's work outside of the home increased as the Industrial Revolution progressed. The more formalised work hierarchy created by factory production meant that resistance to female authority became increasingly important for denying women access to the best paid occupations. Ideology was not merely a response to material factors, but helped determine decisions made by economic actors. This thesis draws on a number of parliamentary reports over the period 1802-67. Not only do these reports provide a wealth of qualitative information, they also contain quantitative information which enables me to track male and female factory earnings over the life-cycle, by region and industry. The information in the parliamentary reports is used in conjunction with business records of various firms, covering both domestic and factory workers, as well as the writings of numerous contemporary observers.

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The paucity of sources that provide information on women's work during the Industrial Revolution is a problem well known to historians. However, by drawing on a variety of primary evidence it is possible to examine the determinants of women's work in textiles with a relatively high degree of precision. This thesis draws heavily on the quantitative data provided on male and female earnings in textile factories in the 1834 Royal Commission into the Employment of Children in Factories, Supplementary Report. Although this source is already well-known to historians, I make more comprehensive use of it than earlier researchers have done. It provides average earnings and participation rates for male and female workers employed in cotton, wool textiles, silk and flax factories in the main production centres across England. Crucially, this data is broken down by individual age (e.g. 17, 18, 19 etc), enabling analysis of male and female factory work across the life-cycle. Additional information on women's work in both domestic and factory textile production is drawn from a number of parliamentary reports dating from 1802-67, which contain both qualitative and quantitative information. I also make use of the surviving business records of various individual firms working in cotton, wool, worsted, silk and lace, covering the West Riding, Lancashire, Derbyshire, Essex, Wiltshire and Devon. Whilst these predominantly cover factory workers, it has also been possible to extract wage data for workers employed in their own homes from some of these records. Abundant use is made of the observations of various contemporary writers, ranging from well-known texts by authors such as Friedrich Engels and Arthur Young to those by less well-known authors such as Angus Bethune Reach and William Brown. Even the lyrics of a traditional folk song originating in Ulster provide rare information on factory women possessing some form of authority over other workers.

The first successful attempt at modern factory production was Thomas Lombe's silk throwing mill in Derby, where production began in 1721. By the middle of the eighteenth century a number of similar mills had been built in various parts of England. Factory production was slower to emerge in the other textile industries, but significant technological advances were occurring from the 1730s onwards. And, by the end of the century factory production of certain processes had also begun in cotton, wool, worsted and lace. However, the transition was far from immediate, and even in the highly advanced cotton industry some domestic workers were still being employed in the middle of the nineteenth century.

Factory work is often perceived to have provided good earning opportunities for women, but I present evidence to show that this was not much of an improvement on what they could previously earn in domestic production. And, whilst absolute earnings for women employed in factories were quite high, these were for working very long hours, and the disutility of factory work was particularly high for women. Further, although there was considerable variation by region and industry, the average earnings of adult females relative to males was lower in factories than seems to have been the case in domestic textile production and many other sectors of the economy. Women's earnings in textile factories were typically one-third to one-half of those paid to men of the same age, despite there being little or no difference by gender in the number of hours worked. The increasing regional concentration of production, as well as the introduction of labour-saving technology such as the jenny and the mule, meant that textile employment became available to fewer women. Spinning and many of other preparatory processes had traditionally been performed almost exclusively by women and children, but the introduction of new technologies, such as the mule, meant that in certain industries spinning came to be dominated by men. Whereas, women were employed in increasing numbers as weavers, first as handloom

weavers, and then in the powerloom workforce. Females were employed in particularly high numbers in worsted and silk factories, whereas males dominated in woollen factories. Lace and cotton factory employment by gender fell between the two extremes. However, the gender balance of factory workers was not determined solely by the type of textile being produced, regional variation in employment was highly significant, and I demonstrate that an appreciation of these differences is vital for a thorough understanding of women's work in this period.

Some historians believe that 'direct discrimination' (i.e. paying women less than men for performing the same work) was an important cause of the gender pay gap during the Industrial Revolution. However, the only evidence for this occurring is in a few branches of woollen handloom weaving in the West of England in the 1830s. Occupational segregation had a much larger impact on the gender wage gap, not only by denying women access to certain occupations, but by causing overcrowding in the occupations in which they were employed. I present evidence for the importance of this in factory production at both the aggregate and firm level. Occupational segregation had become more rigid once production had been shifted to the factory because of the increasing influence of trade unions, an increasingly formalised work hierarchy meaning that resistance to female authority became more significant, and women losing the informal access to the acquisition of skill that was frequently possible in domestic production.

Some of the occupational segregation we see was due to biological differences between men and women. Men's greater natural strength gave them a comparative advantage in certain tasks, and the application of external power to machinery in factories did not always remove or even reduce the strength required to perform a given operation. Further, the male-female strength differential in this period may have been even greater than that which is determined biologically as males typically had superior access to nutrition. This was a period of high fertility meaning that

women's unique ability to give birth and breastfeed had a particularly strong impact on their availability for work. The knowledge that this was the case amongst both females and their parents, meant that a lower return could typically be expected on human capital investment in females than males, meaning they were less likely to have the skills to perform high-paying jobs.

Factory production required a higher proportion of fixed capital investment from employers than domestic production, meaning that strike action by workers was more damaging to employers, and thus more effective. The urbanisation of factory production following the application of steam-power made it easier for workers to combine to defend their interests than was the case under the putting-out system or at isolated rural factories. These changes meant that unionisation and protest by workers had an increasingly large impact on the operation of the labour market. Trade unions, such as those of the cotton mule-spinners, sometimes acted to exclude women from well-paid occupations, contributing to occupational segregation by gender. However, this was not purely motivated by gender ideology, with trade unions typically following their economic self-interest in seeking to limit the number of entrants into their occupation as much as possible, and excluding women was just one of a number of ways to achieve this.

Women had a much lower tendency to unionise than men, and when they did form unions or engage in industrial protest these tended to be short-lived and were frequently unsuccessful. There are many instances of women protesting over the terms of their employment in a variety of industries and regions, but the level of organisation, strategic planning and success shown by male groups such as the cotton mule-spinners of Lancashire and the woollen finishing workers of Leeds was not present for any groups defending female workers' interests. Women's lack of unionisation is well-known and has been attributed to factors such as their lower pay making it harder to pay subscriptions, shorter attachments at work, women workers tending to be younger

than men workers, and men's greater experience in positions of authority both within the political arena and the home. All of these factors played a part, but economic self-interest is also important for explaining this aspect of unionisation: since women earned less and would typically spend a shorter period of time in the labour force than men, their payoff from any concessions that arose from unionisation and protest was lower, making it less worthwhile.

Economic factors and motivations help explain much of the behaviour we see on both the individual and aggregate level during the Industrial Revolution. However, Joyce Burnette's recent, controversial, analysis which claims that the operation of labour markets at this time was solely determined by material factors fails to capture the complexity of forces determining male and female occupations and earnings. Source limitations for women's work in the Industrial Revolution mean that statistical models to test for discrimination are difficult to apply. Total precision on the extent of and causes of discrimination in this period will always remain beyond the reach of the historian. Nevertheless, I present overwhelming evidence for the importance of gender ideology in severely curtailing women's access to jobs which involved having authority over other workers within the factory. In both aggregate and firm-level data, there is no evidence for women ever supervising the work of adult males, and even where all the workers to be supervised were women and children a strong preference was shown for employing men. When women were employed in a supervisory role their remuneration was not equivalent to that of male supervisors, and there is evidence to suggest that they were perceived by the subordinate workers in a different way. There was a strong social stigma against women behaving violently towards subordinate workers. As well as women missing out on well-paid overseeing jobs, the importance of gender ideology meant that men were preferred as mule-spinners and slubbers, which were also highly-paid occupations. The ideological opposition to female authority and violence was

resistant to strong economic forces, and suggests that ideology also impacted labour markets in other ways. This fits in with the recent work of George Akerlof and Rachel Kranton on the importance of notions of gender identity for individuals' utility payoffs and behaviour, and how ideology and social norms help determine the operation of economic forces. The not uncommon practice of factory workers receiving time-rates even where output was easily observable is further evidence for social and cultural expectations influencing employment conditions. This is contrary to a strict neoclassical interpretation of the labour market, under which material incentives promote efficiency to such a degree that they are used wherever feasible.

Although the evidence is not completely clear, there seems to have been increased resistance amongst the working classes to women working outside of the home as the period progressed. Perhaps more significantly, as more and more processes of textile production moved away from the home and into the factory any resistance to women working outside the home had a greater effect on their employment opportunities regardless of any change in ideology. The high level of fertility during the Industrial Revolution meant that the partially economically determined expectation that women would perform the majority of child-rearing and domestic tasks had a particularly severe impact on their access to work. Working-class movements to privilege male factory employment, or even to exclude women from factory work altogether, have been interpreted by a number of historians to be solely or primarily concerned with preserving patriarchal power both within the home and at work. However, the key failure of analyses founded on a theory of patriarchy is the assumption of a dramatic split between male and female interests and behaviour. Although men often did act to preserve their power this was by no means the only motivation. And, given the low pay, long hours and appalling conditions of many factory occupations the evidence we often see for high levels of support amongst working women for

male privilege at work does not mean that they were suffering from false consciousness or were mistaken. Community, family and class interests typically overrode notions of gender solidarity, and a more holistic approach to individuals' motivations and behaviour than that provided by theories of patriarchy is needed to fully understand economic and social behaviour.

The organisational structure of an industry was an important determinant of worker attitudes towards new technology and their willingness to protest against it. Again, an appreciation of regional differences is necessary to understand the behaviour of economic actors. The highly capitalised and proletarianised nature of domestic production in West Riding worsted, and even more so in West of England woollens meant that workers were strongly opposed to the introduction of labour-saving machinery. Whereas, in West Riding woollens the industry was characterised by many small masters employing family members and maybe one or two journeymen, and this meant that technological advance was generally welcomed. The advent of factory production increased the division between workers and employers, meaning new technology was almost invariably against the interests of existing workers. Men were generally better at both defending their own interests and mobilising community support for their interests, but it is significant that women's work performed within the home was much more able to attract support from family and community members, than that which was performed in the factory.

The evidence for mounting middle-class ideological hostility to women's work is stronger than the evidence for such a backlash among the working class. However, it is unclear to what extent they expected the working classes to follow the same proscriptions. Further, in competitive labour markets any employer wishing to discriminate by gender would have suffered a diminution of profits and so been forced to adopt non-discriminatory employment practices. Moreover, the evidence I present here suggests that even where employers had monopsonistic power, they

showed little or no desire to discriminate by gender. Although the state placed some restrictions on the work of women in factories in the 1840s, this was very late in the period under study here, and the evidence is far from clear in suggesting that this actually decreased women's employment and earning opportunities. Economic forces explain much of the difference in the treatment of male and female workers, but ideology also mattered. However, employers and the state only had an extremely limited role in ensuring that ideology affected textile labour markets. Rather, it was through working-class notions of gender identity and appropriate behaviour that women's labour market position was weakened.

List of Tables

2.1: <i>Mean Age of Overseers Interviewed in 1833 and 1834 Reports</i>	p.45
3.1: <i>Wages by Occupation in Lancashire Factory Cotton Production (1833)</i>	p.65
3.2: <i>Wages by Occupation in Bolton Factory Cotton Production (1833)</i>	p.78
3.3: <i>Wages by Occupation in Stockport and Heaton Norris Factory Cotton Production (1833)</i>	p.88
4.1: <i>Average Weekly Wages by Occupation at Bean Ing Mill (1830)</i>	pp.108-10
4.2: <i>Value in Shillings of Monthly Output of Handloom Weavers Employed by B. & W. Marriner (1804-29)</i>	p.124
4.3: <i>Value in Shillings of Monthly Output of Handloom Weavers Employed by Robert Clough (1816-32)</i>	p.125
5.1: <i>The Factory Textile Workforce by Age, Gender, Region and Industry (1833)</i>	p.162
5.2: <i>The Factory Textile Workforce by Age, Gender, Region and Industry (1847)</i>	p.163
5.3: <i>Ratio of F:M Workers in Factory Textile Production (1833)</i>	p.167
5.4: <i>Ratio of F: M Workers in Factory Textile Production (1847)</i>	p.168
5.5: <i>Wages by Occupation in Manchester, Macclesfield and Congleton Factory Silk Production (1833)</i>	p.172
5.6: <i>Average Wages in Various Women's Occupations at the Courtauld Mill in Halstead (1853 & 1855)</i>	p.176
5.7: <i>Number of Male and Female Workers Aged above 17, 25 and 30 as a Proportion of the Factory Workforce in the English Silk Industry (1833)</i>	p.178
5.8: <i>Wages by Occupation in Manchester and Salford Factory Silk Production (1839-59)</i>	p.179
5.9: <i>Females Age 31-50 as a Percentage of the Workforce Age 31-50 (1833)</i>	p.188

List of Figures

3.1: <i>Females As a Percentage of Lancashire Factory Cotton Workers (1833)</i>	p.62
3.2: <i>Female:Male Wage Ratio in Lancashire Factory Cotton Production (1833)</i>	p.62
3.3: <i>Male and Female Average Weekly Wages in Lancashire Factory Cotton Production (1833)</i>	p.63
4.1: <i>Female:Male Wage Ratio in West Riding Factory Wool Textile Production (1833)</i>	p.112
4.2: <i>Male and Female Average Weekly Wages in West Riding Factory Wool Textile Production (1833)</i>	p.113
4.3: <i>Females As a Percentage of West Riding Factory Wool Textile Workers (1833)</i>	p.113
4.4: <i>Female:Male Wage Ratio in Gloucestershire Factory Woollen Production (1833)</i>	p.115
4.5: <i>Male and Female Average Weekly Wages in Gloucestershire Factory Woollen Production (1833)</i>	p.115
4.6: <i>Females As a Percentage of Gloucestershire Factory Woollen Workers (1833)</i>	p.116
4.7: <i>Female:Male Wage Ratio in Somerset Factory Woollen Production (1833)</i>	p.116
4.8: <i>Male and Female Average Weekly Wages in Somerset Factory Woollen Production (1833)</i>	p.117
4.9: <i>Females As a Percentage of Somerset Factory Woollen Workers (1833)</i>	p.117
4.10: <i>Female:Male Wage Ratio in Wiltshire Factory Woollen Production (1833)</i>	p.118
4.11: <i>Male and Female Average Weekly Wages in Wiltshire Factory Woollen Production (1833)</i>	p.118
4.12: <i>Females As a Percentage of Wiltshire Factory Woollen Workers (1833)</i>	p.119
5.1: <i>Male and Female Average Weekly Wages in East Anglian Factory Silk Production (1833)</i>	p.170
5.2: <i>Male and Female Average Weekly Wages in Derby Factory Silk Production (1833)</i>	p.171
5.3: <i>Male and Female Average Weekly Wages in Somerset Factory Silk Production (1833)</i>	p.171

<i>5.4: Male and Female Average Weekly Wages in Leeds Factory Flax Spinning (1833)</i>	p.187
<i>5.5: Female:Male Wage Ratio in Leeds Factory Flax Spinning (1833)</i>	p.187
<i>5.6: Females As a Percentage of Leeds Factory Flax Spinning Workers (1833)</i>	p.188
<i>5.7: Male and Female Average Weekly Wages in Tiverton Factory Lace Production (1833)</i>	p.193

Chapter 1: Historiography and Theory

From the earliest times the productive work of women has been of greater importance in the textile industries than in any other trade.¹

This continued to be the case throughout the Industrial Revolution, and as a result women's work in textiles during this economically and socially tumultuous time has already attracted a high level of attention from gender historians. It has been justly stated that, '[F]emale textile workers in factories were untypical and unrepresentative of the nineteenth-century female workforce as a whole.'² However, this study of female textile work, in both domestic and factory production, provides insights into women's work in textiles not covered by the existing literature. And, many of these insights help improve our understanding of the determinants of female occupations and earnings across the economy. There is perhaps a better body of primary evidence of female work in textiles than in any other industry during this time, enabling a *relatively* high level of precision when analysing women's work.

This period encompasses the transition from domestic to factory production in textiles, allowing the study of how ideology regarding women's work changed as the location of production shifted, and to what degree this shift altered the extent to which ideology could influence the labour market. Although women's work in the cotton industry, and to a lesser extent silk and lace, has been extensively discussed by gender historians, there has been little additional research on women's work in wool textiles from a specifically gender perspective since the

¹ Ivy Pinchbeck, *Women Workers and the Industrial Revolution, 1750-1850*, 2nd ed. (London, 1969), p.111.

² Nicola Verdon, *Rural Women Workers in Nineteenth-Century England* (Woodbridge, 2002), p.11. See also, Patricia Branca, *Women in Europe since 1750* (London, 1978), pp.10-11, 39-40; Louise A. Tilly and Joan W. Scott, *Women, Work and Family* (New York, 1978), pp.63-64; Deborah Valenze, *The First Industrial Woman* (New York, 1995), pp.97-98.

relevant parts of Ivy Pinchbeck's classic account of women's work in the Industrial Revolution, first published back in 1930.³ The same is true for the considerably smaller flax industry.

Although attempts at bringing textile workers together in one place had begun at least as early as the sixteenth century, these were rare and utilised the same technology as that used by domestic workers.⁴ Thomas Lombe's silk throwing mill in Derby, where production began in 1721, was the first successful attempt at modern factory production, featuring a large number of workers gathered in one place, and with much of the machinery powered by an external source (i.e. water). By the mid-eighteenth century similar mills had been built in various regions of England, typically employing large proportions of women and children.⁵ Factory production was slower to emerge in cotton and wool textiles, but important technological advances were occurring from the 1730s.

In 1734 John Kay patented the flying-shuttle, which significantly increased the productivity of handloom weavers, and this came into general use among cotton fustian weavers around 1760.⁶ The heightened demand for yarn occasioned by weavers' increased productivity encouraged the invention of the spinning jenny (by James Hargreaves c.1764-65). The shift to factory production in cotton spinning occurred with the introduction of the water-frame (patented by Richard Arkwright in 1775), and as the mule (invented by Samuel Crompton in 1779) soon grew to a size too large to be used at home. The West Riding wool textile industry typically adopted these

³ Pinchbeck, *Women Workers and the Industrial Revolution*, Chapters 6-9. Although it should be noted that some social historians who have worked on wool textiles in the West Riding have incorporated many of the insights of gender history into their analyses. See, Karl Ittmann, *Work, Gender and Family in Victorian England* (Basingstoke, 1995); Theodore Koditschek, *Class Formation and Urban-Industrial Society: Bradford, 1750-1850* (Cambridge, 1990).

⁴ See below, p.103.

⁵ See below, pp.159-60.

⁶ J.L. Hammond and Barbara Hammond, *The Skilled Labourer: 1760-1832* (London, 1919), p.49; Pinchbeck, *Women Workers and the Industrial Revolution*, p.115.

inventions around ten years after the cotton industry, and in West of England woollen production the take-up was even slower. There were important developments in the mechanisation of preparatory processes in the late eighteenth and early nineteenth centuries, which saw these processes largely shift to factory production as well. Analogous technological improvements took place in silk. Although flax weaving never became mechanised on a large scale in England during the Industrial Revolution, machine spinning of flax was already occurring in Leeds in the early 1790s and factory production became increasingly predominant from this time on.⁷ The first successful lace machinery was patented by John Heathcoat in 1809, after which factory machine production spread rapidly.

Weaving was slower to mechanise and transfer to the factory than spinning and the other preparatory processes. In cotton, the most technologically advanced of the textile trades, powerlooms were not introduced on a wide scale until the 1820s. Even here handloom weaving was by no means extinct by mid-century.⁸ Nevertheless, by 1850 the factory had become the dominant form of textile production in England as it became the world's leading textile producing and exporting country by quite some distance. Although no longer accounting for such a large share as they had done in the 1830s, in 1851 cotton and wool textiles still accounted for over half of the value of all British exports. Wool textiles, linen and silk had all shown strong growth from the 1760s onwards, and in the case of cotton the increase in output was truly spectacular.⁹

Powerloom weaving employed large numbers of women in all of the textile trades, and the high level of gender egalitarianism in the cotton powerloom weaving unions has attracted the

⁷ W. G. Rimmer, *Marshalls of Leeds, Flax-Spinners, 1788-1886* (Cambridge, 1960), pp.34-36.

⁸ Evidence for this can be seen below, Chapter 3.

⁹ Robert C. Allen, *The British Industrial Revolution in Global Perspective* (Cambridge, 2009), pp.182, 211; N. F. R. Crafts, *British Economic Growth during the Industrial Revolution* (Oxford, 1985), pp.23, 143; R. M. Hartwell, *The Industrial Revolution and Economic Growth* (London, 1971), pp.121-22.

attention of numerous gender historians.¹⁰ Although handloom weaving had traditionally been a primarily a male job in England, women had also long been found in this occupation. Women had long been employed as handloom weavers around the world, and in many countries they formed the majority of this workforce. In some regions of Japan in the seventeenth and eighteenth centuries it was even a prerequisite for marriage that women possessed weaving skills.¹¹

It is important not to oversimplify domestic textile production: whilst there were many families where a male weaver headed up the household production unit, directing the labour of his wife and children to perform spinning and other preparatory tasks, and receiving the wage for the whole family's output himself, this was by no means the universal experience. As Pinchbeck makes clear, even in the eighteenth century the textile industry had long had a capitalistic basis and although women still typically worked in their own homes this was mainly for individually-received money wages.¹² At certain points in the family life-cycle the male head of household's family was unable to provide sufficient yarn for him, and workers in the surrounding area often had to be employed either by the weaver or the putting-out merchant to ensure that the weaver had sufficient yarn to work up.¹³ Where the trade was highly capitalised, such as in West of England

¹⁰ This is discussed more fully in Chapter 3.

¹¹ Jeffrey Bortz, 'Mexican Textile Workers: from Conquest to Globalisation' in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nederveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers, 1650-2000* (Farnham, 2010), p.335; Lars K. Christensen, 'Denmark' in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nederveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers*, p.164; Robert Cliver, 'China' in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nederveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers*, pp.103, 107; Janet Hunter and Helen Macnaughton, 'Japan' in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nederveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers*, pp.309-10; Donald Quatert, 'The Ottoman Empire, 1650-1922' in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nederveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers*, p.492.

¹² Pinchbeck, *Women Workers and the Industrial Revolution*, p.111. See also, Craig Muldrew, 'Th' Ancient Distaff and 'Whirling Spindle': Measuring the Contribution of Spinning to Household Earnings and the National Economy in England, 1550-1770', *Economic History Review* (forthcoming); Pamela Sharpe, *Adapting to Capitalism: Working Women in the English Economy, 1700-1850* (Basingstoke, 1996), pp.30-31; Valenze, *The First Industrial Woman*, pp.71-73.

¹³ Joyce Burnette, *Gender, Work and Wages in Industrial Revolution Britain* (Cambridge, 2008), pp.39-40; Pinchbeck, *Women Workers and the Industrial Revolution*, p.132.

woollens and West Riding worsted, independent proletarianised workers under the direction of a putting-out merchant rather than the family unit characterised production.¹⁴ There were also considerable numbers of women working as handloom weavers themselves, whether they were women living independently of a man, wives or daughters of handloom weavers, or indeed wives or daughters of men employed in other occupations.¹⁵

The early textile factory masters targeted children to form the bulk of the workforce, assuming that machinery would run of its own accord, and therefore should be attended by the cheapest labour available.¹⁶ However, this proved not to be the case and adults, especially women, were soon employed in very high numbers as well. Women's labour was of great importance to factory textile production throughout the period under study here.¹⁷ Ivy Pinchbeck believes that the shift towards employing a lower proportion of child workers can be attributed to the development and spread of steam power, which resulted in larger and more complicated machinery, and thus a greater demand for adult labour.¹⁸ Per Bolin-Hort claims that the early factory masters overestimated the ability of machinery to run of its own accord, and so initially sought the cheapest labour available (i.e. children), which turned out to be a sub-optimal organisation of production.¹⁹ Both of these arguments have some validity, but it is also important to remember the difficulty early factory masters had in attracting adult labour to the new form of

¹⁴ These differences are analysed in Chapter 4.

¹⁵ Evidence for this is given in Chapters 3-5.

¹⁶ Per Bolin-Hort, *Work, Family and the State: Child Labour and the Organisation of Production in the British Cotton Industry* (Lund, 1989), pp.35, 41; R. S. Fitton and Alfred P. Wadsworth, *The Strutts and the Arkwrights, 1758-1830: A Study of the Early Factory System* (Manchester, 1958), p.104; Pinchbeck, *Women Workers and the Industrial Revolution*, p.183-84.

¹⁷ By 1847 factory cotton production in England employed 277,028 workers, 153,708 of these were female, and 98,950 were adult women. In wool textiles there were 114,484 workers, 61,386 females, 35,414 women. In silk there were 43,690 workers, 29,918 females, 15,831 women. In flax there were 19,840 workers, 12,782 females, 7518 women. See, B.P.P. 1847, XLVI, *Return of the Total Number of Persons Employed in Cotton, Woollen, Worsted, Flax, and Silk Factories in the United Kingdom*, pp. 610-14.

¹⁸ Pinchbeck, *Women Workers and the Industrial Revolution*, p.184.

¹⁹ Bolin-Hort, *Work, Family and the State*, p.41.

work and time discipline, something which has been vividly emphasised by E. P. Thompson.²⁰ In a similar vein, Wally Seccombe stresses the strong willingness workers across Europe showed to continue working at home, often as part of a family production unit. They frequently preferred to work for considerably lower wages at home than accept work away from it.²¹

Factory production not only required workers to start and finish at specific hours, but also much of their control over the pace of work was lost.²² The testimony of various textile workers, even as late as the mid-nineteenth century, supports Thompson's argument regarding the strength of opposition to factory work by those not accustomed to it from a young age.²³ Once workers had been trained to accept the nature of factory labour as children it was easier to employ them in this fashion as adults. Seccombe argues that once production had moved away from the home, getting married fortified men's commitment to steady employment but had the opposite effect on women. Thus, the future class status and living standard of a young woman became much more dependent on her choice of marriage partner rather than on her present employment and job training.²⁴ Although married women did work in textile factories, it was much harder than it had been in domestic textile production for them to combine this work with the domestic and mothering responsibilities expected of them.

Females' knowledge of their anticipated withdrawal from the labour force can be expected to have reduced willingness of females, and their parents, to invest in their human capital. The widespread absence of formal apprenticeship, and therefore apprenticeship records, in textile

²⁰ E. P. Thompson, 'Time, Work-Discipline and Industrial Capitalism', *Past and Present*, 38 (1967), especially pp.81-89.

²¹ Wally Seccombe, *Weathering the Storm: Working-Class Families from the Industrial Revolution to the Fertility Decline* (London, 1993), p.30.

²² Arthur McIvor, 'The Textile Firm and the Management of Labour' in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nderveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers*, p.601.

²³ This evidence is presented below, Chapters 4-5.

²⁴ Seccombe, *Weathering the Storm: Working-Class Families from the Industrial Revolution to the Fertility Decline*, p.34.

production during the period under study here has meant that it is extremely difficult to test for gender differences in parental investment in human capital of textile workers. Studies of private apprentices in all trades in the eighteenth century show that females accounted for only 3-8% of apprentices, with an average figure of 5%.²⁵ This indicates a much lower investment in the human capital of females than males. However, due to the high degree of female employment in textiles it can be expected that investment in female human capital was higher in this industry than across the economy as a whole.

Parish apprentices had been employed by many early factory masters due to their difficulty in attracting labour. It has been claimed that the cost of feeding and housing paupers, as well as the fact that they could not be dismissed and were difficult to discipline, meant that after 1815 they were only being used in a few isolated rural factories such as Quarry Bank Mill.²⁶ This has been recently challenged by Katrina Honeyman, who demonstrates that although the supply of poor parish children declined after around 1820, 'The demand for institutional apprentices [from textile factory owners] persisted to a greater extent than was previously believed.'²⁷ Nevertheless, this thesis is focused on 'free' men, women, boys and girls (i.e. those whose labour supply decisions were made by themselves and/or their family members subject to their relationship to the means of production), and does not include much consideration of the children and young people whose work choices were decided by the state.

Although spinning employment had been geographically concentrated to an extent from at least as early as the seventeenth century, before the advent of the factory it had employed vast numbers of women across the country, whereas by the early nineteenth century it employed a

²⁵ Cited in, Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, p.117.

²⁶ Bolin-Hort, *Work, Family and the State*, pp.36-38; Mary B. Rose, *The Greys of Quarry Bank Mill: the Rise and Decline of a Family Firm* (Cambridge, 1986), p.55.

²⁷ Katrina Honeyman, *Child Workers in England, 1780-1820: Parish Apprentices and the Making of the Early Industrial Labour Force* (Aldershot, 2007), Chapters 5-6, especially page 102.

much smaller number of workers within much more geographically concentrated areas.²⁸ The introduction of the spinning-mule to the cotton and woollen industries in the late eighteenth century resulted in spinning in these trades becoming male dominated, in contrast to this process being primarily the preserve of female labour as it had been in the past and continued to be in worsted, silk and flax production. Women's access to high paying jobs in domestic textile production has often been underappreciated, and their access to the best paying jobs seems to have gone down as production moved to the factory. Occupational segregation became more rigid due to factory production creating increased trade union power, a more formal work hierarchy making resistance to female authority more significant, and women losing the informal access to skill acquisition that was often possible in domestic production.²⁹ The advance of factory production causing increased occupational segregation by gender has also been observed in the history of textile production in the Netherlands and Japan.³⁰ Further, the separation of work and home, and the shift to long standardised hours, entailed by factory production made it much harder for women to combine textile work with the mothering and domestic responsibilities expected of them. This change contributed to new ideological pressures against women's work.

Factory textile production is often seen as offering good employment opportunities for women and, given their almost total exclusion from many industries in Britain during the

²⁸ For the extent of women's employment across England, but it also being regionally concentrated to some degree, in wool textile hand-spinning prior to the introduction of the jenny, water-frame, and mule, see, Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.39-40, 43-44; Muldrew, 'The Ancient Distaff' and 'Whirling Spindle'.

²⁹ N.b. although trade unions did not become legal until 1824, proto-trade unions, officially designated as 'trade societies' or 'sick clubs', had operated well before this date. In this paper 'trade union' is used to refer to both legal trade unions and any prior organisations which shared their key characteristics.

³⁰ Hunter and Macnaughton, 'Japan', p.319; Elise van Nederveen Meerkerk, 'The Netherlands' in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nederveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers*, p.380.

Industrial Revolution, this is true to a degree.³¹ However, it is important to note that the evidence we have of aggregate wages in domestic textile production suggests that women's wages relative to those of men were higher here than in factory production. It also seems that women's relative wages in factory production were worse, or at the most no better, than for women in the wider economy. Nicola Verdon finds that in agriculture women day labourers typically earned between one-third and one-half of their male counterparts. Maxine Berg states that it is 'generally assumed' that women's wages in this period were between one-third and one-half of those received by men. Katrina Honeyman argues that despite much of the evidence for women's wages during early industrialisation being partial and piecemeal, the evidence we do have suggests levels of at most fifty percent of the male wage.³² Joyce Burnette has rightly pointed out that these estimates overstate the gender wage gap because of a number of factors, including: women in domestic industry working shorter hours than men, women's earnings in the protoindustrial family work unit being subsumed into male earnings; and, various distorting effects in agriculture. Correcting for these biases she finds that women's earnings were typically one-half to two-thirds of those received by men.³³

The adult female to male wage ratio in the 1833 data on factory textiles (which is by far the best available for relative male and female wages in factory textiles during the Industrial Revolution period) was typically one-third to one-half, and does not suffer from any of the biases Burnette gives as a common reason for the gender wage gap being overestimated.³⁴ Thus, I am

³¹ For textiles providing good employment opportunities for women, see below, Chapters 3-5. For women being excluded from many industries, especially new industries, see, Katrina Honeyman, *Women, Gender and Industrialisation in England, 1700-1870* (Basingstoke, 2000), p.31; Ellen Jordan, 'The Exclusion of Women from Industry in Nineteenth-Century Britain', *Comparative Studies in Society and History*, 31 (1989), especially pp.280, 294-96.

³² All cited in Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.72-73.

³³ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.84, 86, 98.

³⁴ For the gender wage gap in factory textiles in 1833, see Figures 3.2-3.3, 4.1-4.2, 4.4-4.5, 4.7-4.8, 4.10-4.11, 5.1-5.7. For a discussion of the 1833 data and the biases it suffers from, see below, Chapter 2.

able to show that women's relative wages were not any better in factory textiles than in most sectors of the economy. Further, the evidence that is available on women's wages in domestic textile production suggests that, on aggregate, the 'F:M' (female:male) wage ratio here was considerably higher than in the factory.³⁵ Given the childcare responsibilities expected of women in this period, they would also have suffered a greater relative decline in the non-wage utility derived from employment than men once production had shifted to the factory. It was generally no longer possible to have young children located in a mother's workplace as had been possible in domestic production and there was very little flexibility over the timing and the length of hours that could be worked.

In his work on child labour during the Industrial Revolution Clark Nardinelli assumes technological change to be exogenous to the labour process.³⁶ But this ignores the importance of power relations in technological change. Peter Scholliers' study of the cotton industry in Ghent during the nineteenth century shows how the Voortman mill used a higher proportion of low-paid young women than its rivals despite using the same technology, as a means of weakening union power.³⁷ The self-actor was invented in England as an (ultimately failed) attempt to destroy the power of male unions in cotton mule-spinning.³⁸ Technological invention and adoption was not a neutral process, rather it reflected the aims and power of competing groups both within and between workers and employers.

Some historians believe that 'direct discrimination' (i.e. paying women less than men for performing the same work) was one of the reasons for the gender pay gap. Judy Lown claims that,

³⁵ For evidence on the gender wage gap in domestic textile production, see below, pp.68-69, 106-07, 121-26, 201-02.

³⁶ Clark Nardinelli, *Child Labour and the Industrial Revolution* (Bloomington, 1990), especially Chapters 4-5.

³⁷ Peter Scholliers, *Wages, Manufacturers and Workers in the Nineteenth-Century Factory: the Voortman Cotton Mill in Ghent* (Oxford, 1996), pp.58, 84.

³⁸ Mary Freifeld, 'Technological Change and the 'Self-Acting' Mule: a Study of Skill and the Sexual Division of Labour', *Social History*, 11 (1986), p.319; William Lazonick, 'Industrial Relations and Technical Change: the Case of the Self-Acting Mule', *Cambridge Journal of Economics*, 3 (1979), pp.231-32.

‘Where women wove alongside men in the silk industry they frequently received lower wages for the same work.’³⁹ However, she fails to provide a reference for this claim, and although female silk weavers typically earned less than men, this can be explained by them typically producing lower quality cloth and probably working shorter hours as well.⁴⁰ Thus, it cannot simply be assumed that men and women weavers were doing the ‘same’ work and that in the absence of discrimination they would have received equal wages. One master attempted to pay women lower piece-rates in the Spitalfields silk industry in 1810, but he was prevented from doing so.⁴¹ Paul Johnson contends that direct discrimination occurred in Lancashire mule-spinning around 1830, but this is due to a failure to distinguish between piece-rates and weekly wages, and the erroneous assumption that women mule-spinners performed exactly the same work as men mule-spinners.⁴² The only evidence for direct discrimination in textile production during the Industrial Revolution is amongst domestic handloom weavers in the West of England in the 1830s.⁴³ Direct discrimination is far from being a significant cause of the gender pay gap in this era.

Joyce Burnette, in contrast to most of the existing literature on women’s work in this period, places a strong emphasis on the importance of biological differences between males and females for explaining occupational segregation and the gender pay gap; arguing that in the absence of distributional coalitions and government interference, occupational segregation and the gender wage gap were determined by natural strength differentials and women’s unique ability to give birth and breastfeed.⁴⁴ As she highlights, the shift to factory production did not immediately

³⁹ Judy Lown, *Women and Industrialisation: Gender at Work in Nineteenth-Century England* (Cambridge, 1990), p.17.

⁴⁰ Evidence for this can be seen below, Chapter 5.

⁴¹ See below, pp.180-81.

⁴² Paul Johnson, ‘Age, Gender and the Wage in Britain, 1830-1930’ in Peter Scholliers and Leonard Schwarz (eds.), *Experiencing Wages; Social and Cultural Aspects of Wage Forms in Europe Since 1500* (London, 2003), p.230. For proof, and how women’s mule-spinning work differed from that of men, see below, pp.63-64, 69-76.

⁴³ See below, pp.131-32.

⁴⁴ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, especially pp.12, 138-153, 172-185.

remove the need for physical strength in many occupations, and in some cases, such as mule-spinning before the introduction of the self-actor, the strength requirement could increase.⁴⁵ As she also points out, the high fertility of this period meant that women's comparative advantage in childcare had a particularly large impact on reducing their ability to earn, and she emphasises the high cost of hired childcare.⁴⁶ Further, it was a frequent lament of contemporary commentators that hired childcare was of an appalling standard, including the supposedly widespread practice of dosing children with the notorious 'Godfrey's cordial'.⁴⁷ However, these fears seem to have been somewhat exaggerated and Michael Anderson's study of Preston shows that kin relationships were still strong even amongst recent migrants to the burgeoning urban areas, and so family networks could often provide good quality childcare at a low price.⁴⁸ Nevertheless, women's unique biological ability to give birth and breastfeed, as well as their lower levels of strength, undoubtedly contributed significantly to the gender pay gap and women's lower rates of labour force participation than men's.

Sylvia Walby and Heidi Hartmann claim that an understanding of patriarchy is essential for explaining women's subordinate labour market position throughout history.⁴⁹ Hartmann defines

⁴⁵ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.110-12.

⁴⁶ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.173, 179-81.

⁴⁷ For example, see, B.P.P. 1843 XIV, *Children's Employment Commission, Second Report of the Commissioners*, pp.536-37, 630; Friedrich Engels, *The Condition of the Working-Class in England in 1844* (London, 1892), pp.142-44; Peter Gaskell, *Artisans and Machinery: the Moral and Physical Condition of the Manufacturing Population Considered, with Reference to Mechanical Substitutes for Human Labour* (London, 1836), pp.70-71, 87; Angus Bethune Reach, *A Cotton-Fibre Halo: Manchester and the Textile districts in 1849*, Chris Aspin (ed.), (Hebden Bridge, 2007), pp.49-62; R. J. Richardson, *The Rights of Woman: Exhibiting Her Natural, Civil, and Political Claims to a Share in the Legislative and Executive Power of the State* (Edinburgh, 1840), p.18.

⁴⁸ Michael Anderson, *Family Structure in Nineteenth-Century Lancashire* (Cambridge, 1971), pp.143-47, 151-60 178-80.

⁴⁹ Heidi Hartmann, 'Capitalism, Patriarchy and Job Segregation by Sex', in Zillah R. Eisenstein (ed.), *Capitalist Patriarchy and the Case for Socialist Feminism* (New York, 1979), especially pp.207, 230; Sylvia Walby, *Patriarchy at Work: Patriarchal and Capitalist Relations in Employment* (Cambridge, 1986), especially pp.1-2, 243. See also, Sally Alexander, Barbara Taylor, 'In Defence of 'Patriarchy'' in Sally Alexander, *Becoming a Woman and Other Essays in Nineteenth and Twentieth Century Feminist History* (London, 1994), pp.271-74; Meg Gomersall, *Working-Class Girls in Nineteenth-Century England: Life, Work and Schooling* (London, 1997), p.2; Lown, *Women and Industrialisation*, pp.5, 211-19.

patriarchy as, 'a set of social relations which has a material base and in which there are hierarchical relations between men, and solidarity among them, which enable them to control women. Patriarchy is thus the system of male oppression of women.'⁵⁰ Whilst largely agreeing with Hartmann, Walby criticised her for being ambiguous about the actual base of patriarchy, defining patriarchy as a set of social relations primarily between men rather than between men and women, and paying insufficient attention to the tension between capitalism and patriarchy.⁵¹ Therefore, Walby gave a broader definition of patriarchy, describing it as, 'a system of interrelated social structures through which men exploit women.'⁵² However, as Carol Morgan points out, Walby's analysis still falsely assumes a straightforward split between male and female interests and behavior. This assumption has meant that analyses based on a theory of patriarchy have failed to fully capture the behaviour of both men and women.⁵³ Jane Humphries has emphasised the importance of female agency, rather than viewing working women as, 'sheep-like creatures incapable of perceiving, defending or acting upon even their most basic interests.'⁵⁴ She has also highlighted how the working-class family acted as a means of preventing capital from expropriating all of the surplus of production, and restrictions on the hours women could work in factories did not only benefit the male head of household.⁵⁵

As can be seen in Chapters 3-5 of this thesis, workers' interests were by no means fully explained by their gender; family, community and class interests seem to have been more important to women at this time than any notion of gender solidarity. Meg Gomersall encapsulates

⁵⁰ Hartmann, 'Capitalism, Patriarchy and Job Segregation by Sex', p.206n.

⁵¹ Walby, *Patriarchy at Work*, pp.43, 45.

⁵² Walby, *Patriarchy at Work*, p.51.

⁵³ Carol Morgan, *Women Workers and Gender Identities, 1835-1913: the Cotton and Metal Industries in England* (London, 2001), pp.4-5. See also, Janet Greenlees, *Female Labour Power; Women Workers' Influence on Business Practices in the British and American Cotton Industries, 1780-1860* (Aldershot, 2007), p.1.

⁵⁴ Jane Humphries, 'The Working-Class Family, Women's Liberation, and Class Struggle: the Case of Nineteenth-Century British History', *Review of Radical Political Economics*, 9 (1977), p.36.

⁵⁵ Jane Humphries, 'Class Struggle and the Persistence of the Working-Class Family', *Cambridge Journal of Economics*, 1 (1977), pp.245, 248, 252-56.

the problems with an overreliance on patriarchy as an explanation for women's subordinate position in the labour market when she states that:

... changes in the mode of production and the organisation of labour were defined as tolerable or intolerable according to the degree in which they challenged or supported patriarchal social relations of male superiority and female inferiority.⁵⁶

This type of interpretation does not account for the complexity of competing forces which determined women's role within both households and the labour market.

In this thesis gender ideology refers to the beliefs held by a certain group(s) within society, or which were held across society, regarding what males and females were capable of performing and what was appropriate for them to perform. Expectations of possible and appropriate behaviour by gender were also contingent on age. Whilst gender ideology may have originally been partially derived from material differences between males and females, it is understood here to operate independently from these. Gender ideology was not fixed and proved liable to change. It is often claimed or assumed by historians of women's work that employers' gender ideology was important in determining women's lower earnings and reduced occupational choice:

Workers and bosses, however sharp their differences on other matters, concurred in discouraging the employment of married women: at least women at home spared class struggles over the control of women and their time.⁵⁷

Employers did not offer a 'living wage' to the female or child since they assumed that she was dependent upon a household headed by a male and therefore did not depend only on her wages for subsistence.⁵⁸

⁵⁶ Gomersall, *Working-Class Girls in Nineteenth-Century England*, p.5.

⁵⁷ Elizabeth Fox-Genovese, 'Placing Women's History in History', *New Left Review*, 133 (1982), p.27.

⁵⁸ Valenze, *The First Industrial Woman*, p.89. For this interpretation being applied to textile work around the world, see, Elise van Nederveen Meerkerk, Lex Heerma van Voss and Els Hiemstra-Kuperus, 'Covering the World: Some Conclusions to the Project' in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nederveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers*, p.781.

Although employers undoubtedly took into account what their competitors were paying women workers, industrialists based their wage scales for women, unlike those for men, on a *customary* rate.⁵⁹ [author's emphasis]

In contrast, Friedrich Engels, and more recently Burnette, argue that ideological or moral concerns were unimportant for employer decision making:

It is utterly indifferent to the English bourgeois whether his working-men starve or not, if only he makes money. All the conditions of life are measured by money, and what brings no money is nonsense, unpractical, idealistic bosh.⁶⁰

When technology changed, the gender division of labour changed too, always allocating men to the more strength-intensive jobs. Employers were not constrained by gender roles, but switched between men and women workers when prices signalled that they should.⁶¹

There was a strong middle-class ideology hostile to women of their own class working, particularly towards the end of the Industrial Revolution era.⁶² However, although there was also increasing concern amongst the middle classes regarding the moral effects of working-class women being employed in many of the new forms of industrial work, it is unclear what the middle-classes thought about the desirability of working-class women working per se. Moreover, employers' economic interests mean that they should not necessarily be expected to share the same view on this issue as that generally held by members of the middle classes. Further, Gary Becker demonstrates theoretically that where there is a high degree of competition between

⁵⁹ Sonya O. Rose, *Limited Livelihoods; Gender and Class in Nineteenth-Century England* (Berkeley, 1992), p.23. Also, Amy M. Froide has recently criticised Burnette for dismissing the argument that employers were a significant cause of gender discrimination in the labour markets of the Industrial Revolution. See, Amy M. Froide, 'Disciplinary Differences: a Historian's Take on Why Wages Differed by Gender in Eighteenth and Nineteenth-Century Britain', *Social Science History*, 33 (2009), pp.466, 470.

⁶⁰ Engels, *The Condition of the Working-Class in England in 1844*, p.277.

⁶¹ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.13-14.

⁶² Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.4-5, 231-33; Leonore Davidoff and Catherine Hall, *Family Fortunes: Men and Women of the English Middle Class, 1780-1850*, 2nd ed., (London, 2002), p.272; Valenze, *The First Industrial Woman*, pp.141-54.

employers, employer-led discrimination will approach zero due to the savings in labour costs that accrue to non-discriminatory employers.⁶³

Burnette dismisses the validity of the monopsony model seemingly on the basis of research on the twentieth century to conclude that only where employers had monopolistic power could they have discriminated.⁶⁴ However, given the vastly different conditions of industrialising Britain to the twentieth century, particularly with regard to communications and transport, this seems like a large assumption to make, and many rural employers appear to have enjoyed some degree of monopsonistic power.⁶⁵ Nevertheless, even where employers seem to have possessed monopsonistic power, as in the case of certain rural paternalists, there is little to suggest that they consciously discriminated against women. The only possible evidence I have found for this occurring in textiles comes from the rural paternalist cotton mills in Lancashire run by Thomas Ashton and the Ashworths, and even here the evidence is ambiguous for employer-driven gender discrimination as it may have been a response to worker preferences.⁶⁶

Bridget Hill has found that census officials downgraded 'skilled' work to 'semi-skilled' when the enumerators found high levels of children and women pursuing these occupations.⁶⁷ This makes it clear that gender ideology could affect how the middle classes perceived the economic value of labouring women's work. Therefore, it may have been the case that labour markets were uncompetitive due to employers collectively underestimating the productive capabilities of women. Ellen Jordan makes the case that this 'androcentric blindness' on the part of employers explains women's exclusion from many of the new sectors (such as railways, engineering, gas,

⁶³ Gary S. Becker, *The Economics of Discrimination*, 2nd ed., (London, 1971), pp.43-45.

⁶⁴ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.80, 242-43.

⁶⁵ Employers that seem to have had a significant degree of monopsonistic power include Samuel Greg, Henry Ashworth, Samuel Courtauld and John Hall. See below, pp.97-102, 204-08.

⁶⁶ This is discussed more fully in Chapter 3. See below, pp.97-102.

⁶⁷ Bridget Hill, 'Women, Work and the Census: a Problem for Historians of Women', *History Workshop Journal*, 35 (1993), p.90.

electricity) or reorganised sectors (such as coal mining, iron and steel production) in industrial Britain to the detriment of women's earning capability.⁶⁸ However, she does not believe this process occurred in textiles. Whilst it could perhaps be argued that the shift to factory production entailed significant reorganisation (particularly with regard to the introduction of a more formalised labour hierarchy), this was not as dramatic a change as in the reorganised sectors that Jordan describes. I have found no clear evidence for employer ideology, either on a conscious or subconscious level, being an important barrier to women's employment. Rather, it was through worker attitudes that gender ideology impacted on the labour market to deny occupational choice and reduce earnings for women.

In attempting to dismiss the importance of ideology for determining occupational segregation by gender and women's low earnings Burnette provides several examples of women working as managers in factories. However, she admits that this was typically where the workers being supervised were women or children.⁶⁹ And, she is unable to provide any evidence of women supervising the work of men. Gender ideology was important for excluding women from overseeing the work of men, which was typically the best paid overseeing work, and also limited their access to overseeing even where the workers were exclusively women or children. Whilst this may partially reflect ideologically-driven behaviour of women (either in the form of being less productive under female supervision, or women being unwilling to take on a job which was seen to compromise their feminine identity), it seems to have been primarily a result of working men resisting female supervision. The strong preference for male supervision at work can be seen to mirror the dominant role men typically had within the home, with experience of dominating,

⁶⁸ Jordan, 'The Exclusion of Women from Industry in Nineteenth-Century Britain', pp.276, 295.

⁶⁹ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.65, 67.

directing and controlling others in either sphere likely to have reinforced male desire and ability to have controlled, directed and dominated in the other.

Information on overseers is scarce but the evidence we do have suggests that they occupied an ambiguous social and class position. Patrick Joyce describes how in the textile factories of Lancashire and the West Riding in the second half of the nineteenth century overlookers were typically conservative, resented and feared by the operatives, and, 'very much the employers' men'. Distance from the other workers had to be maintained to preserve discipline, and the overlookers' factory and leisure dress signified their difference from the mass of workers. Nevertheless, overlookers shared many interests with the male workers and often mixed with them outside of work.⁷⁰ Engels, writing in 1844, when class tensions were much higher than later in the nineteenth century, was far less equivocal, arguing that overseers:

... are not genuine working-men; they are deserters from their class, who have entered the service of the bourgeoisie for better pay, and fight in the interests of the capitalists against the workers. Their interest is that of the capitalists, and they are, therefore, almost more hated by the workers than the manufacturers themselves.⁷¹

It may have been the case that ideological constraints made it harder for women than men to 'break-out' of, or 'betray', their social and class status, therefore further contributing to their general absence from overseeing, but it has not been possible to test for this.

It is often claimed that women working in the eighteenth- and nineteenth-centuries received a 'customary' wage:

⁷⁰ Patrick Joyce, *Work, Society and Politics: the Culture of the Factory in Later Victorian England* (Brighton, 1980), pp.100-01. See also, Ittmann, *Work, Gender and Family in Victorian England*, p.64.

⁷¹ Engels, *The Condition of the Working-Class in England in 1844*, p.172. For the decline in conflict between the worker- and employer-classes in northern textile towns from around 1850, see, Joyce, *Work, Society and Politics*, pp.50, 80, 82, 19, 103-04; Koditschek, *Class Formation and Urban-Industrial Society*, p.424.

We know relatively little about the conditions of work in the early cotton mills of the North Midlands, but research suggests that the notion of a customary wage for females was transferred directly into the early factory system.⁷²

Industrialists evidently paid women a customary wage rate based on their gender.⁷³

... it is generally assumed that women by custom received one-third to one-half the wage of men.⁷⁴

Burnette has criticised the description of wages as customary because this term is typically not clearly defined and different historians, if they are specific in any way, often attribute a different meaning to the term 'customary'.⁷⁵ Due to the confusion and frequent vagueness that comes with the term 'customary wages' I have avoided using this as an explanation for women's wages. However, this is not to say that in supposedly 'competitive' markets (i.e. where there is no interference by the state or distributional coalitions, and employers do not have monopolistic power) wages were necessarily equal to the marginal product of labour as Burnette claims.⁷⁶ George Akerlof has used the norm-gift-exchange models developed by sociologists to critique the neoclassical explanation for how wages are determined (i.e. that they are equal to workers' individual marginal productivity of labour). His analysis emphasises the importance of social norms for influencing wage rates. A clear example of wages being influenced by social norms and notions of fairness is the payment of time-rates even where output is easily observable.⁷⁷ This is something I have found to have taken place in various textile industries in various locations,

⁷² Penelope Lane, 'A Customary or Market Wage? Women and Work in the East Midlands, c.1700-1840', in Penelope Lane, Neil Raven and K. D. M. Snell (eds.), *Women, Work and Wages in England, 1600-1850* (Woodbridge, 2004), p.109.

⁷³ Sonya O. Rose, 'Gender Antagonism and Class Conflict: Exclusionary Strategies of Male Trade Unionists in Nineteenth-Century Britain', *Social History*, 13 (1988), p.197. See also, Rose, *Limited Livelihoods*, p.23.

⁷⁴ Maxine Berg, 'What Difference Did Women's Work Make to the Industrial Revolution?', *History Workshop Journal*, 35 (1993), p.31.

⁷⁵ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.123-35

⁷⁶ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.79-80, 133-35.

⁷⁷ George Akerlof, 'Labour Contracts As Partial Gift Exchange', *Quarterly Journal of Economics*, 97 (1982), especially pp.544, 547, 550.

providing powerful evidence against a strict neoclassical explanation of how wages were determined for both men and women.

Given that work was often viewed in gendered terms, it seems highly probable that gender influenced the wages received by a worker as a result of employers responding to workers', especially adult males', preferences regarding the appropriate level of the gender pay gap and the allocation of occupations by gender. Even in the absence of trade unions and government interference, rather than women's (and men's) wages in domestic and factory textile production being equal to the marginal product of their labour, Nicola Verdon's analysis of the determinants of nineteenth-century rural, often agriculturally employed, women's work and wages seems to be more accurate:

The conditions of women's work were not determined solely by economic factors but also by a complex mixture of wider social and cultural attitudes that placed certain prohibitions and proscriptions on female labour.⁷⁸

These prohibitions and proscriptions on female labour acted to narrow occupational choice for women and the wages they received in a given occupation in the textile industries.

Burnette presents various examples to show that economic self-interest overrode gender ideology when self-interest and the prevalent gender ideology were in conflict, as a means to demonstrate that, 'Economic actors [i.e. employers and workers] respond to economic incentives, and use ideology as a cover for their naked self-interest.'⁷⁹ Rather than custom determining the work people did, 'custom was created to explain and justify the existing patterns of work and pay.'⁸⁰ However, the examples she provides of economic self-interest overriding ideology are typically for employers, and as I have already argued, these were not an important source of

⁷⁸ Verdon, *Rural Women Workers in Nineteenth-Century England*, p.13.

⁷⁹ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, p.7.

⁸⁰ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, p.5.

discrimination in this period. As Burnette herself describes, laundry work presents an example of comparative advantage being overridden by gender ideology: despite this work being highly strength-intensive, this was seen as ‘women’s work’ and men rarely did it (accounting for only around 1% of laundry workers in the 1841 Census).⁸¹

Unfortunately data limitations mean that it is extremely difficult to apply statistical models to women’s work in the Industrial Revolution, making discrimination hard to detect. Since the economic interest of working men typically operated in the same direction as an ideology hostile to women’s work it may be tempting, as Burnette does, to explain occupational sorting and earnings as solely derived from economic factors. However, the evidence of laundry work being so female dominated despite being strength-intensive, and the payment of time-rates even where output was easily observable, strongly suggests that a neoclassical explanation fails to capture the full range of determinants of male and female earnings and occupations.

As Becker describes, where two identifiable groups are imperfect substitutes for each other in the labour market (as men and women were in many aspects of both domestic and factory textile production due to strength and human capital differences), wage discrimination is possible even in ‘competitive’ labour markets.⁸² Moreover, Kenneth Arrow has demonstrated that even where two groups are perfect substitutes in production and the employer has no discriminatory feelings, discrimination can occur. He describes how if white overseers who hold discriminatory views are in charge of black workers they will respond by demanding higher wages or having lower morale, lower productivity, and/or the overseers the employer is able to attract being of a lower quality. He also describes how the effect of discrimination is likely to be even higher, if there is an attempt

⁸¹ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.162-63.

⁸² Becker, *The Economics of Discrimination*, pp.60-61.

to install black workers in a position of authority (such as overseers) over white workers.⁸³ This process, causing occupational segregation and women's exclusion from certain occupations, is what I have found to have occurred in Industrial Revolution era England, with women taking the place of black workers, and men taking the place of white workers.

Akerlof and Rachel Kranton have expanded on the work of Becker and Arrow, demonstrating the importance of gender identity for individuals' utility and behaviour. Notions of gender appropriate behaviour are shown to affect the choices both men and women make in the labour market. Societal and group prescriptions regarding gender appropriate behaviour are an expression of what I have termed gender ideology. Akerlof and Kranton describe how following the behavioural prescriptions for one's gender affirms identity as a 'man' or 'woman'. Conversely, violating these prescriptions causes anxiety and discomfort in oneself and in others. Therefore, gender identity affects the utility payoffs from different actions. Their model indicates that people have identity-based payoffs derived from their own actions; people have identity-based payoffs derived from other people's actions; third parties can generate persistent changes in these payoffs; and some people may choose their identity but choice may be prescribed for others. Twentieth-century studies in social psychology have shown that group identities can be formed around even the most arbitrary social categorisations and, 'Subjects are more likely to give rewards to those with the same label than to those with other labels, even when choices are anonymous and have no impact on own payoffs. Subjects also have higher opinions of members of their own groups.'⁸⁴

⁸³ Kenneth Arrow, 'Models of Job Discrimination', in Anthony H. Pascal (ed.), *Racial Discrimination in Economic Life* (London, 1972), pp.87-88.

⁸⁴ George Akerlof, and Rachel Kranton, 'Economics and Identity', *Quarterly Journal of Economics*, 115 (2000), especially pp.716-17, 720; George Akerlof, and Rachel Kranton, *Identity Economics: How Our Identities Shape Our Work, Wages, and Well-Being* (Oxford, 2010), especially chapter 7.

Working in an occupation that is seen as one which should be performed by the opposite gender decreases utility to the individual, meaning that a wage premium has to be paid to an individual who is the ‘wrong’ gender working in an occupation which is seen as sex-specific. Workers will also frequently act to exclude or harass entrants to their occupation who are not from the same social group (e.g. men, women) as themselves. A woman working in a ‘man’s’ job may make colleagues feel less like ‘men’ (the opposite is also true). Harassment of entrants of the ‘wrong’ gender to a sex-specific occupation is a means of preserving the utility pay-off they receive from their job, as a result of it reflecting and reinforcing their gender identity.⁸⁵ Therefore, gender identity affects both the desire of individuals wishing to enter occupations held by the ideological prescriptions of a society (or one or more groups in that society) to be gender-specific, and their access to those jobs, further to any material/biological differences between males and females. In this thesis I apply these insights to labour markets of the English Industrial Revolution.

As Akerlof and Kranton make clear, the impact of workers’ identities on the operation of the labour market will change as the ideological prescriptions held by the workers change.⁸⁶ The period 1760-1850 saw a rise in an ideology hostile to women’s work, and so gender identity can be expected to have had an increasing impact on women’s occupational choice and earnings as the period advances even aside from the transition to factory production creating more formalised work hierarchies.⁸⁷ It may also be the case that where workers gathered in large numbers away from home (e.g. in factories) adherence to gender prescriptions of behaviour and choice of occupation as a means of achieving social acceptance and maintaining personal identity were

⁸⁵ Akerlof and Kranton, ‘Economics and Identity’, especially pp.723, 732-36.

⁸⁶ Akerlof and Kranton, ‘Economics and Identity’, pp.735-36.

⁸⁷ For a discussion of the rise in an ideology hostile to women’s work, see below, pp.83-88, 153-57.

more powerful than in small, often family-based, domestic or workshop production units. However, source limitations mean it has not been possible to test for this in my thesis.

Burnette outlines how occupational segregation as a result of sorting by comparative advantage benefits women's earnings, since they are allocated to the jobs in which they are most productive. There is no doubt that women's lower average strength, and the lower human capital that they typically possessed (which was at least partly due to the biologically determined shorter time they would spend in the workforce), means that even if labour markets at this time were entirely free of discriminatory influences we would still see a considerable degree of occupational sorting by gender. However, in this thesis I present clear evidence for some of the occupational sorting we observe being determined by discriminatory attitudes. Not only did this mean that women missed out on certain highly-paid occupations, it also means that, as Barbara Bergmann outlines in her crowding hypothesis, the wages paid to those in occupations performed by the group discriminated against (in this case women) were reduced as women were crowded into these occupations, with the resultant artificially high supply of labour depressing the earning power of each individual so employed.⁸⁸

Instead of direct discrimination being important for lowering women's earnings, gender discrimination was predominantly caused by gender ideology creating a sexual division of labour. This reduced women's earnings by denying them access to many well-paid occupations and causing overcrowding in the occupations where they were employed. It is this type of 'deeply rooted gender discrimination' resulting in labour market segmentation by gender that Elise Van Nederveen Meerkerk has recently argued lowered the wages of females relative to males in domestic wool-spinning in the seventeenth- and eighteenth-century Dutch Republic. Unlike many

⁸⁸ Barbara Bergmann, 'The Effect on White Incomes of Discrimination in Employment', *Journal of Political Economy*, 79 (1971), pp.294-313.

European trades at this time, there were no guilds controlling entry to spinning here. However, as I argue in this thesis, even in the absence of direct discrimination, a supposedly ‘free’ labour market discriminated against women.⁸⁹

The primary focus of the discrimination models created by Becker, Arrow and Bergmann was to explain racial discrimination, but, as they make clear, the same theory can be applied to gender relations. Unfortunately, because of a lack of available evidence I have not been able to consider how the nature of discrimination against Irish workers operated, and how this intersected with gender discrimination. There was large-scale migration from Ireland into England, especially Lancashire and Yorkshire, in the nineteenth-century. We know that many of those that entered Lancashire worked as cotton handloom weavers and in Yorkshire as worsted hand-combers.⁹⁰ Angus Reach tells us that they were almost totally absent from factory textile production; in his extensive tour of the textile factories of Yorkshire, Cheshire and Lancashire in 1849 the only Irish workers he found were women in the factories of Batley and Dewsbury performing the ‘lowest and foulest’ work anywhere in the factory system.⁹¹ The Irish immigration into the northern industrial districts attracted considerable contemporary attention (much of it, particularly with regard to their domestic habits, negative), and there was a high degree of social segregation between English and Irish workers.⁹² However the lack of readily available information on the

⁸⁹ Elise van Nederveen Meerkerk, ‘Market Wage or Discrimination? The Remuneration of Male and Female Wool Spinners in the Seventeenth-Century Dutch Republic’, *Economic History Review*, 63 (2010), especially pp.169-70, 175-76, 179-81.

⁹⁰ Bythell, Duncan, *The Handloom Weavers: A Study in the English Cotton Industry during the Industrial Revolution* (Cambridge, 1969), p.63; Koditschek, *Class Formation and Urban-Industrial Society*, p.450; Angus Bethune Reach, *Fabrics, Filth and Fairy Tents: the Yorkshire Textile Districts in 1849*, Chris Aspin (ed.), (Hebden Bridge, 2007), p.46.

⁹¹ Reach, *Fabrics, Filth and Fairy Tents*, pp.18, 20.

⁹² For contemporary discussion of Irish immigrant workers, see, Engels, *The Condition of the Working-Class in England in 1844*, pp.90-94; Leon Faucher, *Manchester in 1844: Its Present Condition and Future Prospects* (London, 1844), pp.28-32; Gaskell, *Artisans and Machinery*, pp.82-84; J. E. Morgan, *The Danger of Deterioration of Race from the too Rapid Increase of Great Cities* (London, 1866), p.15; Reach, *Fabrics, Filth and Fairy Tents*, pp.37-38, 40, 51-53, 85-86. For social segregation between English and Irish workers, see, Anderson, *Family Structure in Nineteenth-Century Lancashire*, p.101; Koditschek, *Class Formation and Urban-Industrial Society*, pp.449-51.

work that they performed has meant that it is beyond the scope of this thesis to examine the nature of the discrimination they faced in the labour market.

In theory it is clear that employee-driven discrimination is far more resistant to competitive pressures than employer-driven discrimination. If discriminatory attitudes are held solely by the employer class, any one employer who does not discriminate (or discriminates less than his rivals) will enjoy an immediate labour cost advantage, resulting in higher profits, and placing strong pressure on rivals to imitate non-discriminatory employment practices. Whereas, if discriminatory attitudes are held by one or more groups in the workplace, one or two individual workers in the discriminating group who do not discriminate will not be sufficient to break down the attitudes of the other workers. Any employer operating in this labour market who tries to employ workers in a non-discriminatory fashion will suffer a diminution of profits as the discriminating group respond to the change in workplace organisation and occupational segregation by, at the very least, working less productively. Rather, only when a high number of workers in the discriminating group abandon their discriminatory attitudes will a non-discriminatory arrangement of the labour force be the most profitable one. Therefore, it is unsurprising that I find worker ideology to have been far more important than employer ideology for limiting women's occupational choice and earnings.

Worker-driven discrimination within the factory environment provides a clear demonstration of how gender ideology could depress women's earning capability in this period. Gender ideology almost certainly also depressed women's earnings through its influence on working-class family decision-making. Indeed, even Burnette accepts that gender ideology influenced parental failure to invest in the human capital of female children, and that men resisted wives having high earnings since this could threaten the power that the male head of household held over family

members.⁹³ However, working-class family economic decision-making in this period is still too poorly understood in the aggregate, let alone accounting for sectoral and regional biases, for the historian to have much confidence in being specific as to what extent this limited women's earning capability in various industries.⁹⁴ Jan DeVries applies Gary Becker's model of household decision-making to his analysis of household behaviour in this period, and as Humphries points out Becker's model assumes that the household is headed by a 'benevolent dictator'.⁹⁵ According to this model the head of household would need to be both willing and able to make decisions for the family which maximises the utility of all family members with regard to purchasing and labour supply by the household in this period. De Vries does not provide us with any reasons to believe that this is a realistic approximation of how working-class families operated at this time.⁹⁶

Analyses based on a theory of patriarchy have tended to assume that the male head of household had total control over the behaviour and income of the family, and used this primarily for his own benefit rather than the family as a whole. But, as is the case with De Vries, the assumption that this is an accurate depiction of family decision-making is made without providing sufficient evidence.⁹⁷ Despite men having the legal right to all of their wives' and children's income, it does not necessarily follow that they always had total control of family income. We know from the work of Elizabeth Roberts that in late nineteenth- and early twentieth-century Lancashire women were almost universally in charge of the household budget, and that 'good'

⁹³ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.14, 118-20.

⁹⁴ Jane Humphries' forthcoming publications on the information on women's work and family decision-making provided by working-class autobiographies can be expected to go some way to improving our understanding of this issue.

⁹⁵ Gary S. Becker, 'A Theory of the Allocation of Time', *Economic Journal*, 75 (1965), pp.493-517; Jan De Vries, *The Industrious Revolution: Consumer Behaviour and the Household Economy, 1650 to the Present* (Cambridge, 2008), especially pp.26-31; Jane Humphries, 'Cliometrics, Child Labour and the Industrial Revolution', *Critical Review*, 13 (1999), p.275.

⁹⁶ Indeed, DeVries assumes that this model of household decision-making applies to the whole period under his study (1650 to the present day) despite the profound economic and ideological changes that occurred in this period.

⁹⁷ For example, see, Anna Clark, *The Struggle for the Breeches: Gender and the Making of the British Working Class* (London, 1995), p.23; Walby, *Patriarchy at Work*, pp.53-54.

husbands, as well as children, were expected to hand over their wages without any deductions having been made.⁹⁸ Jane Humphries' recent study of working-class autobiographies suggests that this may often have been the case in the Industrial Revolution era as well, albeit that 'top-slicing' of the man's wage often occurred before it was passed on to his wife.⁹⁹ Further, 'It was an unwritten law that children should surrender their wages to their mothers.'¹⁰⁰ An anonymous old potter, born in 1832 describes his mother as being in charge of her children's earnings.¹⁰¹ Thomas Wood, the son of a Yorkshire handloom weaver, born in 1822, makes it clear that his mother was in charge of the whole of the household budget and it seems that his father readily surrendered his earnings to her control:

Father never meddled with household matters. With the burden of debts that mother had to carry this was where help was needed and given. But, somehow, father thought more of a shilling given to him personally than a pound to the family exchequer.¹⁰²

An assumption that women would be in charge of household income would seem to explain the belief of B. Love, a member of the Literary and Philosophical Society of Manchester, that as well as being taught to sew, knit, wash and cook, girls should be, '... instructed how to make the most of a penny', since these skills would help to, '... make them good wives and mothers.'¹⁰³ And, Nicola Verdon finds that, 'It was a universal trend in rural labouring family households for women to be in charge of the domestic budget.'¹⁰⁴

⁹⁸ Elizabeth Roberts, *A Woman's Place: an Oral History of Working-Class Women, 1890-1940* (Oxford, 1994), p.110.

⁹⁹ Jane Humphries, *Childhood and Child Labour in the British Industrial Revolution* (Cambridge, 2010), pp.101, 140.

¹⁰⁰ Humphries, *Childhood and Child Labour in the British Industrial Revolution*, p.240. See also, testimony of William Cooper, B.P.P. 1833, XX, *Royal Commission into the Employment of Children in Factories*, p.399.

¹⁰¹ Burnett, John (ed.), *Useful Toil: Autobiographies of Working People from the 1820s to the 1920s* (London, 1974), p.300.

¹⁰² Burnett, *Useful Toil*, p.310.

¹⁰³ By contrast he thought that boys should be taught skills such as shoemaking, tailoring and gardening. See, B. Love, *The Handbook of Manchester* (Manchester, 1842), pp.100-01.

¹⁰⁴ Verdon, *Rural Women Workers in Nineteenth-Century England*, p.171.

Whilst the internal operation of the working-class family is difficult to determine, I have tried to discuss this wherever possible in my thesis. There is abundant evidence for labour supply decisions being made according to family needs, and I do not assume that decisions about whether to supply labour to the market were made solely by individuals, rather the family unit was the primary locus for decision-making on this issue. Although I have worked under the general assumption that the male head of household (where, indeed, there was a male head household) had the most decision-making power of any individual in the household, I have not assumed this to necessarily be the case. I also have not assumed that intra-household power relationships were constant by time, region, industry, other family members' earning power, or the personalities of individuals within a given household.

David Warren Sabean's detailed analysis of family life in Neckarhausen (a village in southern Germany) in the eighteenth and nineteenth centuries reveals how the change in technology that accompanied the agricultural revolution resulted in a rise of marital conflict and dissatisfaction for around forty years. This then eased as culturally defined roles for men and women fully adapted to the change in the sexual division of labour that had resulted from the agricultural revolution.¹⁰⁵ The technological and locational changes occurring in textile manufacture during the Industrial Revolution in England may well have had a similar effect. However, data constraints have prohibited a thorough examination of this here.

State regulation of labour markets was not a significant cause of gender differences at work during the Industrial Revolution. Whilst attempts to enforce apprenticeship regulation of some kind according to customary prescriptions were still being made in some textile sectors and regions in the late eighteenth and early nineteenth centuries (see Chapters 4-5), apprenticeship as

¹⁰⁵ David Warren Sabean, *Property, Production, and Family in Neckarhausen, 1700-1870* (Cambridge, 1990), pp.164-65.

it was defined under the Statute of Artificers had been in serious decline since the start of the eighteenth century and had fallen into almost total disuse by the time it was repealed in 1813.¹⁰⁶ The 1833 Factory Act, which prohibited the employment of children aged below nine and placed restrictions on the hours children aged 9-12 could work in factories, was the first piece of effective factory labour legislation but did not have any gender bias.

The Factory Acts of 1844 and 1847, as well as creating further regulation and methods of enforcement for child labour, were the first to limit the hours and time of day that women could work in factories. However, these were introduced at the end of the period under study here and so do not affect most of the data and arguments I present. Further, these Acts do not seem to have significantly discouraged women from working in the factories, with the proportion of factory textile workers that were females aged thirteen and above actually increasing slightly between 1838 and 1856.¹⁰⁷ Indeed, as I argue in Chapter 3, it may even have been the case that these acts increased the utility of factory work to women and their access to it, as well as apparently having had no negative impact on their earnings in both relative and absolute terms.¹⁰⁸

Trade unions, proto-trade unions, and less formal organisations of workers had a significant impact on the adoption of new technology and the gender composition of the workforce during this period. The ability of workers in certain branches of domestic textile production to enforce

¹⁰⁶ Paul Minoletti, 'The Transition to Factory Production in the English Wool Textile Industries: Individual and Family Desires for Labour Regulation, 1720-1850', in Perry Gauci (ed.), *Regulating the British Economy, 1660-1850* (Farnham, 2011).

¹⁰⁷ B. L. Hutchins and A. Harrison, *A History of Factory Legislation*, 2nd ed., (London, 1911), p.110.

¹⁰⁸ I considered applying the 'competitive dependence' model which has recently emerged in the development economics literature on child labour, and which Jane Humphries has successfully applied to child labour in the British Industrial Revolution, but with women taking the place of children. However, the only legislation to restrict women's factory labour (the 1844 and 1847 Factory Acts) comes right at the end of my period, and even this only gave a very small restriction, something I believe would have been insufficient to lead to the large change in adult male (i.e. in the original model 'adult') income described in the model as labour withdraws and wages rise. Further, the luxury axiom was generally only applicable to women's factory labour, rather than women's work in the home. Finally, if the model were to be applied, women's factory labour would need to be distinguished between married and unmarried women in terms of father's/husband's (and indeed women's) attitudes towards this work, which is something it is rarely possible to do with my data. See, Humphries, *Childhood and Child Labour in the British Industrial Revolution*, especially pp.24-33.

some type of apprenticeship into the early nineteenth century often indirectly acted to the detriment of women's access to the best paid occupations: although females were rarely formally prevented from taking apprenticeships in textile occupations, parents were less willing to invest in training for daughters than for sons. It also seems that male worker organisations in a few branches of domestic woollen production may have explicitly excluded women, although evidence on this is sparse.¹⁰⁹ And, we know that women were formally excluded from the highest-paid branches of silk weaving in Spitalfields for a period in the second half of the eighteenth century.¹¹⁰ However, the shift to factory production created a significant change in attitudes held by organised or protesting workers to women's work.

The gathering of many workers in one place, which was entailed by factory production, gave a boost to trade union influence, particularly after the application of steam-power meant that factories were increasingly located in urban areas. Whilst support from husbands and the wider community was common for women's domestic textile work, this was much rarer when women's work shifted to the factory, and men increasingly tried to exclude them from certain occupations, such as mule-spinning.¹¹¹ When women's domestic work was subsumed into the wage of the male head of household it is obvious why this would be supported by men. However, there was also stronger support for women's work domestic work even where they earned independent wages than for women's factory work.¹¹² Whilst ideology may explain some of this, it also reflects the fact that women's continued availability to perform domestic work was in many ways more useful to the family economy than working away from home for long, fixed, hours.

¹⁰⁹ For a discussion of what evidence there is, see below, pp.106-07, 149-51.

¹¹⁰ See below, Chapter 5.

¹¹¹ For the shift in willingness to support women's work, see below, Chapters 3-4.

¹¹² For example see the actions of the Keynsham colliers in 1790 in defence of women spinners' earnings. See below, p.146.

Economic self-interest is highly important, although by no means the only factor, for explaining trade union behaviour. Whilst gendered rhetorical arguments were often used by male unions to support the exclusion of women, this was just one way of limiting the labour supply, and therefore increasing the wages paid to union members. The mule-spinning union's exclusion of women may partially be explained by the importance of identity. However, the union also excluded all males unrelated to existing members, demonstrating that economic self-interest acted as an important motivation for their exclusionary behaviour.¹¹³ Women's low level of unionisation contributed to the gender pay gap. This has often been noted by historians of the English Industrial Revolution, and reasons given for this include women's crowding in low-paid and low-skilled occupations, men's greater experience in the political arena as heads of households and heads of production units, the social stereotype that women's place was in the home, women workers tending to be younger, women having shorter attachments at a given firm, and women's lower earnings making it harder to pay union subscriptions.¹¹⁴ These factors all had an effect, but it also needs to be understood that women had less economic self-interest in unionising, although this in itself was partly because ideology skewed the labour market against women's employment and earnings.¹¹⁵

The factors determining levels of unionisation amongst men and women, and the behaviour of trade unions illustrates the complex intersection of ideological and economic factors in the

¹¹³ This is explained more fully in Chapter 3.

¹¹⁴ Michèle Barrett and Mary McIntosh, 'The 'Family Wage': Some Problems for Socialists and Feminists', *Capital and Class*, 11 (1980), p.67; Barbara Drake, *Women in Trade Unions* (London, 1920)198-201; Hartmann, 'Capitalism, Patriarchy and Job Segregation by Sex', p.216; Malcolm I. Thomis and Jennifer Grimmett, *Women in Protest 1800-50* (London, 1982), p.71. Women's lower tendency to unionise has also been noted by historians examining textile work in other countries. For example, see, Christensen, 'Denmark' in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nederveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers*, p.167; Janet Hunter and Helen Macnaughton, 'Gender and the Global Textile Industry' in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nederveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers*, pp.719-22.

¹¹⁵ I develop this argument in Chapter 5.

labour markets of the Industrial Revolution era. Dramatic changes in the nature and location of work meant that traditional conceptions of gender-appropriate behaviour came to be challenged by economic forces, and these economic forces were constrained by gender ideologies which were themselves changing. A fine example of a change in ideology was the notion of a male ‘breadwinner wage’; this had gained increasing popularity amongst working-class by the 1840s, but would have been unimaginable to the domestic textile workers of the eighteenth century, who expected all genders and ages to contribute to family income.

This thesis aims to illustrate the changes in women’s textile work in the period 1780-1850, and explain the changing economic and ideological forces which caused them. By covering all of the main textile industries in this period I am able to assess the effect a wide variety of technologies and methods of organisation of production on women’s work. It has also been possible to consider the regional context and the importance of local labour market conditions; including factors such as whether the trade was booming (such as in Lancashire and Yorkshire) or in decline (such as in the West of England), different industrial structures, different levels of trade union power, the availability of non-textile work for men and women, and rural-urban differences.

Chapter 2: Sources

This thesis draws heavily on the information provided in the 1834 Supplementary Report on the Employment of Children in Factories (hereafter referred to as the ‘1834 Report’ or ‘1834 Factory Report’).¹ This Report drew on surveys conducted by the earlier 1833 Report on the Employment of Children in Factories (hereafter referred to as the ‘1833 Report’ or ‘1833 Factory Report’). The 1834 Report is already well-known, especially amongst historians of women’s and children’s work. H. M. Boot has used the age-earnings profiles provided in this report to examine returns to human capital investment for males and females employed in factory work.² Joyce Burnette has used these data to show the male-female wage gap in Lancashire cotton and Gloucestershire wool factories.³ However, I make more thorough use of this rich source than earlier researchers. I am able to compare age-earnings profiles and participation rates for males and females in cotton, wool textile, silk and flax factories in various regions across England.⁴

The 1834 Report provides male and female wage data in textile factories across Great Britain for the four-week period ending 4th May 1833, with a high number of observations of both individual employees and employers. It provides the average wage for individual ages (e.g. 17, 18, 19 etc) by gender, region and sector of textiles (e.g. cotton, silk etc). Therefore it is possible to use these data to get a clear picture of changes in male and female earnings and participation rates over the life-cycle. Very few sources from this period provide such information, especially for females, and these data are highly informative about various factors affecting the gender wage gap, including; strength, mothering and childcare responsibilities, and workplace experience. The

¹ B.P.P. 1834, XIX, *Royal Commission into the Employment of Children in Factories, Supplementary Report*.

² H.M. Boot, ‘How Skilled Were Lancashire Cotton Factory Workers in 1833?’, *Economic History Review*, 48 (1995), pp.283-303.

³ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, p.79.

⁴ See, Figures 3.1-3.3, 4.1-4.12, 5.1-5.7.

tables in the report for cotton and silk on a regional basis which provide average earnings and the typical age and gender employed in each occupation are also extremely revealing for the importance of occupational segregation in limiting women's earning opportunities, and the close correlation between gender, occupation and average earnings.⁵ These tables have not been used in a systematic way by earlier researchers. The most significant and extensive data from the 1834 Report that I have drawn on in this thesis are reproduced in Appendices A-C.

Unlike many other sources from this period, the average wages stated in the 1834 Report are the average (weekly) net payments to each worker.⁶ Thus, the data accounts for any deductions made from gross piece- or time-rates such as fines or payments for tools, machinery or materials (which may or may not be gender-biased). Moreover, any payments needed to be made to sub-contracted workers are already deducted. Since men working in factories were much more likely to employ sub-contracted assistants than were women working in factories (see below, Chapters 3-5), this source eliminates the overstatement of the gender wage gap that arises when using sources which record the payment for the whole production team as wages being solely received by the head of the team. 'Wages' in this source are the same as net weekly earnings, and these terms are used interchangeably in this thesis. The same applies to wage/earnings data derived from other sources unless specifically stated otherwise.

The earnings by age in the 1834 Report were reported by employers on the assumption that the workers being described had worked a 'standard' 69 hour week. Thus, any possible differences in working hours actually performed do not affect the gender wage gap in these data, unlike many sources for this period. Further, when earnings are given by occupation (this

⁵ See, Tables 3.1-3.3, 5.5.

⁶ This is made explicit in the Report when wages in the cotton and silk industries are reported according to occupation. Since the tables which present this information are derived from the same data as the age-earnings profiles, it can confidently be concluded that the age-earnings profiles also represent net wages. See, B.P.P. 1834, XIX, pp.427-35, 448-50.

information is provided for the cotton and silk industries) the average number of hours performed by workers in that occupation is given; and, there is no correlation between the gender(s) employed in an occupation and the average number of hours reported.⁷ When presenting the age-earnings data from the 1834 Report I have truncated them at the age of 50, since beyond this the low number of observations means there is a very high variance, making inference problematic and possibly misleading. Although there are low number of observations for workers aged less than 10, I have included these since there is little variance and their inclusion does not significantly affect the R-squared value for the inference curves. Despite workers aged over 50 being excluded from my formal statistical analyses, I have included select references to these workers where appropriate.

D. T. Jenkins estimates that not much more than a quarter of textile factories in Britain returned the questionnaires on which the 1834 Report is based.⁸ Further, not all of those that did return the forms provided complete information about the workers at the factory. Responding to the questionnaire was voluntary so the data in the report is almost certainly biased towards large firms, since they are likely to have been better organised, and therefore have been more likely to possess detailed information on wages paid, and have staff able to complete the forms. Additionally, the owners of large firms can be expected to have been more concerned with their standing in the industrial and political community, and as a result would have had a greater incentive to appear to do the bidding of parliamentary investigators. Writing in 1842, William Cooke-Taylor found that, 'Experience has everywhere shown that great capitalists are more equitable and more merciful employers than persons of limited fortune.'⁹ This view is shared by

⁷ Evidence for this is given in Chapters 3 & 5.

⁸ D. T. Jenkins, 'The Validity of the Factory Returns, 1833-50', *Textile History*, 4 (1973), p.27.

⁹ William Cooke-Taylor, *Notes of a Tour in the Manufacturing Districts of Lancashire*, 2nd ed., (London, 1842), p.117. See also, Reach, *A Cotton-Fibre Halo*, p.123.

most historians, with a consensus emerging that the worst exploitation probably occurred under small-scale employers.¹⁰ Thus, the big-firm bias in this source is likely to give evidence which is not fully representative of typical employment conditions at this time.

This bias is likely to slightly overstate the gender wage gap since trade unions, which often privileged men's work at the expense of women's, typically had more influence at large firms.¹¹ However, most other primary sources available for the textile industries in this period are heavily biased towards large firms, since they were the ones most likely to leave records. Further, the district commissioners (i.e. the individuals responsible for gathering the data from which the 1834 Report is derived) were instructed that, 'It is desirable that as many of the smaller manufactories where children are employed as can well be visited should be carefully examined.'¹² Therefore, the big-firm bias in this report is lower than in most other sources.

Some errors in data collection may have occurred in the 1834 Report because of the short period of time allowed for the survey, arising from, '...the urgency of the promoters of the bill before the legislature.'¹³ However, the large sample size means that any errors are unlikely to have affected the data too significantly.¹⁴ Potentially more harmful is that it appears from Dr Mitchell's introduction that the district commissioners did not check to see if the returns were a true depiction of employment practices within the mills.¹⁵ Since the Report was commissioned with the purpose of providing a statistical basis for proposed legislation on child and female labour, the factory owners had an incentive to downplay the harshness and extent of the work

¹⁰ For example, see, Sydney J. Chapman, *The Lancashire Cotton Industry: a Study in Economic Development* (Manchester, 1904), pp.86-87; Fitton and Wadsworth, *The Strutts and the Arkwrights*, p.193; C. H. Lee, *A Cotton Enterprise, 1795-1840: a History of M'Connel & Kennedy, Fine Cotton Spinners*, (Manchester 1972), p.128.

¹¹ For trade unions having more influence at large firms, see, R. Lloyd-Jones and A. A. LeRoux, 'Marshall and the Birth and Death of Firms: the Growth in Size Distribution of Firms in the Early Nineteenth-Century Cotton Industry', *Business History*, 24 (1982), pp.143-44.

¹² B.P.P. 1833 XX, p.82.

¹³ B.P.P. 1834, XIX, p.277.

¹⁴ It seems safe to assume that any genuine errors were randomly distributed.

¹⁵ B.P.P. 1834, XIX, p.277.

these groups performed. However, it is difficult to quantify the effect of this, especially as it may have been counteracted by some factory owners trying to overstate the level of female and child labour, so as to claim that such workers were indispensable to the industry, and therefore for the good of the national economy should not have restrictions placed on their work. Indeed, this argument was successfully used by the silk industry to gain an exemption from the restrictions placed on the labour of children aged ten to twelve years old.¹⁶ This uncertainty over how truthful the responses were has led me not to attempt to revise the figures, instead, leaving them as they are.

Mark Blaug's work on the 1834 Report of the Poor Law Commissioners reveals how biased parliamentary reports of this time can be.¹⁷ However, in the 1833 and 1834 Factory Reports the investigators own reportage and their choice of interviewees provide an apparently balanced methodology. There is none of the strident one-sidedness that is so clearly apparent when reading the 1834 Report of the Poor Law Commissioners, and which led Blaug to state that, 'The Poor Law Commissioners of 1834 ... deliberately selected the facts so as to impeach the existing administration on predetermined lines.'¹⁸ The 1834 Factory Report includes abundant statistical information on issues such as employment, wages, health, and number of accidents at work. This gives further confidence in its lack of political bias: the absence of quantitative evidence in the 1834 Report of the Poor Law Commissioners is something Blaug highlights as a means by which the commissioners were able to distort the reality of the situation.¹⁹ The instructions to the district commissioners carrying out the 1833 Factory Report state that, 'It should be distinctly understood

¹⁶ Peter Kirby, Peter, *Child Labour in Britain, 1750-1870* (Basingstoke, 2003), p.104.

¹⁷ Mark Blaug, 'The Myth of the Old Poor Law and the Making of the New', *Journal of Economic History*, 23 (1963), pp.151-84.

¹⁸ Blaug, 'The Myth of the Old Poor Law and the Making of the New', p.177; B.P.P. 1834, XXVII-XXXIX, *Royal Commission of Inquiry into Administration and Practical Operation of the Poor Laws*.

¹⁹ Blaug, 'The Myth of the Old Poor Law and the Making of the New', p.177.

that the Inquiry is in no respect to be narrowed to the views of any class, or any party or interest.'²⁰ Any potential fears that the investigators were in alliance with capitalist producers are further allayed by Cowell's firm rejection of British manufacturers' claims that they were placed at a competitive disadvantage by the high price of labour:

It seems somewhat unaccountable that gentlemen who are in the habit of paying their own operatives according to a scale dependent on the varieties of productive capability in the machine, and according to the extent to which the operative develops [sic] such capability, should think it a simple and easy matter to compare the rate of wages in foreign and English cotton-working.²¹

The age-earnings data for 'Lancashire' cotton covers factories in south-eastern Lancashire and the border areas in Derbyshire, Cheshire and Yorkshire. Unfortunately, it does not include cotton production in Preston, which was the other large Lancashire centre for factory cotton, and was characterised by low wages and a high proportion of female and juvenile labour.²² The table in the 1834 Report from which I have extracted data on age-earnings and presented as being for West Riding wool textile production is headed 'Wool: Leeds', and H. M. Boot has followed this description when using these data, but this seems to be inaccurate. In the introduction to the age-earnings data in the 1834 Report, it states that, 'From the factories working in wool ... Those in the North are nearly all in the West Riding of Yorkshire, and have been classed together. A few from the neighbouring districts, being insufficient to form in any instance a satisfactory average, have been conjoined with them.' Since no tables with earnings by age are given in the report for the West Riding other than 'Wool: Leeds', it would seem that these data are referring to the West Riding (and a few factories found in bordering areas).

²⁰ B.P.P. 1833 XX, p.79.

²¹ B.P.P. 1834, XIX, p.399.

²² Michael Huberman, *Escape from the Market: Negotiating Work in Lancashire* (Cambridge, 1996), pp.22, 140; Sidney Pollard, *The Genesis of Modern Management: a Study of the Industrial Revolution in Great Britain* (London, 1965), p.185.

It was the intention of the inspectors to assess factory conditions in all types of factories, and the West Riding factories are described as those ‘working in wool’, so it also seems that these data are referring to both woollen and worsted factories, rather than just woollens. Finally, in the 1833 data, females account for 44.32% of the total workforce: in the 1835 Factory Returns females account for 61.11% of the workforce in the worsted mills of Bradford and Halifax (the two main centres of the West Riding worsted industry), and only 24.64% of the workforce in the woollen mills of Leeds and Huddersfield (the two main centres of the West Riding woollen industry). It does not seem plausible that there would be a dramatic change in the gender composition of the workforce in only two years, giving strong evidence for the 1833 data including both woollen and worsted workers.²³ Unfortunately, it is not now possible to separate these data for the workers employed in West Riding woollen and worsted.

I have reproduced the table headings in the Report for woollen production in Gloucestershire, Somerset and Wiltshire, as these do not seem to need any revision. The same goes for silk production in East Anglia (i.e. Norfolk, Suffolk and Essex) and Somerset. The introduction to the tables given in the report states that the information for silk production in ‘Derbyshire’ refers to, ‘the factories in Derbyshire, and some in the neighbouring counties’. The information for ‘Leeds’ flax production is for factories, ‘from Leeds and its vicinity’. The Report states that the information provided for lace production in Tiverton is from one firm only (this was John Heathcoat’s mill). The information on lace production in ‘Derby’ is, ‘from several factories in and about Derby’.²⁴ Whilst this source is by no means perfect, it is very useful in providing averages for a large number of workers yet at the same time breaking it down by region and industry,

²³ See B.P.P. 1834, XIX, pp.278, 281; Boot, ‘How Skilled Were Lancashire Cotton Factory Workers in 1833?’, pp.296, 301. For the 1835 Factory Returns, see, Pat Hudson, *The Genesis of Industrial Capital: A Study of the West Riding Wool Textile Industry c.1750-1850* (Cambridge, 1986), p.82.

²⁴ B.P.P. 1834, XIX, p.278.

allowing me to make important inferences regarding the effect of local labour market conditions by gender, as well as establishing the nature of forces affecting women's and men's work on a national level.

I have followed the 1833 and 1834 Factory Reports, and the 1847 Factory Returns, in defining an adult as aged 18 and above.²⁵ This is largely because, apart from some of the data in the 1834 Report which is presented for each individual age, these Reports group earnings and occupation information by whether workers are adults or children, and male or female. To ensure consistency between comparisons I have thus followed this definition. However, as K. D. M Snell highlights, there remains disagreement over whether 18, 19 or 21 marked the age of adulthood at this time, and 21st birthdays seem to have had a lot of social significance.²⁶ Records from individual mills demonstrate this confusion and difference; whilst it seems that at some mills workers aged 18 and above were viewed as adults, at Bentley silk mill in the West Riding the workers' ages were recorded up to and including 19, with their time-rate increasing with each year up until then. The age of those above 19 is not recorded, and the time-rate for all ages above 19 was one increment higher than that given to the 19-year-old workers.²⁷ This strongly suggests that 20 was seen as the age of adulthood for these workers. In the contract records left by the Heathcoat lace mill in Tiverton the age of workers was recorded up to and including 21, with the time-rate increasing incrementally up to and including this age.²⁸ Here, 21 seems to have been seen as the age of adulthood. The 1836 government survey of textile workers across Britain groups workers by occupation, with this broken down by gender and individual age up to and

²⁵ B.P.P. 1833 XX-XXI, B.P.P. 1834 XIX-XX. B.P.P. 1847, XLVI, *Return of the Total Number of Persons Employed in Cotton, Woollen, Worsted, Flax, and Silk Factories in the United Kingdom*.

²⁶ K. D. M. Snell, *Annals of the Labouring Poor: Social Change and Agrarian England, 1660-1900* (Cambridge, 1985), pp.332-34. See also, Peter Laslett, *Family Life and Illicit Love in Earlier Generations: Essays in Historical Sociology* (Cambridge, 1977), pp.163-64.

²⁷ *Bentley Silk Mills Records*, West Yorkshire Archive Service, Kirklees, Wages Book 1848-53.

²⁸ *Heathcoat Records*, Devon Record Office, Exeter, 4302B/A9-A12.

including 20. From age 21 onwards workers are broken down by gender only, again suggesting that workers were not seen as adults until the age of 21.²⁹ The table of workers employed in calico printing in the 1843 Report of the Children's Employment Commission, groups workers as 'adults' (aged 21 and above), 'young persons' (aged 13-17), and 'children' (aged less than 13).³⁰ The absence of any category for workers aged 18-20, reflects the confusion on this issue. As can be seen in the age-earnings profiles I have extracted from the 1834 report, average female earnings did not rise much after the age of 21, whereas male earnings did, and the gender wage gap increases dramatically between 18-21. Thus, defining adulthood at age 18 understates the gender wage gap for factory workers compared to the alternative benchmarks of 19, 20 or 21.

Whilst the 1833 Report provides far less quantitative data than the 1834 Report it still contains much pertinent information. It includes interviews with many factory workers of different ages and employed in various occupations, and I have been able to make substantial use of these exchanges. The district commissioners chose which workers, and other individuals, they wished to interview, rather than employers deciding this.³¹ Thus, it would have been no easy matter for employers to hide any working practices they wished to conceal. This would include any possible desires by employers to suppress information relating to men or women working in a job at their mill that was commonly perceived to be specific to the other gender.

²⁹ B.P.P. 1836 XLV, *Returns of Persons And Number of Powerlooms Employed in Cotton, Woollen, Worsted, Flax and Silk Factories of the United Kingdom*, pp.51-143.

³⁰ N.b. in the original document the heading given for young persons is, 'Young Persons between 13 & 18 Years of Age'. In the government reports of this time when it was stated that ages were 'between' (or 'between' is indicated with a hyphen) x and y years, this meant from x years up to but *not* including y years. So in this case from the ages 13 years and 0 days up to and including one-day before their 18th birthday. For proof of this, compare the summary tables given for factory workers in the 1834 Report, where the ages are given as '11-16, 16-21, 21-26' etc. The summary tables only accurately correspond to the data by individual age if this notation is interpreted in the way I have outlined. Throughout this thesis I have followed the modern convention of describing ages, whereby 'between' or a hyphen indicates up to *and* including y years. E.g. in the case of the young persons in the 1843 report I have written this as 13-17, with this representing workers from the ages 13 years and 0 days up to and including one-day before their 18th birthday. B.P.P. 1834, XIX, pp.279-95. B.P.P. 1843, XV, pp.76-77.

³¹ B.P.P. 1833 XX, pp.79-82.

The 1833 Report has been particularly helpful as a source on overseers, a group of workers which is otherwise very difficult to investigate. Across the 1833 and 1834 Reports interviews with 197 individuals employed as overseers in textile factories at the time they were interviewed were recorded. There are interviews with 11 individuals previously employed as overseers in textile factories but no longer so engaged, and 3 individuals who had worked as overseers in textile factories but it is not clear if they are still employed in such a capacity. There are also interviews with 7 individuals employed as overseers in non-textile factories (paper, pin-making, brick-making and pottery). I have been able to make a database from these interviews, shedding some light on a poorly understood sector of the factory workforce. All of them are men despite women in a variety of occupations being interviewed throughout the Reports. Unless I specify otherwise, all references in this thesis to statistical information on the overseers in the Reports draws on the interviews with the 197 individuals employed as overseers in textile factories at the time of the interviews only.

Although there was a standard questionnaire provided for the district commissioners, both how the workers were interviewed and what type of information was included in the Reports varied by region.³² It is not completely clear what criteria was used by the district commissioners for deciding which overseers were to be interviewed and which interviews were to be included in the Reports. Also, terminology varied both between and within the sections of the Reports from the various regions. Because of these various problems full consistency in the recording of my database has been impossible. I have recorded as an overseer any individual whose occupation was described as, ‘overseer, overlooker, chief overseer, general overseer, steward, foreman’. Those described as, ‘manager, master, partner, proprietor or owner’ have been excluded since these roles would have often involved greater access to capital or higher levels of human capital

³² B.P.P. 1833 XX-XXI, especially B.P.P. 1833 XX, p.80.

than required of typical overseers. However, when an individual is described as ‘master’ of a specific room (e.g. William Nash was ‘spinning master’) I have included them. Where an individual is described as ‘tenter or overseer’ they have been included, but where they are described just as ‘tenter’ they have not been, since it is not clear that tenter was always a synonym for overseer. George and Elizabeth Shawcross are described as, ‘superintendents of the children apprenticed to Messrs. Greg, Quarry Bank’. This refers to them taking care of the parish apprentices’ accommodation and providing them with food and moral instruction. Despite their occupational descriptor, they did not superintend the labour of these children, and so have not been included in the database.³³

The interviews (at least as they are recorded in the Reports) from Scotland tend to be brief and numerous, whereas the interviews with overseers in England are much longer, and as a result are fewer in number, despite textile factories in England employing a greater number of workers than in Scotland and accounting for more pages of interviews in the Reports. Interviews with Scottish overseers were overrepresented in terms of number interviewed and the level of detail useful to my study included in each interview. There are 124 interviews with Scottish overseers, 63 with English overseers, and 10 with Northern Irish overseers in the Reports. Although the interviews with English overseers are much more extensive, they are primarily focused on the treatment of child workers in the mills in which the overseers are employed and most of what is discussed in these interviews is of little use for my purposes. Age of the overseers at the time of being interviewed is the most important information I have been able to extract, and this is only provided for 26 English overseers, whereas for Scotland this figure is 107. For Northern Ireland it is 7. As can be seen in Table 2.1, the mean age of overseers Scotland is not too dissimilar to

³³ See, Frances Collier, *The Family Economy of the Working Classes in the Cotton Industry, 1784-1833* (Manchester, 1964), p.45; Rose, *The Gregs of Quarry Bank Mill*, p.109.

England, except for woollen factories (for which there is a low number of observations for both England and Scotland). Whereas, for Northern Ireland the mean age of overseers is considerably lower in both cotton and flax (the only industries from which Northern Irish overseers were interviewed). The large number of observations provided from Scottish factories and their similarity to results from England means that I have included this information in references to the average age of overseers in subsequent chapters, whereas the opposite holds true for Northern Ireland and so I have dropped these results. However, where appropriate I make select references to information provided in interviews from this region.

Table 2.1: Mean Age of Overseers Interviewed in 1833 and 1834 Reports

	England		Scotland		N. Ireland		Britain	
	Mean Age	N	Mean Age	N	Mean Age	N	Mean Age	N
All Factories	41.88	26	39.45	107	30.57	7	39.46	140
All Textiles	41.88	26	39.45	107	30.57	7	39.46	140
Cotton	41.25	16	47.64	22	26.67	3	43.61	41
Woollen	47	5	35.75	4		0	42	9
Worsted		0		0		0		0
Silk	32	1		0		0	32	1
Flax	46	1	37.24	63	32.67	3	37.16	67
Lace	38.67	3		0		0	38.67	3

Source: B.P.P. 1833, XX-XXI; B.P.P. 1834, XIX-XX. N.b. there were 28 workers interviewed where it was not possible to determine which branch of textiles they were employed in. They are included in 'all factories' and 'all textiles' but nowhere else in the table.

The inclusion of the Scottish observations biases the average age of overseers downwards slightly. However, the interviewees were not selected randomly, rather the regional commissioners were instructed to speak to those best able to give them information about the treatment of children in factories.³⁴ Older overseers would have been better able to answer

³⁴ B. P. P. 1833, XX, pp. 79-83.

questions about previous incidents which had been reported to the commissioner as well as being able to describe changes in the nature of factory work over the last ten to forty years (a matter of some interest to the commissioners). Thus, it seems probable that there is an upward bias for age in how overseers to be interviewed were chosen. This would seem to have been particularly likely for the much more extensive interviews that featured in the English sections of the Reports than those from Scotland and Northern Ireland. Uncertainty over the extent to which this possible bias operated means that these figures should be treated with a degree of caution. Nevertheless, there has been very little research on overseers and the level of information given in this source is far beyond what any other historian has previously provided, and enables me to examine more thoroughly the reasons for women's widespread exclusion from this occupation. As well as mean age, selective use can be made of other information relating to the age at the time of interview of the overseers, as well as variables such as the age when they first started work as overseers, length of tenure at their present firm, and wages. However, the number of observations is much lower for these variables than for age at time of interview, so formal statistical tests have not been worthwhile.

I have been able to make selective use of interviews with various workers employed in non-overseeing occupations which appear in the 1833 Report. There is very little surviving evidence on how the labouring classes perceived their work at this time and so these interviews provide important insights. Whilst the interviews were particularly concerned with the treatment of child workers and workers' views regarding possible restrictions on the hours children could work,³⁵ they provide information on a wide array of aspects of both work and family life for textile workers at this time. The instructions to the district commissioners state that:

³⁵ B.P.P. 1833 XX-XXI, especially B.P.P. 1833 XX, pp.79-82.

With relation to workmen or the parents of Children whom you may examine, you will endeavour to obtain for them all protection for giving evidence freely, by preventing, where practicable or expedient, their names being made public, or by requiring from their masters some public assurance or pledge that they (the witnesses) shall in no way be prejudiced by any evidence which they may give.³⁶

However, it must be conceded that it is improbable that all of the workers responded comprehensively and honestly since they may have been afraid of possible retribution by their employers, or certain other members of the community, if they feared that their comments could be traced to them. The fact that they were speaking to middle-class observers may also have distorted how they described their experience of factory work. Nevertheless, the large number of interviews, covering males and females over a wide range of ages, occupations, and regions make these interviews a rich source, with great potential for additional future research.

Whilst I have been able to make the most use of the 1833 and 1834 Reports, I have also drawn on information provided in a number of other parliamentary reports from 1802-67.³⁷ The increasing desire amongst parliamentarians to provide a factual, and particularly a statistical, basis for parliamentary debate in this period, especially from the 1830s onwards, has left an array of qualitative and quantitative information for historians to use. The rapidly changing location, technology and organisation of work in the textile industries meant that they attracted considerable attention, particularly with regard to labour. The 1802-03 and 1806 Reports on the Woollen Trade were a response to demands of workers in these industries for apprenticeship regulation to be enforced. These Reports provide a wealth of qualitative information on almost all aspects of domestic and early factory production in the woollen, and to a lesser extent the

³⁶ B. P. P. 1833, XX, p.81.

³⁷ B.P.P. 1802-03, VII, *Minutes of Evidence Taken before the Committee, to Whom the Bill, Respecting the Laws Relating to the Woollen Trade, Is Committed*; B.P.P. 1806, III, *Report and Minutes of Evidence, on the State of the Woollen Manufacture of England*; B.P.P. 1818, IX, *Reports and Evidence on Silk Ribbon Weavers' Petitions*; B.P.P. 1831-32, XIX, *Report from Select Committee on the Silk Trade*; B.P.P. 1836, XLV; B.P.P. 1840, XXIV, *Reports on Handloom Weavers*; B.P.P. 1843 XIII-XV; B.P.P. 1847, XLVI; B.P.P. 1867, XVI, *Sixth Report of the Children's Employment Commission*.

worsted, trade. Also, of particular use for this thesis is the 1847 census of factory workers, which was an attempt to record all of the workers working in factories across Great Britain. Despite not including information on earnings, this source provides a useful comparison with the data in the 1834 Report and has allowed me to examine regional differences in factory employment in greater detail.

I have collected extensive data on individual workers in both domestic and factory production from the records of individual firms in the cotton (three firms), wool (two), worsted (five), silk (two) and lace (one) industries.³⁸ The different levels of representation for the different textile industries does not reflect a deliberate decision on my part, rather it was determined by which firms had left appropriate surviving records. The far more extensive records that survive for worsted producers in the West Riding rather than woollen producers reflects the fact that worsted firms were generally larger in this period.³⁹ Indeed, the only woollen firm from the West Riding to leave records that I could make use of is that of Benjamin Gott, which was the largest woollen firm in the region.⁴⁰ Whilst present in nearly all sources on factory workers during the Industrial Revolution, the problem of big-firm bias is particularly acute with the records left by individual mills. Paternalistic rural mills seem to be particularly overrepresented. Whilst the records provided by rural paternalistic employers such as the Gregs and the Courtaulds are very extensive

³⁸ *Arkwright Papers*, Manchester Central Library, Manchester; *Benjamin Gott & Son Papers*, Brotherton Library, Leeds; *Bentley Silk Mills Records*; *Business Records of John Foster & Son*, Brotherton Library, Leeds; *Business Records of R. V. Marriner*, Brotherton Library, Leeds; *Business Records of Robert Clough Ltd*, Brotherton Library, Leeds; *Business Records of William Ackroyd Ltd*, Brotherton Library, Leeds; *Courtauld Papers*, Essex Record Office, Chelmsford; *Greg Papers*, Manchester Central Library, Manchester; *Heathcoat Records*; *J & T Clark Records*, Wiltshire and Swindon Archives, Chippenham; *John Brigg & Co. Records*, West Yorkshire Archive Service, Bradford; *Samuel Oldknow Papers*, John Rylands Library, Manchester.

³⁹ For worsted firms typically being larger, see, Herbert Heaton, *The Yorkshire Woollen and Worsted Industries: From the Earliest Times up to the Industrial Revolution* (Oxford, 1920), pp.293, 296-97; Hudson, *The Genesis of Industrial Capital*, p.40; D. T. Jenkins and K. G. Ponting, *The British Wool Textile Industry, 1770-1914* (London, 1982), pp.8, 10, 31, 78, 80.

⁴⁰ Heaton, Herbert, 'Benjamin Gott and the Industrial Revolution in Yorkshire', *Economic History Review*, 3 (1931), p.55.

and as a result highly attractive to the historian, it is important to avoid assuming, as Judy Lown does with her research on Courtaulds, that this was representative of women's work experience throughout the economy.⁴¹ Indeed, the relationship between workers and employers at this type of firm was markedly different to that experienced by most workers and employers in this era.⁴²

All of the data I have recorded from individual mills for individual workers is for workers where the first name was provided in the firm records, enabling their gender to be determined. Where the gender of a name was ambiguous, or the handwriting of the bookkeeper was illegible, the observation was excluded. The surviving state of these records is fragmentary, and there was not consistency between bookkeepers in how the records were kept. Therefore, systematic comparisons between firms have not been possible, even between wage books, which are the most common type of record left by individual firms which could be used for my purposes. Nevertheless, it was possible to extract much relevant information by approaching each archive on a case-by-case basis. Unfortunately, with a few exceptions, the data on payments to individuals in firms' wage books do not provide the age of the workers, and sometimes do not provide the occupation they were employed in.⁴³ Occasionally, it has been possible to assume with confidence that all of a certain type of worker were adults, as is the case with the highly skilled mule-spinners working for Samuel Oldknow, but I have only done this where the evidence overwhelmingly supports this inference. Whilst it would be possible to reasonably accurately judge approximate ages from the wages paid to individual workers within factory production I have avoided doing

⁴¹ See Lown, *Women and Industrialisation*, especially Conclusion.

⁴² The uniqueness of employment and the labour market at rural paternalist mills is discussed in Chapters 3 & 5.

⁴³ The data I have from Bentley silk mills gives the age of the workers up until age 21, as does some of the data from the Heathcoat mill. The return of J & T Clark to the 1833 Factory Enquiry provides the age and gender of all workers, as well as an array of other information (including number of years married, total number of children, number of children still alive, number of children who have died, tenure, specific occupation, whether receiving parish relief, weekly wage, whether able to read or not, whether able to write or not). However, since the only females employed here were four juveniles I have not been able to make extensive use of this source. *Bentley Silk Mills Records*, West Yorkshire Archive Service, Kirklees, Wages Book 1848-53; *Heathcoat Records*, Devon Record Office, Exeter, 4302B/A9-A12; *J & T Clark Records*, 927/71.

this since it creates a circular argument whereby workers are assumed to be adults or children according to their wages and gender, and this is then used to infer male and female wages across the life-cycle.

Janet Greenlees' study of British and American cotton workers in this period is heavily reliant on the records of individual firms, and her willingness to infer the age of workers from their wages reduces confidence in the validity of her results.⁴⁴ Moreover, when rejecting the claims of many historians and contemporaries that women in the cotton industry generally received wages between one-third and one-half of those of men, she bases this on records from individual factories and does not distinguish between adult and child labour. Instead she bases her claims for the woman:man ratio on the figures she has for the F:M ratio for all ages.⁴⁵ Since workers aged under eighteen, where the gender wage gap was much lower, accounted for 46.48% of the factory cotton workforce in 1833 (and workers aged under sixteen, for which the F:M wage ratio was particularly high, accounted for 35.37%), it is easy to see how failing to distinguish wages by age would grossly understate the gender wage gap for adult workers.⁴⁶ Further, much of the data Greenlees presents is for specific occupations, or specific rooms within factories, and so fails to account for the importance of occupational segregation which resulted in women being

⁴⁴ Greenlees, *Female Labour Power*, p.9.

⁴⁵ Greenlees, *Female Labour Power*, especially pp.80-83. A good example of the problems failing to distinguish between adult and child labour causes is when, referring to the mule-spinning room at Quarry Bank Mill in 1848, she claims that, 'Here, wage rates were usually the same for the men and women piecers, but there were several instances throughout the year when women piecers earned a higher rate than their male counterparts, with the average [weekly] rate being 1s 3d'. Whilst wages at Quarry Bank Mill were lower than in urban areas, it is utterly implausible that adults had this time-rate for a week's work. Mary Rose's study of the firm shows that wages here in the period 1833-50 were typically at least one-half of the rate paid for equivalent occupations and age/gender in Manchester. As can be seen in Chapter 3 of this thesis, women in Manchester cotton factories earned far above 2s 6d per week, and the men even more so. Further, of the occupations/workers grouped by gender and age for which Rose has wage data at Quarry Bank Mill the only ones to have a rate below 4s per week were 'children under 13' (and even some of these had a rate as high as 3s per week). See, Greenlees, *Female Labour Power*, pp.93-94; Rose, *The Greggs of Quarry Bank Mill*, p.116.

⁴⁶ Figures extracted from B.P.P. 1834, XIX, p.279.

denied access to many of the best-paid jobs in the industry.⁴⁷ As Greenlees highlights, the records of individual mills have rarely been used by gender historians, and a great deal of useful information can be drawn from them.⁴⁸ However, the difficulty they typically present as to determining the age (and frequently the specific occupation) of the workers listed means that they need to be used with caution, and in conjunction with alternative sources.

Of particular rarity in the evidence I have from individual firms is the information I provide on domestic workers employed by Oldknow, Robert Clough and R. W. Marriner. There has been very little existing research which provides wage data on individual textile workers employed in their own homes, particularly where it is possible to distinguish individual earnings by gender.⁴⁹ Factory workers were paid weekly or bi-weekly, and when recording their average earnings I took a four week sample for each year.⁵⁰ The domestic workers employed by Oldknow in 1788 were also paid weekly. However, domestic workers employed by Marriner were paid monthly, and those employed by Clough would sometimes have to wait as long as three months for payment. Both of these employers also made widespread use of truck payments.⁵¹ Rather than record the actual payments to workers, I have recorded the value of the pieces they produced each time the employer or his assistant went to visit the workers' homes/workshops, which could be as often as

⁴⁷ The importance of occupational segregation for limiting women's wages is an important theme of this thesis and is discussed at length in Chapters 3-5.

⁴⁸ Greenlees, *Female Labour Power*, p.8.

⁴⁹ An example of existing research which does provide this type of information, is that carried out by John S. Lyons. Rather than records from individual firms, Lyons uses data from a survey of individual handloom weavers' annual earnings, which includes the workers' age and gender. Christine Johnstone has previously made extensive use of the Clough and Marriner handloom weavers' wage books, but did not distinguish the workers' earnings by gender. See, Christine Johnstone, *The Standard of Living of Worsted Workers in Keighley during the Nineteenth Century* (unpublished Ph.D. thesis, University of York, 1976), Ch.4, especially. p.100; John S. Lyons, 'Family Response to Economic Decline: Handloom Weavers in Early Nineteenth-Century Lancashire', *Research in Economic History*, 12 (1989), especially p.61.

⁵⁰ In this thesis, 'mill' or 'factory' work is defined as any work performed outside of the home on the premises of a large capitalist, regardless of whether new technology was being used or external power was being applied. So, for example, the weavers employed by Gott at Park Mill in 1830 (who were almost certainly operating handlooms) would qualify as factory/mill workers, whereas handloom workers working at home or in small workshops where the rent was shared between the weavers themselves would not. See, *Benjamin Gott & Son Papers*, Volume 204.

⁵¹ Hudson, *The Genesis of Industrial Capital*, pp.151-52.

four times a week. This way I am able to judge the value of each worker's monthly output. Since weekly visits to workers home/workshops were the most common, for all workers at Clough and Marriner I recorded the value of the first piece they produced in June and any other pieces within 3.5 weeks of the first piece that were within June. The relatively large sample size, particularly for the Clough data, means that the averages should fairly accurately represent monthly output by value of male and female workers, however variance between individual workers is almost certainly overstated compared to their annual earnings.

Apart from one individual (Thomas Brentnall) listed in the payments book of Oldknow for 1788, it has not been possible to exclude individuals listed in the payments to individual domestic workers who received payment for more than just themselves.⁵² Some individuals consistently received suspiciously high payments, but since it is not possible to be totally sure this was not all for their own work I have retained them in the database. This can be expected to overstate male average earnings relative to female, since men are more likely to have acted in an intermediary/sub-merchant role, and it is indeed the case that the very large payments typically go to men. Whilst the Clough records often record the production by, and payments to, members of the same family separately this is not always the case.⁵³ Since it can be expected that this would typically occur when family members' wages were subsumed to a male head of household, this is likely to have inflated male wages relative to those of females. However, this may have acted to overstate female earnings, since it seems probable that subsuming family earnings into a single payment would occur when the other family members were only producing small amounts. And,

⁵² The payments to Brentnall were so much higher than to the rest of the workers that it was clear from the payments book that he was acting as some kind of merchant. This is confirmed by Unwin's in-depth study of the Oldknow firm, which reports that Brentnall was a calico manufacturer who also sold yarn to Oldknow. See, George Unwin, *Samuel Oldknow and the Arkwrights: the Industrial Revolution in Marple and Stockport*, 2nd ed. (Manchester, 1968), p.116.

⁵³ For example, Edmund and Susannah Smith, and William and Mary Laycock, are sometimes both listed, whereas at other times only Edmund and William are recorded. *Business Records of Robert Clough Ltd*, Volumes 18-23.

it should be pointed out that it was extremely common for both male and female members of the same family to receive individual wages even when they were working in the same location.⁵⁴ Clearly, the results for the domestic handloom weavers employed by Clough and Marriner need to be treated with considerable caution because of doubts over possible biases. Nevertheless, the rarity of this kind of source makes their inclusion in this thesis worthwhile.

The 1830s and 40s not only saw a big increase in official government reports on textile factories, but also in independent authors writing accounts of the employment, domestic conditions and leisure activities of the new breed of textile workers. Where appropriate I have drawn on the well-known publications by Cooke-Taylor, Leon Faucher, Friedrich Engels, Peter Gaskell, William Dodd and Andrew Ure.⁵⁵ Less well-known, especially amongst historians of women's work, is a series of reports Angus Reach produced on the Lancashire and West Riding textile districts in 1849 for the *Morning Chronicle*.⁵⁶ However, for my purposes at least, the work of Reach has proved to be more useful than that of any of the better known authors. There is far less obvious bias in his reports than in most accounts of the period. He does not try to provide a case for the abolition or heavy restriction of factory production (as Engels and Dodd clearly do), or vastly overstate the benefits of factory production to the workers (as Ure, and to a lesser extent Cooke-

⁵⁴ Clough's handloom weavers' wages book gives a unique number for each location of the domestic weavers. This number seemingly could refer to either houses or small workshops. *Business Records of Robert Clough Ltd*, Volumes 18-23.

⁵⁵ Cooke-Taylor, *Notes of a Tour in the Manufacturing Districts of Lancashire*; William Dodd, *The Factory System Illustrated: in a Series of Letters to the Right Hon. Lord Ashley, Together with, a Narrative of the Experience and Sufferings of William Dodd, a Factory Cripple* (London, 1842); Engels, *The Condition of the Working-Class in England in 1844*; Faucher, *Manchester in 1844*; Gaskell, *Artisans and Machinery*; Peter Gaskell, *The Manufacturing Population of England: Its Moral, Social and Physical Conditions* (London, 1833); Andrew Ure, *The Philosophy of Manufactures*, 2nd ed. (London, 1835).

⁵⁶ These are now available as edited collections: Reach, *A Cotton-Fibre Halo*; Reach, *Fabrics, Filth and Fairy Tents*. N.b. although the collected volumes of Reach's reports I have used were published in 2007, they have been available as collected volumes since 1972 and 1973 respectively, see, Angus Bethune Reach, *Manchester and the Textile Districts in 1849*, Chris Aspin (ed.), (Rossendale, 1972); Angus Bethune Reach, *The Yorkshire Textile Districts in 1849*, Chris Aspin (ed.), (Rossendale, 1973).

Taylor, do). Instead, Reach accepts factory production as inevitable and embodying some positive aspects without losing sight of the challenges and threats it provided to both the workers employed in the new factories and those displaced by this new form of production. He seems to have visited a wider range of employers than other reporters, as well as interviewing members of the labouring class at work and at home. Crucially, as well as the wealth of qualitative information in his reports, he also provides average earnings for a large number specific occupations and locations, with the gender and approximate age (e.g. young child, adolescent, adult) employed in these occupations and locations typically stated as well. This level of detail is not given in any of the other accounts of this period.

The only other data for textile workers in the accounts of individual reporters in the period under study which gives wage data by specific occupation, location and gender that I am aware of is in the work of Arthur Young, Frederick Morton Eden and David Chadwick.⁵⁷ Young's report of his tour of the North of England provides me with wage data for textile workers in Lancashire and the West Riding in 1768, and his 1771 tour through the East of England provides the equivalent information for worsted workers in Norwich. Having wage data from such an early date is particularly useful, since it is before domestic production faced significant competition for factory production. Thus, comparisons can be made between this source and data from later times on domestic workers to ascertain the effect that factory competition had on the lives of domestic workers. Chadwick's survey gives net weekly earnings data for factory workers in Manchester and Salford in 1839, 1849, and 1859. Whilst the earnings figures given by Young, Eden,

⁵⁷ D. Chadwick, *On the Rate of Wages in Manchester and Salford in Lancashire, 1839-59*, 2nd ed. (Manchester, 1860); Frederick Morton Eden, *The State of the Poor, or, an History of the Labouring Classes in England, from the Conquest to the Present Period, Volumes 1-3* (London, 1797); Arthur Young, *A Six Months Tour through the North of England: Containing, an Account of the Present State of Agriculture, Manufactures and Population, in Several Counties of This Kingdom*, 2nd ed., Vols.1-4 (London, 1770); Arthur Young, *The Farmer's Tour through the East of England: Being the Register of a Journey through Various Counties of This Kingdom, to Enquire into the State of Agriculture, &c., Vol.2* (London, 1771).

Chadwick and Reach may not be completely accurate, these authors seem to have taken considerable care in their reports and attempted to balance the often conflicting figures given by workers and masters, and to state net earnings. The qualitative information provided by Reach, as well as the better-known writers of the 1830s and 40s, is highly beneficial for informing us about how workers felt about their working conditions, pay, and life in general, with gendered considerations regarding these factors a near ever present. I also make use of the observations made by various other contemporary writers where this information can enhance our understanding of the operation of Industrial Revolution labour markets.

I have used a traditional folk song ('The Doffing Mistress', see below, pp.183-84) dating from some time in the nineteenth century as evidence on female overseers. As outlined above, information on overseers in this period is extremely sparse and so it has been necessary to be creative in obtaining sources which can shed light on this form of labour. As Vic Gammon describes, folk songs can often provide us with a different perspective than that which is found in what can be called 'elite, approved or official culture', and, 'Songs are social and cultural texts, products of particular sets of social relations and a means of communicating cultural values, concerns and messages'.⁵⁸ This is certainly the case with 'The Doffing Mistress', not only does it provide rare evidence of women working in a supervisory capacity, it also gives some indication of how these female overseers were perceived by workers in a different way to, and distinguished from, their male counterparts. Since the lyrics to this song do not seem to have been written down or recorded until the 1960s, it is not possible to be sure that they are totally unchanged from the original nineteenth-century version, but it can be assumed that the main themes are unchanged.⁵⁹

⁵⁸ Vic Gammon, *Desire, Drink and Death in English Folk and Vernacular Song* (Aldershot, 2008), pp.1, 12.

⁵⁹ The first recording of this song that I am aware of is by Anne Briggs, featuring Ray Fisher, on *The Iron Muse: A Panorama of Industrial Folk Music*, (arranged by A. L. Lloyd), an album which was recorded in 1962 and first

It should be noted that ‘The Doffing Mistress’ originates from Ulster in Northern Ireland, rather than England which is the focus of my thesis. Due to the lack of information on overseers I have used evidence on these workers from Scotland and Northern Ireland in the 1833 and 1834 Reports. The inclusion of non-English evidence in this case reflects the lack of information on this class of worker, and is something ideally to have been avoided. An overriding theme of my thesis is the importance of regional diversity for a whole range of factors, as can be seen particularly clearly in the differences between the woollen industry in the West Riding and the West of England, and the silk industry in various locations across England.⁶⁰ Even within regions local conditions need to be considered, with big differences between urban and rural labour markets.⁶¹ However, there was a level of resistance to female supervision strong enough to totally exclude them from overseeing, except in specific circumstances (i.e. when the only workers being supervised were women and children, and even here there was a preference against employing them in such a manner), throughout Great Britain. Thus, and given the source limitations when it comes to overseers, I feel it has been justified to use evidence from Scotland and Northern Ireland.

released in 1963. It seems probable that Briggs had heard this song through the oral tradition rather than the lyrics previously having been written down.

⁶⁰ The importance of regional variation for women’s employment is shown particular clearly in Chapters 4-5.

⁶¹ For the importance of adopting a regional approach when analysing women’s work, and the wider economy, during the Industrial Revolution, see, Maxine Berg and Pat Hudson, ‘Rehabilitating the Industrial Revolution’, *Economic History Review*, 45 (1992), pp.37-38, 44; Sara Horrell and Jane Humphries, ‘Women’s Labour Force Participation and the Transition to the Male Breadwinner Family’, *Economic History Review*, 48 (1995), p.105; Pat Hudson, *The Industrial Revolution* (London, 1992), Chapter 4; Pat Hudson (ed.), *Regions and Industries: a Perspective on the Industrial Revolution in Britain* (Cambridge, 1989), especially Chapter 1; Verdon, *Rural Women Workers in Nineteenth-Century England*, pp.17-18.

The paucity of sources on women's work in the Industrial Revolution era is well known.⁶² This is the case for quantitative sources, and for qualitative sources that are free from class or political bias. However, women's work in textiles, particularly that which was performed in factories, is *relatively* well documented. By drawing a wide range of sources I have been able to divine the relative importance of many factors determining women's work in this period and it has been possible to do this with more precision than in much of the existing literature. The lessons drawn from this study of textile workers c.1760-1850, can also inform analyses of women's work in other industries and time periods.

⁶² For example, see, Berg and Hudson, 'Rehabilitating the Industrial Revolution', p.35; Nigel Goose, 'Working Women in Industrial England' in Nigel Goose (ed.), *Women's Work in Industrial England: Regional and Local Perspectives* (Hatfield, 2007), pp.13-14; Honeyman, *Women, Gender and Industrialisation in England*, pp.54, 141.

Chapter 3: Cotton

Introduction

Whilst accurate data for domestic workers is notoriously difficult to find, it is almost certain that females accounted for the majority of domestic cotton workers throughout this period. Prior to the mechanisation of spinning and carding in the late eighteenth century these tasks were almost exclusively performed by women and children.¹ Despite it traditionally being seen as a ‘man’s job’, women had also long accounted for a minority of handloom weavers.² The newness of the cotton trade meant that there were no apprenticeship regulations and it was easy for women to enter with little gender conflict. Gender conflict was further limited by this labour being performed domestically, thus presenting less of a challenge to women’s domestic and mothering duties than work performed outside of the home (especially factory work). The ‘Worsted Smallware Weavers’ Apology’, issued in Manchester in 1756, shows that women there were employed on the same terms as men and subject to the same rules.³ The onset of factory production in the late eighteenth-century meant that traditionally female occupations in cotton such as carding and spinning moved away from domestic production, and many women moved into handloom weaving. As early as 1808 a Parliamentary investigation claimed that 50% of the cotton handloom weavers were women and children, and this occupation became increasingly feminised as piece-rates continued to decline.⁴

¹ Muldrew, ‘“Th’ Ancient Distaff’ and ‘Whirling Spindle’; Pinchbeck, *Women Workers and the Industrial Revolution*, p.114; Young, *A Six Months Tour through the North of England: Containing, an Account of the Present State of Agriculture, Manufactures and Population, in Several Counties of This Kingdom*, p.192.

² Bythell, *The Handloom Weavers*, p.9; Alfred P. Wadsworth and Julia De Lacy Mann, *The Cotton Trade and Industrial Lancashire, 1600-1780* (Manchester, 1931), p.332. See also, *Oldknow Papers*, SO/9/1-10.

³ Pinchbeck, *Women Workers and the Industrial Revolution*, p.157.

⁴ Cited in Bythell, *The Handloom Weavers*, p.61.

Despite women's far greater tendency to perform domestic and/or part-time work in England during the Industrial Revolution,⁵ they were also employed in large numbers in factory production. By 1795 approximately 300 mills, typically employing 200-250 workers, were using Richard Arkwright's water-frame machinery, with the vast majority of the workforce being women and children.⁶ The water-frame was soon superseded by the mule, which accounted for approximately 90% of the spindlage in the cotton industry for the period 1811-41.⁷ Although mule-spinning was dominated by males, women continued to be employed in large numbers in factory production.

Domestic textile production had traditionally seen a handloom weaver being supplied with yarn by a spinner who spun using a distaff or a spinning wheel. Prior to spinning the cotton needed to be picked, cleaned, and carded, and all of these operations were performed by hand.⁸ In 1734 John Kay patented the flying-shuttle, which significantly improved the productivity of handloom weavers. It was in general use amongst cotton fustian weavers by 1760.⁹ The resultant increase in demand for spun thread led to the invention of the spinning-jenny (1764-65), the water-frame (1769), and the spinning-mule (1779).¹⁰ The water-frame required factory production and a large level of capital investment, whereas jennies and mules could initially be used at home. Water power was applied to spinning-mules from around 1790, and the greater efficiency of the mule meant that it came to dominate cotton spinning in England throughout the rest of the period

⁵ Goose, 'Working Women in Industrial England', pp.18-19; Honeyman, *Women, Gender and Industrialisation in England*, p.97.

⁶ Huberman, *Escape from the Market*, p.11.

⁷ Bolin-Hort, *Work, Family and the State*, p.47.

⁸ Pinchbeck, *Women Workers and the Industrial Revolution*, pp.111-14

⁹ Hammond and Hammond, *The Skilled Labourer*, p.49; Pinchbeck, *Women Workers and the Industrial Revolution*, p.115.

¹⁰ Baines, Edward, *History of the Cotton Manufacture in Great Britain* (London, 1835), pp.150-51, 199; Pinchbeck, *Women Workers and the Industrial Revolution*, p.116.

under study here.¹¹ Various improvements in carding and other preparatory processes had occurred from the mid-eighteenth century onwards, and by 1830 spinning and all of the preparatory processes had almost entirely moved from domestic production to the factory.¹² The self-acting mule was patented in 1825, and then further improved in 1830, but its diffusion was delayed until the fall of the price of coal in the 1840s.¹³ Although a powerloom had been patented by Edmund Cartwright as early as 1785, and he built the first English powerloom shed at Doncaster in 1787, they did not become a common sight until the boom of powerloom adoption in 1823-25.¹⁴ By 1850 a small rump of handloom weavers were the only domestic workers to remain in the cotton industry.¹⁵

Earnings and Employment

Figure 3.1 indicates two critical ages for changes in the gender composition of the factory workforce. Sixteen marks the youngest age at which females make up a clear majority of factory cotton workers. This dominance is short-lived, and from the age of 25 onwards they are always in a minority. However, women still accounted for a slight majority of the adult labour force employed by the factories which gave the age and wages of each individual worker to the 1833 investigation (accounting for 2065 of the 4075 adult workers), since workers aged 16-25

¹¹ Hammond and Hammond, *The Skilled Labourer*, p.52.

¹² Baines, *History of the Cotton Manufacture in Great Britain*, pp.175-84; Thomas Ellison, *The Cotton Trade of Great Britain* (London, 1886), p.20; Pinchbeck, *Women Workers and the Industrial Revolution*, page 116-17

¹³ Baines, *History of the Cotton Manufacture in Great Britain*, p.207; Huberman, *Escape from the Market*, p.58.

¹⁴ Bythell, *The Handloom Weavers*, pp.68, 73, 75, 89.

¹⁵ Lyons, 'Family Response to Economic Decline', p.68. Geoffrey Timmins presents convincing evidence that cotton handloom weaving remained more economically important in Lancashire in the 1850s and 1860s than had previously been appreciated by historians, with numerous rural districts still highly dependent on this trade. See, Geoffrey Timmins, *The Last Shift: the Decline of Handloom Weaving in Nineteenth-Century Lancashire* (Manchester, 1993), pp.108-10.

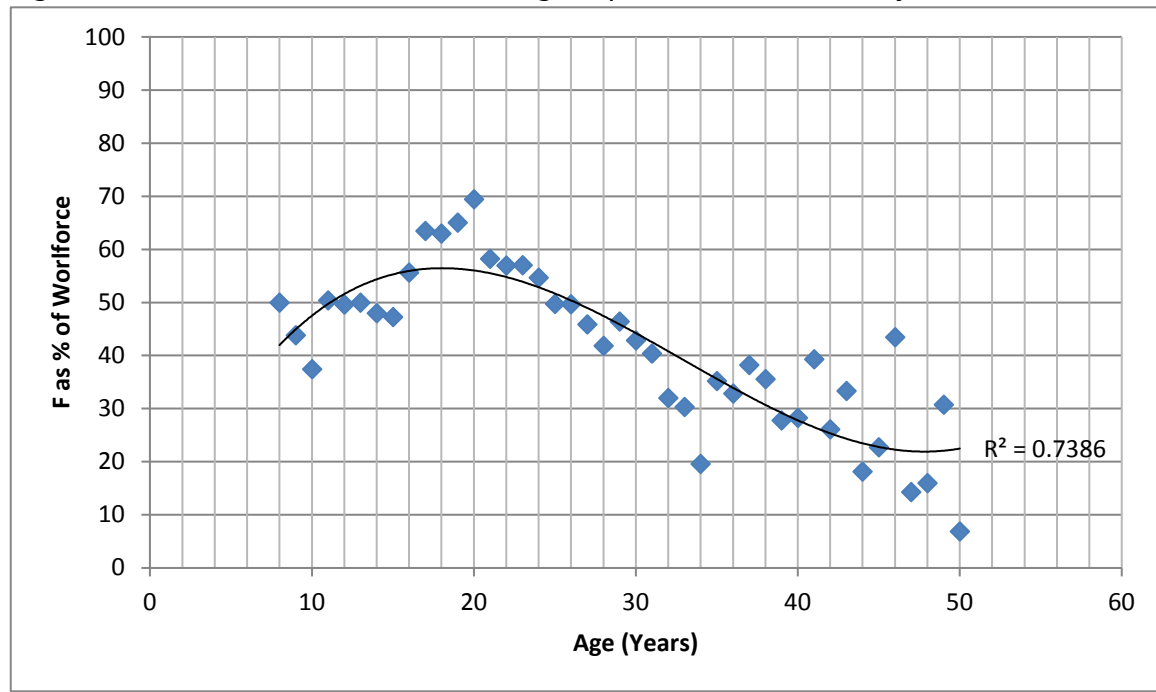
accounted for 44.23% of the workforce.¹⁶ As well as demonstrating how important the labour of young adults was to the industry, this makes it clear how important female labour was to one of the two key growth industries of the British Industrial Revolution, and this was the case throughout the period under study.¹⁷

Figure 3.2 shows a F:M wage ratio of around, or slightly above, 1.0 up until the age of 15, after which it plunges dramatically. As can be seen in Figure 3.3 this is due to rapidly rising male wages and relatively slowly rising female wages. The relationship between male and female wages then stabilizes from the mid-20s. This stabilization is caused by male and female wages rising at approximately the same rate from their mid-20s to mid-30s. After the age of 36, several years earlier than for females, male wages start to decline. It is also important to note that male wages decline much more rapidly from their peak than those of females.

¹⁶ Extracted Appendix A1. Many of the firms which responded to the questionnaires, and provide information for some of the other data (e.g. see Table 3.1), did not provide complete information, so we do not have age-earnings profiles for every worker.

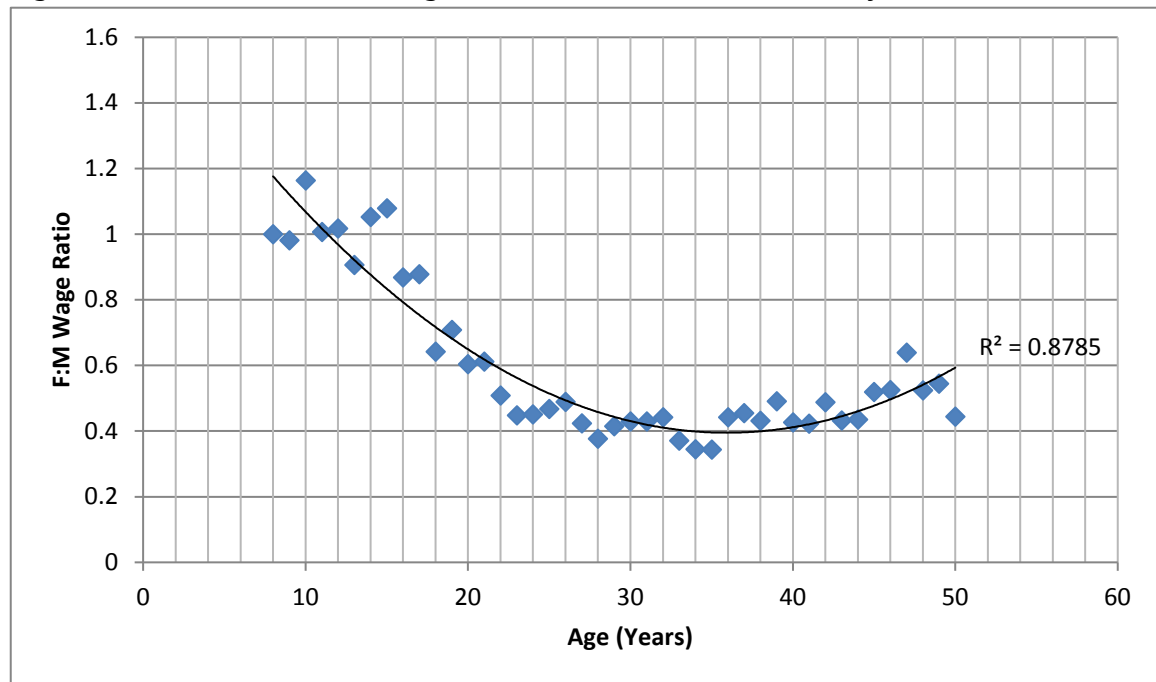
¹⁷ The other key industry being iron. See, Crafts, *British Economic Growth during the Industrial Revolution*, pp.17, 21, 24.

Figure 3.1: Females As a Percentage of Lancashire Factory Cotton Workers (1833)



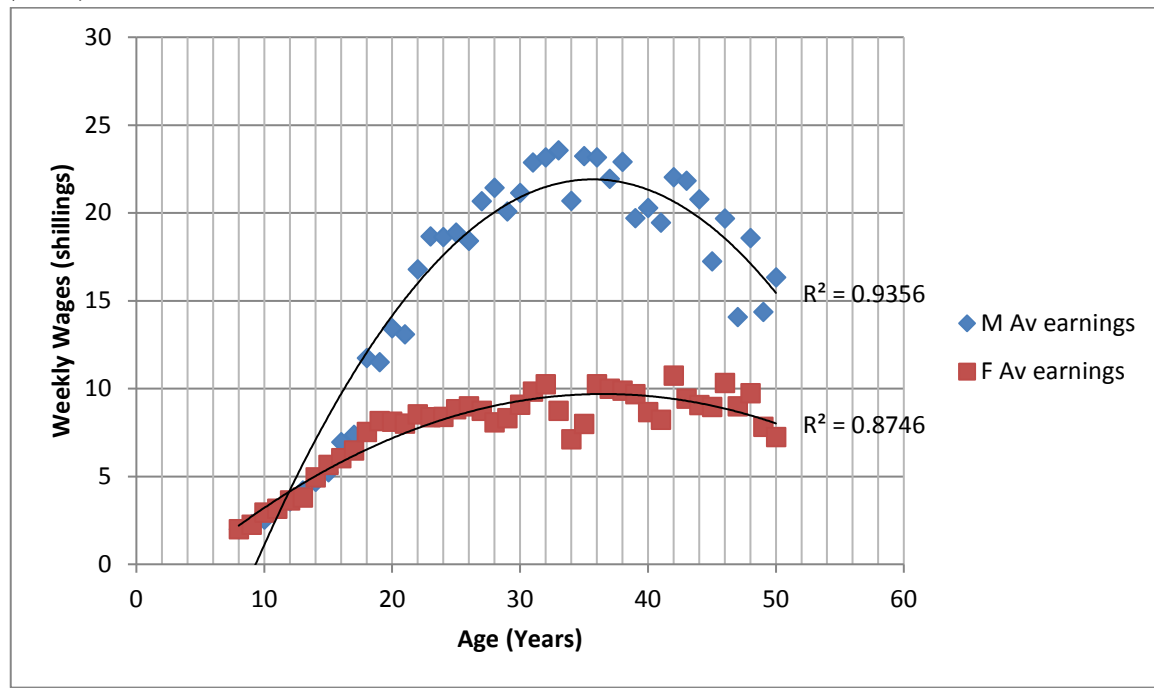
Source: See Appendix A1.

Figure 3.2: Female:Male Wage Ratio in Lancashire Factory Cotton Production (1833)



Source: See Appendix A1.

Figure 3.3: Male and Female Average Weekly Wages in Lancashire Factory Cotton Production (1833)



Source: See Appendix A1.

I have found no valid evidence for women being paid less than men for performing the same work in either the primary evidence or secondary literature I have consulted. Paul Johnson argues that direct discrimination occurred in Lancashire mule-spinning around 1830 when women were employed at half the male piece-rate for 'equal work'.¹⁸ However, his only reference for this is Mary Freifeld's article, and of the references she provides for Lancashire, and Scotland, only Kirby and Musson mention women receiving a lower piece-rate; they describe how in 1831 women and 'lads' were being employed by Manchester small-mule masters below list prices (against which the local spinners had been striking in the winter of 1830). However, they do not state how much lower the piece rate was.¹⁹ Freifeld apparently infers that women were paid half the piece-rate of men from average weekly wages provided elsewhere in her references, which is

¹⁸ Johnson, 'Age, Gender and the Wage in Britain', p.230.

¹⁹ R. G. Kirby and A. E. Musson, *The Voice of the People; John Doherty, 1798-1854, Trade Unionist, Radical and Factory Reformer* (Manchester, 1975) p.142

a large assumption to make.²⁰ As can be seen from my discussion below (pp.69-76) it is not at all clear that women mule-spinners performed the same work. Not being responsible for paying their own assistants would have reduced the wages received by the operative. Not supervising or recruiting their own assistants would have reduced their value to employers. Further, women tended to work on smaller mules and spin coarser yarn, which would have further reduced their earnings. Finally, even if this was not the case, this is not necessarily an explicit example of gender discrimination by the employers; both women and lads were employed as a means of bypassing the union, and if the employers had been able to bypass the union in some other way it is likely that they would have taken this option.

There actually seems to have been a strong aversion to paying men more for the *same* work as women. Early country mills, such as the Strutts' mill at Belper, went so far as to branch out into the running of an estate and its subsidiary trades so as to provide the employment for men which was necessary to attract families to come and work at the mill.²¹ There was only limited demand for adult male labour at these factories, for supervision, machine-making, and repair work, and rather than pay men more than women or children for the other factory work, it was seen as preferable to create work unrelated to factory production, that could be paid at the higher rate that was expected for men's labour, than to pay men more for performing the same work as women. Much of the adult gender wage gap for factory workers can be explained by the different occupations men and women were employed in, as can be seen below:

²⁰ Freifeld, 'Technological Change and the 'Self-Acting' Mule', p.334. Her references are: Baines, *History of the Cotton Manufacture in Great Britain*, pp.438-89; W. H. Fraser, 'The Glasgow Cotton Spinners, 1837' in John Butt and J.T. Ward (eds), *Scottish Themes* (Edinburgh, 1976), pp.84-85; Kirby and Musson, *The Voice of the People*, pp.76, 78, 109-10, 142.

²¹ Fitton and Wadsworth, *The Strutts and the Arkwrights*, p.104.

Table 3.1: Wages by Occupation in Lancashire Factory Cotton Production (1833)

Occupation	Sub-Sector	Age and gender	N	Avg. Wages	Avg. Hours
Overlookers	Mule-Spinning	M	145	29.25	275.9
Dressers	Powerloom Weaving	M	836	27.81	276.0
Overlookers	Powerloom Weaving	M	400	26.30	273.9
Spinners	Mule-Spinning	M & W (Principally MA)	3797	25.66	275.5
Carders or Overseers	Carding	M	376	23.51	275.2
Overlookers	Throstle-Spinning	M	82	22.38	272.8
Warpers	Powerloom Weaving	M & W	332	12.26	273.0
Weavers	Powerloom Weaving	M, W, B, G (Chiefly FE)	10171	10.82	273.7
Jack-frame tenters	Carding	Principally W	696	8.00	273.5
Spinners	Throstle-Spinning	W & G	1123	7.75	272.2
Drawing tenters	Carding	Principally W	1931	7.48	275.6
Bobbin-frame tenters	Carding	Principally W	945	7.46	276.8
Piecers	Mule-Spinning	M, W, B, G (Principally CH)	7157	5.39	274.8
Scavengers	Mule-Spinning	B & G	1247	2.89	272.6

Source: Extracted from B.P.P. 1834, XIX, p.427. N.b. Average wages are expressed in shillings and are calculated for a standardised 69 hour week, thus any differences in hours worked do not affect wages figures. Average hours are recorded for a four-week period. Although it seems probable that ‘principally’ and ‘chiefly’ have the same meaning, I cannot be sure of this, and so I have followed the original report in using these as separate descriptors for the proportion of a certain type of worker employed in a given occupation.

Key: ‘M’ = male aged 18 and above; ‘W’ = female 18 and above; ‘B’ = male 17 and below; ‘G’ = female 17 and below; ‘MA’ = males; ‘FE’ = females; ‘CH’ = children.

The exclusion of women from overlooking/overseeing in Table 3.1 is striking, and highly significant in restricting their earning capability, as this accounted for four of the six most highly paid occupations.²² Mule-spinning also required the supervision of assistants, with the number of assistants to be supervised increasing with the size of the mule. Whilst direct discrimination does not seem to have occurred in the cotton industry, Table 3.1 indicates the importance of occupational segregation in limiting women’s earnings. The average wages of warpers, the highest-paid occupation to employ a large proportion of women, was only 54.78% of that for

²² The exclusion of women from overseeing occupations was also a feature of factory cotton production in Denmark. See, Lars K. Christensen, ‘Denmark’ in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nderveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers*, p.164.

throstle-spinning overseers (the lowest paid of the male-dominated occupations). It is also noticeable that of the six occupations for which women accounted for a large proportion of the workforce,²³ the two that were highest paid were the only two to also employ high numbers of men.

It is not possible to be certain that no women at all were recorded as overseers in the original returns, since only the aggregated tables remain, and if a gender/age category accounted for only a small proportion of the workers, the tables in the 1834 Report do not necessarily mention them. For example, only ‘women’ and ‘girls’ are listed in the aggregate table for Lancashire as performing throstle-spinning, but when these data is broken down into eight sub-regions, in three of these regions ‘men’ and ‘boys’ are also reported in this occupation.²⁴ Where men were so employed this did not have a significant impact on the average wages of throstle-spinners, suggesting a lack of alternative employment opportunities for men in these areas.²⁵ However, there is no mention of females working as overlookers/overseers in any of the eight sub-regional tables, so if any women were so employed they would have been very rare. I have also examined the wage books of three cotton mills (in Derbyshire and Lancashire), and have found no evidence of female overseers.²⁶ Further, all forty-one of the overseers employed in cotton factories interviewed in the 1833 and 1834 Reports were male.²⁷

Although less time spent working explains some of the gender wage gap that was common in domestic production, this does not apply to the wages figures given in the 1834 Report, since

²³ These are ‘warpers’, ‘weavers’, ‘jack-frame tenters’, ‘throstle-spinners’, ‘drawing tenters’, and ‘bobbin-frame tenters’.

²⁴ The sub-regions are: ‘Manchester’; ‘Stockport and Heaton Norris’; ‘Duckenfield and Stayley Bridge’; ‘Brinnington, Hyde, &c.’; ‘Tintwistle, Glossop, &c.’; ‘Oldham’; ‘Bolton’; ‘Warrington’. Men and boys are listed as throstle-spinners in ‘Bolton’, Brinnington, Hyde, &c.’, and ‘Tintwistle, Glossop &c.’. See, Appendices A1-A8.

²⁵ For the average wages of throstle spinners in all sub-regions, and how they compared to Lancashire average, see, Appendices A1-A8.

²⁶ *Samuel Oldknow Papers*, (dates examined: 1790, 1792); *Greg Papers*, (1790, 1834); *Arkwright Papers*, (1786, 1794, 1810).

²⁷ B.P.P. 1833, XX-XXI; B.P.P. 1834, XIX-XX.

these are all calculated for a standard 69 hour week. Further, Table 3.1 shows no clear correlation between the gender(s) employed in an occupation and the number of hours typically worked, suggesting that other factory data may not suffer from a gender-time bias either.²⁸ These long hours could have highly deleterious effects on the health of women workers:

In the early 1850s [i.e. after the Factory Acts of 1844 and 1847, which placed some limited restrictions on the number of hours factory women could work] deaths in Oldham from tuberculosis, the characteristic disease of overwork, were more than double the national average. The group worst affected, with treble the national rate, was women aged between twenty-five and thirty-four - the same group that also supplied the greatest share of millworkers.²⁹

The high level of fixed capital investment required for factory production meant that there was little flexibility for workers' hours, especially at steam-powered urban mills.³⁰ Prior to mechanisation, with its concomitant increase in fixed capital requirements, there does seem to have been more of a gender gap with regard to number of hours worked, and mothers would have worked the shortest hours of all. For example, the hand-pickers employed by M'Connel and Kennedy around the beginning of the nineteenth century, despite their work being primarily based outside of the home, were not subject to regular mill discipline or hours, and worked in a separate building with the option to take work home if they wished.³¹ Domestic industry offered workers complete control over working hours (subject to individual or family income constraints), and it is

²⁸ However, it should be noted that occupations employing large numbers of child workers did tend to work slightly shorter hours.

²⁹ John Foster, *Class Struggle and the Industrial Revolution: Early Industrial Capitalism in Three English Towns* (London, 1974), p.92.

³⁰ Fixed capital requirements became particularly high from the 1820s onwards, as powerloom weaving spread, and then mule-spinning began to be automated. See, V. A. C. Gatrell, 'Labour, Power, and the Size of Firms in Lancashire Cotton in the Second Quarter of the Nineteenth Century', *Economic History Review*, 30 (1977), p.95.

³¹ Collier, *The Family Economy of the Working Classes in the Cotton Industry*, pp.16-17.

no surprise that women and children were more likely than men to do handloom weaving on a casual or part-time basis.³²

Apart from the few women employed in mule-spinning, the highest-paid factory occupation open to women in 1833 was warping, which offered an average wage of less than 12s6d per week, and provided only a limited number of jobs. From the ages 23-41 average factory female wages were less than half of those paid to men. This compares unfavourably with the gender wage gap for handloom weavers in Tottington in 1817, a trade that did not suffer from rigid occupational segregation. The ratio for the average earnings of married women aged 21-46 (who had an average of 3.3 children aged seven or younger) to those of men aged 18-47 was only 0.50. However, these women, unlike the factory workers in the 1834 Report, would have almost certainly been working fewer hours due to their childcare responsibilities. Indeed, when we replace the earnings of married women with those of co-resident daughters aged 18 and above, who can be expected to have worked similar hours to those of adult men, the ratio is 0.81. And, the average earnings of the married women were even lower than those of girls aged 9-12, and boys aged 8-12.³³

This higher apparent gender equality in domestic industry is also shown in data from the eighteenth century. At Manchester in 1768, before the onset of factory production could have had any potential distorting effects on the labour market (e.g. possibly attracting the 'best' male labour, so male domestic labour may appear relatively under-paid), the average wage for women workers in fustians, checks, hats, and smallwares was 5s4d. Since the average wage for men was 7s1d, the adult F:M wage ratio was 0.75, far above the ratio we see for factory workers in 1833, and again this figure is likely to be biased by women working shorter hours, thus overstating the

³² Bythell, *The Handloom Weavers*, p.60.

³³ Extracted from Lyons, 'Family Response to Economic Decline', p.61.

wage gap.³⁴ Payments to the highly skilled female mule-spinners working for Samuel Oldknow from 1788-92, were 0.87 of those paid to males in the same occupation at the firm.³⁵ This period encompasses domestic production (1788), water-powered factory production (1790), and steam-powered factory production (1792).³⁶ The total absence of female spinners at the firm by 1793, gives an early indication of how the shift to a more hierarchical and formal work organisation entailed by factory production acted against the employment of women, particularly in the way that women lost access to the best-paying occupations.³⁷

The Causes of Occupational Segregation and Attitudes Towards Women's Work

Unfortunately, we do not know the number of spindles on the machines being used 1788-92, but these are provided in the 1793 data. Any possible male strength advantage due to an increase in the size of machinery cannot explain the complete absence of women by this date, since mules ranging in size from 108 to 256 were in use, so even if the largest was beyond the physical capability of women, the smallest certainly should not have been.³⁸ The voluntary withdrawal of women from this workforce also seems highly unlikely given the high wages available in this occupation.³⁹

³⁴ Manchester wage data taken from Young, *A Six Months Tour through the North of England*, p.322.

³⁵ *Samuel Oldknow Papers*, SO/4/2. A sample was taken for the years 1788, 1790, 1792. The highly skilled nature of this work is indicated by the very high average count of the yarn spun for the time (for men the average was 81.31, and for women it was 78.51). Before the invention of the mule most yarns had counts of below 20, and towards the end of the eighteenth-century the average count was still only in the high 20s. See, Knick Harley, 'Cotton Textile Prices and the Industrial Revolution', *Economic History Review*, 51 (1998), p.55.

³⁶ Unwin, *Samuel Oldknow and the Arkwrights*, pp.128-32.

³⁷ *Samuel Oldknow Papers*, SO/4/3. For my sample from 1788-92 women accounted for 12.95% of observations.

³⁸ Further the mean number of spindles on the mules in 1793 was only 162.97.

³⁹ The fragmentary state of the surviving record, and the fact that spinners were not paid at a fixed regular date (e.g. weekly, bi-weekly etc), means that it was not possible to construct weekly earnings for this firm. However, there is considerable evidence from elsewhere that mule-spinning was well-paid at this time, and the fineness of the cotton being spun for Oldknow would have meant that the spinners here were particularly highly paid. For mule-spinners receiving high wages in the late eighteenth-century, see, Lazonick, 'Industrial Relations and Technical Change', p.233.

Although gender strength differentials fail to adequately account for the ending of women working as mule-spinners at the Oldknow firm, they do help to account for some of the gender wage gap we see in both domestic and factory production. And, in some textile occupations the shift to the factory could result in an increase in the level of strength required. The more rapid decline of factory male wages than those of females, which can be seen in Figure 3.3, indicates the tendency for their work to be more strength-intensive, with earning capability dropping fast as they passed their physical prime.

Burnette uses data from US Army soldiers in 1988 to show that men are able to lift twice as much as women.⁴⁰ Given that females, especially mothers, had inferior access to nutritional resources within the family during the Industrial Revolution, and unlike late twentieth-century America in this period many people of both genders could not afford the optimal calorific intake, it may be that the difference was even greater than Burnette's data suggests.⁴¹ However, it seems likely that gender ideology influences the type of exercise performed by army recruits throughout their life, with gender-biased results for the acquisition of strength from childhood. Support for this can be seen in the gender gap for maximum lift capacity being slightly narrower for soldiers aged 28-39, than for those aged 17-20 or 21-27. The older age group can be expected to have been in the Army for longer, therefore reducing the effect of gender-biased exercise prior to conscription. Further, there is a smaller gender difference for sit-up performance for soldiers than for army trainees (although it should be noted that there was no difference between soldiers and trainees for the time in which they could run two miles).⁴² Unlike modern America, most 'exercise' taken by children in the Industrial Revolution era would have been physical labour for

⁴⁰ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.108-09.

⁴¹ For females' inferior access to nutrition, see, Jane Humphries, "'Bread and a Penny-worth of Treacle": Differential Female Mortality in England in the 1840s', *Cambridge Journal of Economics*, 15 (1991), p.453.

⁴² Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, p.110.

money, which may not have included the same gender biases. Further, the preferential allocation of nutritional resources away from females, especially wives, was influenced by earning capability, therefore this difference can be expected to be lower where a woman performed well-paid and physically demanding work.⁴³ Finally, *maximum* lift capacity is not a particular useful guide to the kind of muscular power needed in strength-intensive jobs during the Industrial Revolution. Mule-spinning required the same motion to be performed thousands of times a day, a level of repetition that nobody could perform for their maximum lift capacity. A measure of muscular stamina would be far more relevant but is something that Burnette's data does not provide.

Despite the problem of estimating gender strength differentials for the Industrial Revolution period it is evident that men did have a natural biological advantage, and this was typically increased by preferential allocation of nutritional resources. We also do not have an accurate measure of the productivity advantage afforded by strength, especially with regard to different sized mules. Nevertheless, there is no doubt that prior to the spread of the self-actor in the 1830s and 1840s, which all but removed any need for physical strength from the operative,⁴⁴ mule-spinning could be done more productively by those with greater strength, since they could operate the heavier machines with more spindles, and work these at a faster pace, thus producing a greater quantity of yarn in a given period of time. Strength was particularly important on the hand-powered mules of the late eighteenth-century, and then again in the 1820s and 30s when water- and steam-powered mules were lengthened and 'doubled-up'.⁴⁵ However, it is important to remember that many firms were not using the newest technology available at any given time, and

⁴³ Humphries, "Bread and a Penny-worth of Treacle", p.454; Stephen Nicholas and Deborah Oxley, 'The living standards of women during the Industrial Revolution, 1795-1820', *Economic History Review*, 46 (1993), pp.737, 739.

⁴⁴ Freifeld, 'Technological Change and the 'Self-Acting' Mule', pp.336-37.

⁴⁵ 'Doubling-up' involved stacking one mule on top of another to double the spindlage under the control of one spinner.

so strength advantage may have been less important than is often assumed. The slow adoption of technology can be seen by the continued use of the jenny for cotton spinning in Stockport, which was by no means a backward region, as late as the early 1830s.⁴⁶ V. A. C. Gatrell states that the self-actor did not become universally adopted until well into the 1860s.⁴⁷ On fine counts it was even later than Gatrell suggests, with it taking until 1880 before the self-actor had 'almost entirely superseded the hand mule' on even medium-fine counts of 80 or 90.⁴⁸ Hand mules (i.e. mules that were powered by water or steam, but did not feature the self-actor mechanism) were still in use in Bolton until as late as 1907.⁴⁹

William Lazonick claims that strength advantage also mattered for the ability to apply the level of physical coercion to juvenile assistants (piecers and scavengers) which was deemed necessary for maximum efficiency. Not only did larger mules require more strength from the spinner for their technological operation, they also required more assistants, which under Lazonick's interpretation would create a double preference for stronger workers.⁵⁰ Many historians have thus emphasised the importance of male strength advantage in enabling men to create a powerful exclusionary union, which ensured continued male dominance of mule-spinning even after the introduction of the self-actor removed any strength advantage.⁵¹

The literature emphasising the importance of strength for the evolution of the workforce in mule-spinning has tended to understate the importance of endogeneity in the development of mule size. Michael Huberman has challenged this approach, instead claiming that for mule-spinners:

⁴⁶ Robert Glen, *Urban Workers in the Early Industrial Revolution* (Beckenham, 1984), p.71.

⁴⁷ Gatrell, 'Labour, Power, and the Size of Firms in Lancashire Cotton in the Second Quarter of the Nineteenth Century', p.113.

⁴⁸ Harold Catling, *The Spinning Mule* (Newton Abbot, 1970), pp.51, 116.

⁴⁹ George Henry Wood, 'The Statistics of Wages in the United Kingdom during the Nineteenth Century (Part XVII), the Cotton Industry', *Journal of the Royal Statistical Society*, 73 (1910), p.283.

⁵⁰ Lazonick, 'Industrial Relations and Technical Change', p.236.

⁵¹ For example, see, Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, p.265; Freifeld, 'Technological Change and the 'Self-Acting' Mule', pp.335, 337; Lazonick, 'Industrial Relations and Technical Change', pp.235-36, 239.

Undoubtedly it is difficult to separate the relative influences of discrimination and pure abilities; we can, however, be more certain that technical change itself was more an effect than a cause of the substitution of men for women.⁵²

As Lazonick highlights, the relative cheapness of women's labour, and perhaps more importantly, their perceived docility (this was particularly important with regard to their lower tendency to unionise), should have made them more attractive to employers, but women mule-spinners were never widespread.⁵³ Hence it may seem strange that Huberman finds that the size of the mule was extended until it made efficient use of the physical capability of adult males.⁵⁴ However, an analysis that explicitly examines the importance of gender ideology and identity can explain this puzzle. Both Huberman and Lazonick find that male supervisory advantage was crucial in creating a situation where men came to dominate mule-spinning.⁵⁵ Lazonick's claim that men had an advantage in disciplining their piecers due to greater strength does not stand up to close scrutiny. The level of force that was perceived to be needed to motivate adolescent workers, i.e. rather than being so great as to injure them and therefore make them less productive, would not have been beyond the physical capabilities of a woman. Even if the piecer was of equal or greater strength than the mule-spinner it seems improbable that they would have been able to use violence in response to any behaviour by the mule-spinners given that they were hired by the day or the week and were easily replaceable.⁵⁶ The common use of leather straps and ropes for disciplining piecers would have made inflicting pain easy to achieve with relatively little muscular power or

⁵² Huberman, *Escape from the Market*, p.35.

⁵³ Lazonick, 'Industrial Relations and Technical Change', p.235.

⁵⁴ Huberman, *Escape From the Market*, p.35.

⁵⁵ Huberman, *Escape from the Market*, pp.28-29; Lazonick, 'Industrial Relations and Technical Change', p.236.

⁵⁶ For piecers being hired by the day or the week and being easily replaceable, see, Michael Huberman, 'Industrial Relations and the Industrial Revolution: Evidence from M'Connell and Kennedy, 1810-1840', *Business History Review* 65 (1991), p.361.

exertion.⁵⁷ However, the testimony of ‘T. W.’, a 15-year-old piecer from Manchester to the 1833 Commission, reveals that the two female mule-spinners he had worked for never ‘licked’ him or any of the other piecers or scavengers working for them, whereas all eight of the male spinners he had worked for had done so on a regular basis. When asked how the female mule-spinners were able to motivate the piecers without using physical discipline he replied:

They used to ask them if they’d mind their work, and then they’d give ‘em a halfpenny or a penny; and then the piecers was pleased, and worked; and if the piecers had’nt meat, they used to give ‘em meat, and marbles, and tops; and at any pastime here gives ‘em money; 6d or 1s.⁵⁸

The differing methods of motivation used by the male and female mule-spinners reflect an ideological climate which had very different expectations regarding the behaviour of men and women, which affected their behaviour at work, in turn influencing their desirability as workers to employers. This interpretation is supported by J. M. Beattie’s study of judicial records from Surrey and Sussex, 1663-1802. He finds that women were much less likely than men to commit violent crime. Beattie concludes that this difference is greater than what can be expected from strength and ‘temperamental’ differences between the sexes, and that some of this difference, ‘[M]ust have resulted from contrasts in training and expected behaviour and in general from the place of women in society.’⁵⁹ Further, Humphries’ study of working-class autobiographies reveals that sons were much more likely to receive physical punishment from their father than from their mother in the nineteenth century.⁶⁰

⁵⁷ B.P.P. 1833, XX, p.688.

⁵⁸ B.P.P. 1833 XX, pp.688-89.

⁵⁹ J. M. Beattie, ‘The Criminality of Women in Eighteenth-Century England’, *Journal of Social History*, 8 (1975), pp.85, 96.

⁶⁰ Humphries, *Childhood and Child Labour in the British Industrial Revolution*, pp.134-36, 143-44.

Due to the nature of their work, the output of the children working as assistants to mule-spinners, as well as the output of most children employed in textile factories, was difficult to measure. Therefore, it is no surprise that time-rates were the standard form of payment for children in the cotton industry, in contrast to the adults employed in mule-spinning and powerloom weaving, who were usually paid piece-rates.⁶¹ Even if it were to be assumed (and this would be a big assumption) that piece-rates have the same incentivising effect on child workers as they do on adults, the nature of children's work in cotton factories meant that this form of payment was rarely appropriate. It was widely believed at this time that physical coercion was the best way for mule-spinners to motivate their child assistants,⁶² meaning that a reduced willingness to use such methods would have made women less attractive to employers.

Evidence on what proportion of women mule-spinners supervised their own assistants, as was the standard practice amongst male mule-spinners, is scarce. However, despite 'T. W.' apparently working for female mule-spinners who supervised their own assistants, other evidence suggests that this was uncommon. Women mule-spinners were widely perceived as being less effective at supervising their own assistants.⁶³ When M'Connel and Kennedy began to hire women in the place of men on their mules from 1810 in an attempt to cut wage costs and bypass the male unions, the women did not supervise, recruit or pay their own piecers, as was standard for male mule-spinners at this firm and throughout the industry.⁶⁴ Rather, more spinning-room overlookers had to be employed as the internal sub-contract system was broken up. From 1820

⁶¹ 'Piece work ... remained the norm for most adults in spinning and weaving, although not for their young assistants.' And, 'Unlike most adult workers, children were not generally paid on piece-rates; they received weekly wages.' See, Michael Winstanley, 'The Factory Workforce' in Mary B. Rose (ed.), *The Lancashire Cotton Industry: a History since 1700* (Preston, 1996), pp.124, 131.

⁶² Huberman, *Escape from the Market*, p.28.

⁶³ Huberman, *Escape from the Market*, p.28.

⁶⁴ Huberman, *Escape from the Market*, pp.28-29. Birley's Mill did not allow their male mule-spinners to supervise their own assistants, however, this was highly unusual and even here it was abandoned from the early 1840s. See, Lazonick, 'Industrial Relations and Technical Change', p.245.

M'Connel and Kennedy abandoned this strategy because of increased wastage and search costs, and reverted to employing male spinners who once again were responsible for supervising, recruiting and paying the piecers.⁶⁵ Evidence for women mule-spinners not supervising their assistants being a widespread practice can be seen in the exchange between 'L. S.', a mule-spinner in Manchester, and Leonard Horner, factory commissioner for Lancashire:

LH: 'Where there are women [mule] spinners, how do they manage to keep their boys at work, since they cannot correct them?'

LS: 'Where there are women spinners, there the overlookers exert themselves for them, and keep the boys in order and to their work.'⁶⁶

The strength of the social expectation that women should not use violence is demonstrated by Horner's assumption that women simply 'cannot correct' their assistants. The advantage men had for possessing and exercising authority was not only due to the social acceptability of their use of violence towards assistants; this advantage was surely enhanced by their typical role as heads of households, which gave them experience of directing the behaviour of other individuals. Whilst the relationship between the law and working-class behaviour was far from straightforward (for example, see above, pp.27-28), the privileged legal position of men relative to women, particularly within marriage, is highly likely to have contributed to the greater authority of men than of women within the working-class family.⁶⁷ This male advantage of authority can be expected to have then transferred into the workplace, giving men further advantage in jobs requiring authority over other workers.

⁶⁵ Huberman, *Escape from the Market*, pp.28-29.

⁶⁶ B.P.P. 1833 XX, p.665.

⁶⁷ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.278-81; Robert Shoemaker, *Gender in English Society, 1650-1850: the Emergence of Separate Spheres?* (Harlow, 1998), pp.52-3, 106.

The adoption of standard piece-rate lists as the nineteenth-century advanced, the first being the Bolton list of 1813,⁶⁸ would have acted against women since this would have made mule-spinners who did not supervise their own piecers more expensive to employ.⁶⁹ The increasing size of mules, as well as placing a premium on strength, required more assistants, making the supervisory aspect of mule-spinners' work even more important, creating further preference for male workers.

Anna Clark has rejected strength and supervisory explanations for mule-spinning being male dominated, instead arguing that men achieved this through the strength of their union.⁷⁰ The influence of trade unions on the labour market can be seen in the sub-regional tables for wages by occupation in the 1834 Report. Table 3.2 shows that mule-spinners in Bolton, who had the strongest union and were the first to be able to introduce a piece-rate list,⁷¹ had average wages higher than for any of the other seven sub-regions. Mule-spinners' wages here were more than 10% above the Lancashire average, despite it not generally being a high-wage district. The only other occupation where the Bolton average was above the Lancashire average was warpers, who received 4% above the Lancashire average. Intriguingly, the three occupations that were most women dominated (jack-frame tenters, bobbin-frame tenters and drawing tenters) in Bolton received average wages that were lower than in any of the other seven sub-regions for their

⁶⁸ Huberman, *Escape from the Market*, p.82.

⁶⁹ By the end of the nineteenth century three-quarters of mule-spinners in Lancashire and Cheshire had their earnings determined by piece-rate lists. See, Huberman, *Escape from the Market*, p.133.

⁷⁰ Clark, *The Struggle for the Breeches*, p.134.

⁷¹ Huberman, *Escape from the Market*, pp.134-35. The Bolton union was established in 1795, three years after the mule-spinners' unions in Stockport and Manchester. Despite its later start, the Bolton union was the only mule-spinners' union to remain in continuous existence and influence from its founding date until the twentieth century. Even the often powerful Manchester union had periods in the first four decades of the nineteenth century where, '[I]t was a broken or defeated body.' See, John Mason, 'Mule Spinner Societies and the Early Federations' in Alan Fowler and Terry Wyke (eds.), *The Barefoot Aristocrats: a History of the Amalgamated Association of Operative Cotton Spinners* (Littleborough, 1987), pp.14,34.

respective occupations.⁷² The ratio of average wages in Bolton to the Lancashire average in these three occupations was also lower than for any other occupations in Bolton. It is clear that trade union influence was significant, and contributed to women's exclusion from mule spinning. Yet, even in Bolton, some women were employed in this occupation.

Table 3.2: Wages by Occupation in Bolton Factory Cotton Production (1833)

Occupation	Sub-Sector	Age and gender	N	Avg. Wages	Lancs. Avg Wages	Ratio to Lancs Avg.
Carders or Overseers	Carding	M	56	21.41	23.51	0.91
Jack-frame tenters	Carding	Principally W	108	5.21	8.00	0.65
Bobbin-frame tenters	Carding	Principally W	189	5.66	7.46	0.76
Drawing tenters	Carding	Principally W	302	5.90	7.48	0.79
Overlookers	Mule-Spinning	M	23	25.29	29.25	0.86
Spinners	Mule-Spinning	M & W (principally MA)	675	28.48	25.66	1.11
Piecers	Mule-Spinning	M, W, B, G (principally CH)	1688	4.68	5.39	0.87
Scavengers	Mule-Spinning	B & G	25	2.78	2.89	0.96
Overlookers	Throstle-Spinning	M	10	18.12	22.38	0.81
Spinners	Throstle-Spinning	M, W, B, G	88	7.52	7.75	0.97
Overlookers	Powerloom Weaving	M	9	23.55	26.30	0.90
Warpers	Powerloom Weaving	M & W	14	12.74	12.26	1.04
Weavers	Powerloom Weaving	M, W, B, G	236	9.27	10.82	0.86
Dressers	Powerloom Weaving	M	24	23.84	27.81	0.86

Source: See Appendix B1.

The male spinners' attempts to exclude women reflect, at least partly, a fear that their strength and supervisory advantage was insufficient to permanently maintain their privileged position. However, Clark fails to explain how the union gained sufficient labour market power to be able to effectively limit women's access to an occupation which had been female dominated prior to the spread of the mule. It was through men's largely biologically-determined strength advantage, and their ideologically-based supervisory advantage, as well as their higher levels of human capital, that they were able to form unions powerful enough to exclude potential rivals.⁷³ Even after the

⁷² For wages by occupation in all of the eight sub-regions, see, Appendices A1-A8.

⁷³ For a discussion of the importance of human capital for mule-spinning, see below, p.89.

spread of the self-actor removed any strength requirement, men's supervisory advantage and their control over much of the labour supply helped to maintain the power of their exclusionary union.⁷⁴

We know that employers in the cotton industry faced considerable difficulty in finding overseers, particularly those who understood the production process that they were supervising.⁷⁵ Therefore, especially in female dominated subsectors such as carding and throstle-spinning, there should have been strong economic incentives for factory owners to employ female overseers. Unlike in mule-spinning, where the picture is clouded by the difficulty of accurately measuring the importance of strength and trade union behaviour in limiting women's employment opportunities, there do not seem to have been any formal or physical barriers to women becoming overseers. No trade unions emerged for cotton factory overseers until the second half of the nineteenth-century.⁷⁶ The only physical aspect of overseeing work was the disciplining of child workers, and as I have argued in the case of mule-spinning, this was not beyond the biological capabilities of women. Indeed, the 1833 Report interviews a total of 23 overseers aged over 50 across all the textile industries, including the 60-year-old James Paterson who worked at the Brown flax-spinning mill in Dundee, '...and has been in their employment for about seven years; that he was previously at the spinning-mill at Glammis for twelve years and there lost his right

⁷⁴ Smith et al. have noted that when self-actors were introduced to the Catalan cotton industry in the 1850s women were employed initially employed on the new technology in large numbers, but in many parts of Catalonia men managed to reassert their dominance over the next twenty-five years. Male supervisory advantage seems to be a probable explanation for why men were able to do this. See, Angel Smith et al., 'Spain' in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nederveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers, 1650-2000*, p.458

⁷⁵ Huberman, *Escape from the Market*, pp.28, 50-51.

⁷⁶ H. A. Turner, *Trade Union Growth Structure and Policy: a Comparative Study of the Cotton Unions* (London, 1962), pp.153, 157.

hand and arm, caught by the belt of the wheels, in the preparing floor.’⁷⁷ The oldest overseer interviewed in the Reports was 72 years old.⁷⁸

Different levels of human capital or skill also fail to explain the absence of female overseers. Whilst certain overseers were learned individuals,⁷⁹ the only apparent necessary formal skill for overseeing was basic numeracy (for recording worker output and/or hours worked). The 1833 Report interviews John Blair, a 33-year-old overseer in a Dundee flax mill who cheerfully, ‘Depones he cannot write due to indisposition.’⁸⁰ Similarly, James Tomalson, a 29-year-old overseer in the picking room of the White Abbey cotton mill near Belfast, ‘Depones he cannot write’.⁸¹ Human capital in the form of a knowledge of the productive process under supervision would have been beneficial, as is demonstrated by the frustration of employers in finding overseers with the requisite knowledge to be able to accurately judge worker performance. Women’s years spent working in the cotton mills would have adequately prepared them for this. This was particularly the case in the carding and throstle-spinning sectors, where the workforce was heavily dominated by females, thus providing a large proportion of the workers with the apparent potential to become overseers.

Overseers tended to be drawn from the older members of the factory workforce, and this was particularly so in cotton: cotton overseers in England and Scotland in 1833 had an average age of 44.95 (the average for all textiles was 39.92). As a result, women’s earlier withdrawal from the

⁷⁷ B.P.P. 1833, XX, especially p.131.

⁷⁸ B.P.P. 1833, XX, p.197.

⁷⁹ Sixteen members of the Manchester Mutual Improvement Society wrote papers in 1836. Of the eleven whose occupation and status could be reliably identified, ‘Only one remotely approached working-class status. The felicitously named Isaac Newton, a spinning factory overlooker, presented three papers: “On Mechanics applied to the Arts”, “On Hydrostatics”, and “On the Importance of Schools of Design”. Newton had distinguished himself before. In 1833 he won two institution prizes. The first rewarded a French essay written on the advantages of Mechanics’ Institutions, and the second, appropriately enough, his answers to questions in algebra, trigonometry, and “Fluxions”.’ See, Howard M. Wach, ‘Culture and the Middle Classes: Popular Knowledge in Industrial Manchester’, *Journal of British Studies*, 27 (1988), p.383.

⁸⁰ B.P.P. 1833, XX, p.122.

⁸¹ B.P.P. 1833, XX, p.230.

factory workforce would have counted against them being able to perform this work. However, as can be seen in Figure 3.1, this withdrawal was by no means total, and is insufficient to account fully for their absence. Additionally, despite the average age being almost 45, 18.42% of cotton overseers were aged 30 or under. And, of the sixty cotton overseers interviewed in the Reports, at least five were first employed as overseers aged less than 25.⁸² Information on length of tenure at present firm is available for nine of the cotton overseers, and the mean is again particularly high for cotton, being 21.61 years (the average for all textiles was 10.39). This figure may well be inflated since the commissioners sought to speak to those who could describe past events, and only recorded information they deemed to be of interest. Also, this does not tell us how long they had typically been at the firm before they were made overseer, and given the privileged economic position of these workers it can be expected that once appointed overseer they would have little incentive to move elsewhere. However, it is clear that not only was age and experience beneficial for becoming an overseer, but length of time spent at a given firm was also frequently important for building up trust with the employer.

Women typically had more absences from paid employment than men due to childbirth and child-rearing and sickness, and left the factory workforce permanently at a younger age.⁸³ This can be expected to have resulted in women having shorter tenure at firms, although it is unclear how strong this effect would have been. If better paid work was available to women more of them can be expected to have stayed in the factory workforce for longer, and taken fewer and shorter absences. Higher wages would have improved women's access to nutrition, increasing resistance to illness. Higher wages available to older women would also have reduced the incentive to have children as a means to protect family income, reducing fertility. Finally, at isolated rural cotton

⁸² The actual figure is almost certainly higher than this, since the age at which the interviewee began overseeing is frequently not recorded in the Reports.

⁸³ Boot, 'How Skilled Were Lancashire Cotton Factory Workers in 1833?', p.293.

mills, where the labour market was less fluid than in urban areas, many women would have stayed attached to a single employer over a long period, if not all, of their working lives (see below, pp.100-02), but there is still no evidence to suggest that women worked in an overseeing capacity at these locations.

The only way to explain the total absence of female overseers in cotton is through the existence of a pervasive ideology hostile to female authority. This would have taken the form of an objection by workers, particularly adult males, to working under female supervision. There may also have been unwillingness amongst females to perform a job which compromised their feminine identity. Even where there is no explicit objection by workers to female supervision obviously apparent to the historian, a distaste by workers for this would make female supervisors less productive, discouraging employers from employing women in such a way. The strength of resistance to female overseers can be seen in the fact that in the early days of the powerloom industry overlookers were rarely drawn from the ranks of the weavers.⁸⁴ At this time nearly all of the powerloom weavers were women and children, writing in 1833, Gaskell stated that:

The individuals employed at them are chiefly girls and young women from sixteen to twenty-two to twenty-three years of age; indeed the weavers in many mills are exclusively females.⁸⁵

It was apparently preferable to employ a male overseer with no experience of the production process rather than a knowledgeable woman who could have been paid less, even where there were no males of any age subordinate to the authority of the overseer.

⁸⁴ Turner, *Trade Union Growth Structure and Policy*, p.153.

⁸⁵ Gaskell, *The Manufacturing Population of England*, p.182. See also, H. M. Boot and J. H. Maindonald, 'New Estimates of Age- and Sex-Specific Earnings and the Male-Female Earnings Gap in the British Cotton Industry, 1833-1906', *Economic History Review*, 61 (2008), p.400n; Bythell, *The Handloom Weavers*, p.11; Hammond and Hammond, *The Skilled Labourer*, p.94.

Resistance to female authority seems to have been present throughout the period of study, but as production moved to the factory and work organisation became more hierarchical and formalised, this had an increasingly large impact on women's access to work. It may also be the case that the strength of resistance increased, although this is difficult to gauge accurately. However, it is clear that an ideology hostile to women's work outside of the home was much stronger amongst the middle- and upper-classes by the 1830s than it had been in the days of early factory production. This was particularly the case for factory work (and mining), regardless of the level of authority held by women in the workplace.⁸⁶ John Byng, the fifth Viscount Torrington, observing the changeover of shifts at Arkwright's Cromford mill in 1790 happily remarked that, 'I saw the workers issue forth at 7 o'clock, a wonderful crowd of young people, made as familiar as eternal intercourse can make them.'⁸⁷ This lack of concern for the moral effect of genders mixing at work is particularly interesting given Byng's general objection to the deleterious effect on working-class morals of employment in manufacturing rather than agriculture.⁸⁸

The picture presented by Byng contrasts with that observed at Messrs. Birley's Manchester mill in 1849, where, 'It was curious to observe how each sex and age clung together. Boys kept with boys, men with men, and the girls went gossiping by, in exclusive parties of their own.'⁸⁹ By the 1830s and 1840s the mixing of the sexes at work was being heavily criticised for its damaging moral effects, with particular concern arising from the lack of clothing worn due to the high temperatures of cotton factories (this was especially so at fine-spinning factories).⁹⁰ The behaviour of the workers exiting Birley's mill indicates that this attitude seems to have been shared by the workers as well, something which Humphries has found to occur across a range of

⁸⁶ See, Gaskell, *Artisans and Machinery*, p.173.

⁸⁷ John Byng, *The Torrington Diaries*, Vol. 2, C. Bruyn Andrews (ed.), (London, 1935), p.195.

⁸⁸ Byng, John, *The Torrington Diaries*, Vol. 3, C. Bruyn Andrews (ed.), (London, 1936), pp.32-33, 117.

⁸⁹ Reach, *A Cotton-Fibre Halo*, p.38.

⁹⁰ See, Faucher, *Manchester in 1844*, pp.45-46; Reach, *A Cotton-Fibre Halo*, pp.35, 155.

occupations in this period as the labour of children and young adults shifted away from a familial or quasi-familial supervisory context.⁹¹

A lack of evidence makes it much harder to assess changes in working-class attitudes than middle-class attitudes regarding the desirability of women working. There is little dispute that in the eighteenth century women were expected to work, and were valued for providing a contribution to family income.⁹² However, it is less clear how this attitude changed as factory production came to predominance. Ivy Pinchbeck concludes that:

Among the operatives themselves women's factory labour seems to have been accepted as perfectly natural until the Ten Hours agitation in the 'forties and external criticism was at first centred upon children's employment.⁹³

This is in contrast to the interpretation of Walby, who believes that men resisted women's employment in factories from a much earlier date due to its disruption on the patriarchal ordering of the family and its effect on the wages of men.⁹⁴ Although the mule-spinners' unions consistently acted to try and exclude women from around 1800,⁹⁵ it would be mistaken to interpret this as purely motivated by gender since they also sought to limit the labour supply by excluding males not related to existing members.⁹⁶ By the 1840s there is more evidence for opposition from working-class males to female factory work, for example the 1841 Short Time Committee (which represented male operatives) included in their demands, '... the gradual withdrawal of all females from the factories', claiming that women should stick to the domestic

⁹¹ See, Jane Humphries, "...The Most Free From Objection..." The Sexual Division of Labor and Women's Work in Nineteenth-Century England', *Journal of Economic History* 47 (1987), pp.929-49.

⁹² Erickson, Amy, 'Marital Status and Economic Activity: Interpreting Spinsters, Wives and Widows in Pre-Census Population Listings', *Paper Given at Economic History Society Conference, 2010*; Goose, 'Working Women in Industrial England', p.2; Honeyman, *Women, Gender and Industrialisation in England*, p.24; Pinchbeck, *Women Workers and the Industrial Revolution*, p.1.

⁹³ Pinchbeck, *Women Workers and the Industrial Revolution*, p.199.

⁹⁴ Walby, *Patriarchy at Work*, pp.98, 110.

⁹⁵ Lazonick, 'Industrial Relations and Technical Change', p.236.

⁹⁶ Kirby and Musson, *The Voice of the People*, p.93.

sphere as this was what was natural.⁹⁷ Although this apparent increase in hostility to female factory work amongst males may have been partially motivated by the spread of the self-actor removing male strength advantage in mule-spinning, this was by no means the only factor. After visiting the cotton districts in 1844, Friedrich Engels, reflecting the sentiment of many members of the working-class argued that:

The employment of women [in factories] at once breaks up the family; for when the wife spends twelve or thirteen hours every day in the mill, and the husband works the same length of time there or elsewhere, what becomes of the children? They grow up like wild weeds; they are put out to nurse for a shilling or eighteenpence a week, and how they are treated may be imagined ... That the general mortality among young children must be increased by the employment of the mothers is self-evident, and is placed beyond all doubt by notorious facts.⁹⁸

A desire for male privilege at work was not limited to male members of the working class. In 1849 a survey of cotton textile operatives by the factory inspectors found that just under 55% of women supported a reduction of women's factory labour to ten hours per day.⁹⁹ Interpretation of this is problematic since many workers saw the Ten Hours Act (1847) as a means of reducing the hours of all workers, but it would have been clear that it would have resulted in some degree of increased preference for male workers from employers. Also, the level of support amongst females not employed in the factories, but who had male relatives that were (and thus would have benefited from any increase in male wages resulting from the exclusion of women), is likely to have been somewhat higher. Angus Reach, two years after the Act had been passed found widespread appreciation for it amongst female factory workers due to the extra time it allowed them to perform domestic duties:

⁹⁷ Cited in Pinchbeck, *Women Workers and the Industrial Revolution*, p.200.

⁹⁸ Engels, *The Condition of the Working-Class in England in 1844*, pp.142-43.

⁹⁹ Wanda F. Neff, *Victorian Working Women: an Historical and Literary Study of Women in British Industries and Professions* (London, 1929), p.76.

‘I have time now to clean my house, and I do it, too, every evening’ is the phrase I have heard repeated a hundred times by the tenters and female weavers. ‘Before, I was so tired that I could do nothing but just eat my supper and go to bed,’ they generally added.¹⁰⁰

Since the factory textile labour force was heavily segmented by gender, restrictions on women’s hours would not have had a large impact on women’s attractiveness to employers. Whilst restrictions on the hours that women could work can be expected to have decreased their attractiveness to employers for the best paid jobs, the gender wage gap for adult workers in cotton factories actually narrowed over the period 1833-1906, especially between 1855 and the mid-1870s.¹⁰¹ The reduction in hours that women could work in textile factories would have made it easier for women to combine factory work with mothering, and especially domestic, duties. The reduction in the disutility of factory work for women means the state restrictions on the hours women could work may well have actually increased women’s access to, and willingness to perform, work in the textile factories.

It is worthwhile distinguishing between what the working class saw as *natural* and *acceptable* for women and what was *desirable*. Michael Anderson concludes from his Preston data for 1851 that, ‘Only before they had their first child did many women work because they wanted to.’¹⁰² He finds that the wives of low-paid men working in cotton factories were far more likely to work in factories than wives of men employed in highly paid factory cotton occupations. Also, there was a much larger withdrawal of women from factory work once their children were

¹⁰⁰ Reach, *A Cotton-Fibre Halo*, pp.15, 24.

¹⁰¹ Boot and Maindonald, ‘New Estimates of Age- and Sex-Specific Earnings and the Male-Female Earnings Gap in the British Cotton Industry’, pp.394-95.

¹⁰² Anderson, *Family Structure in Nineteenth-Century Lancashire*, p.72.

old enough to enter the labour market than when their children were born.¹⁰³ Theodore Koditschek's analysis of the 1851 Census data for Bradford also reveals that most working-class housewives avoided factory work whenever economically feasible.¹⁰⁴ R. Burr-Litchfield's study of Stockport for 1841-61, shows that more than half of mothers with children at home aged less than one were listed as working, with many of these working in factories. As was the case in Preston, women's level of employment decreased once their children were old enough to go out and work.¹⁰⁵ Thus, it seems that working-class mothers tended to seek work when family income needs demanded it, rather than when it would have been easier to do so due to lack of childcare responsibilities.

Although wages for factory cotton operatives in Preston were notoriously low, average wages in Stockport were relatively high for the cotton industry, as can be seen in Table 3.3.¹⁰⁶ Women's withdrawal from the factory workforce as soon as family income permitted indicates that there was little desire amongst working-class mothers to perform factory labour unless the financial demands of the family made it absolutely necessary. The resistance of working-class families to mothers working in textile factories, and the increasing material and ideological pressures against women's work that the advance of factory production seems to have caused, means that it is hard to agree with Douglas Farnie's belief that factory cotton production, '[S]erved as a powerful vehicle of female emancipation, pioneering the liberation of working-class women.'¹⁰⁷

¹⁰³ Michael Anderson, 'What Can the Mid-Victorian Censuses tell us about Variations in Married Women's Employment?' in Nigel Goose (ed.), *Women's Work in Industrial England: Regional and Local Perspectives* (Hatfield, 2007), pp.190,197-98.

¹⁰⁴ Koditschek, *Class Formation and Urban-Industrial Society*, p.377.

¹⁰⁵ R. Burr-Litchfield, 'The Family and the Mill: Cotton Mill Work, Family Work Patterns and Fertility in Mid-Victorian Stockport' in Anthony S. Wohl (ed.), *The Victorian Family: Structure and Stresses* (London, 1978), p.191.

¹⁰⁶ It should be remembered that the 'Lancs. Avg.' does not include data from Preston, if it did the ratio of wages for Stockport and Heaton Norris to the rest of Lancashire would appear even higher.

¹⁰⁷ Douglas Farnie, 'Cotton, 1780-1914' in David Jenkins (ed.), *The Cambridge History of Western Textiles*, p.722.

Table 3.3: Wages by Occupation in Stockport and Heaton Norris Factory Cotton Production (1833)

Occupation	Sub-Sector	Age and gender	N	Avg. Wages	Lancs. Avg Wages	Ratio to Lancs Avg.
Carders or Overseers	Carding	M	55	23.64	23.51	1.01
Jack-frame tenters	Carding	Principally W	155	9.30	8.00	1.16
Bobbin-frame tenters	Carding	Principally W	103	7.98	7.46	1.07
Drawing tenters	Carding	Principally W	253	7.70	7.48	1.03
Overlookers	Mule-Spinning	M	10	26.22	29.25	0.90
Spinners	Mule-Spinning	M & W (principally MA)	398	24.29	25.66	0.95
Piecers	Mule-Spinning	M, W, B, G (principally CH)	571	5.87	5.39	1.09
Scavengers	Mule-Spinning	B & G	93	3.32	2.89	1.15
Overlookers	Throstle-Spinning	M	17	23.70	22.38	1.06
Spinners	Throstle-Spinning	W & G	221	8.34	7.75	1.08
Overlookers	Powerloom Weaving	M	113	29.57	26.30	1.12
Warpers	Powerloom Weaving	M & W	96	12.32	12.26	1.01
Weavers	Powerloom Weaving	M, W, B, G (chiefly FE)	2888	10.69	10.82	0.99
Dressers	Powerloom Weaving	M	234	29.11	27.81	1.05

Source: See Appendix B6.

As Figure 3.1 shows, women accounted for a declining proportion of the cotton labour force in Lancashire from their mid-20s onwards. This was an era of extremely high fertility,¹⁰⁸ and the tendency for women to shoulder the majority of child-rearing and domestic tasks helps to explain their relative withdrawal from the mid-20s upwards, particularly given the greater choice of jobs for adult males in Lancashire.¹⁰⁹ As Burnette highlights, much of women's lower labour force participation can be attributed to their comparative advantage in domestic tasks.¹¹⁰ The biological necessity of their temporary withdrawal shortly before and after childbirth would have affected the human capital formation that may have been required for high-paid jobs, since it is less worthwhile for an individual to invest time or wages forgone to acquire human capital if they would spend less time in the workplace. Given the high levels of fertility at the time this

¹⁰⁸ E. A. Wrigley and R. S. Schofield, *The Population History of England 1541-1871* (London, 1981), p.418.

¹⁰⁹ Burr-Litchfield, 'The Family and the Mill', p.185.; Bythell, *The Handloom Weavers*, p.63; Greenlees, *Female Labour Power*, pp.41, 47, 86.

¹¹⁰ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, p.173.

biological necessity would have been a significant consideration. Parents' unwillingness to invest in the human capital of their female children would have been influenced by their expected shorter period spent in the labour force and lower weekly wages, although discrimination may also have played a role in this decision.¹¹¹

These lower levels of human capital can be expected to have reduced women's attractiveness to employers in certain occupations. Freifeld has shown that technical skill was important for mule-spinning, and this continued to be the case even after the introduction of self-actor.¹¹² As was the case in other cotton occupations, there was no formal apprenticeship system for mule-spinning. Instead, the necessary skills would be learnt on the job by piecers. By comparing the earnings of boys employed in cotton mills with boys employed in coal mines and brick yards, Boot demonstrates that acquiring these skills entailed a significant cost in forgone wages during a worker's teenage years.¹¹³ Girls spent a similar time in the cotton factory workforce as boys, but since they were more likely to be employed in the weaving and carding departments it was harder for them to acquire the skills to enter the well remunerated occupation of mule-spinning. However, these differences were not solely due to parental or individual decision-making: mule-spinners' unions sought to exclude females from learning the trade. Further, male and female differences in human capital are not the full story even in mule-spinning, and as I have argued above, human capital requirements are utterly insufficient to explain women's absence from overseeing.

Women's low earnings in cotton were not only partly due to occupational segregation within the cotton trade but also occupational segregation across the economy. Jordan has shown that women were excluded from an increasing number of industries as the nineteenth century

¹¹¹ Boot, 'How Skilled Were Lancashire Cotton Factory Workers in 1833?', pp.293-95.

¹¹² Freifeld, 'Technological Change and the 'Self-Acting' Mule', pp.321, 328, 331.

¹¹³ Boot, 'How Skilled Were Lancashire Cotton Factory Workers in 1833?', pp.290-91.

progressed.¹¹⁴ The resultant oversupply of female labour in cotton, and in specific occupations within cotton, would have acted to depress female wages. The lack of alternative employment opportunities for women can be seen by contrasting the level of married women's employment in cotton districts and non-cotton districts in the 1851 census. Lancashire districts where a large amount of cotton manufacture was carried on had a much higher proportion of married women in employment than districts where little cotton manufacture took place.¹¹⁵ Evidence from elsewhere in mid-nineteenth-century England shows that along with low pay for men, the availability of work for women was a key factor for the level of employment of married women.¹¹⁶

Chadwick's survey of earnings in Manchester and Salford, 1839-59, lists earnings for various occupations within thirty-four distinct trades. It is instructive that female earnings are only recorded in six of these trades ('cotton', 'silk', 'cabinet, &c. makers', 'umbrella makers', 'crown sewers, women and girls').¹¹⁷ Of course, it must be remembered that many forms of women's casual and irregular work went unrecorded in the Victorian censuses, and so factory work is relatively overrepresented as a form of female employment in these records.¹¹⁸ And, it seems probable that the same is true to an extent for Chadwick's survey. However, the fact that the under-recorded alternatives were irregular and casual meant that women's factory work had a low monetary opportunity cost, therefore depressing the wage they received in cotton employment.

¹¹⁴ Jordan, 'The Exclusion of Women from Industry in Nineteenth-Century Britain'.

¹¹⁵ John McKay, 'Married Women and Work in Nineteenth-Century Lancashire: the Evidence of the 1851 and 1861 census reports' in Nigel Goose (ed.), *Women's Work in Industrial England: Regional and Local Perspectives* (Hatfield, 2007), pp.171-72.

¹¹⁶ McKay, 'Married Women and Work in Nineteenth-Century Lancashire', p.177.

¹¹⁷ Chadwick, *On the Rate of Wages in Manchester and Salford in Lancashire*, especially pp.11, 22-29.

¹¹⁸ Anderson, 'What Can the Mid-Victorian Censuses tell us about Variations in Married Women's Employment?', pp.203-08; Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.18-15.

Trade Unions and Worker Protest

The behaviour of trade unions and the nature of less formal protest by workers in the cotton industry can assist in illuminating working-class perspectives on the desirability of female work, and how this changed over time and with changes in the organisation of production and the location of work. One of the earliest examples of protest by cotton workers was the destruction in and around Blackburn of spinning-jennies with more than twenty-four spindles in 1779. Carding engines and water-frames were also attacked by men and women, with colliers and labourers involved as well as those employed in the cotton industry.¹¹⁹ The destruction was targeted at machinery that could not be used within the home, and also was beyond the financial reach of the typical worker. This level of community support was far less apparent in protests relating to factory production, with dissent increasingly atomised, cotton workers frequently failing even to unite the interests of workers in all the different processes performed within the same factory.¹²⁰ The level of male support against changes which negatively affected female employment opportunities is also much stronger for domestic industry than we see for factory work, suggesting a greater unity of working-class interest under a domestic organisation of production. From the early nineteenth century, as elsewhere, food riots in Lancashire declined, further indicating a decline in community-based protest.¹²¹

Although the shift to factory production may have resulted in protest by the labouring classes occurring along more narrow occupational lines, with a shift away from community support for shared interests, the new organisation of production created new opportunities for worker protest. The increased proportion of fixed capital required from employers meant that strike action would have a greater cost to the employer. The urbanisation resulting from the application of steam-

¹¹⁹ Wadsworth and Mann, *The Cotton Trade and Industrial Lancashire*, pp.374-75.

¹²⁰ Glen, *Urban Workers in the Early Industrial Revolution*, pp.76-77.

¹²¹ John K. Walton, *Lancashire: a Social History, 1558-1939* (Manchester, 1987), p.141.

power made it much easier for workers to unite and coordinate a significant proportion of the workforce in a given occupation than was possible under the putting-out system or at dispersed rural factories. Finally, the increased levels of capital required to be an employer removed all but the slightest possibility that workers could expect to become bosses, fostering resentment and creating a greater willingness to take action against those that were perceived to be exploiting them.¹²²

The high earnings available to mule-spinners attracted many tradesmen (such as hatters and shoemakers) into the trade from the 1780s to the early nineteenth-century. These entrants influenced how the male mule-spinners adopted the status of artisans, bringing institutions and standards of eighteenth-century craft.¹²³ Unlike domestic textile workers, most artisans had not been used to a family organisation of labour, and both their rituals and apprenticeship regulations encouraged the exclusion of women and male bonding over the issue of their labour.¹²⁴ Because of the necessity of working in a team involving women and/or children, which could include family members, the extreme exclusionary approach of male artisans could not be fully transferred to mule-spinning. However, neither was it fully extinguished. Despite women's traditional dominance of spinning, and a small percentage of the Manchester Spinners' Society in 1795 being female, almost all of the major spinners' strikes of the first four decades of the nineteenth-century included opposition to women's work.¹²⁵ This opposition was encouraged by employers in Salford replacing striking male spinners with women in 1807. This move, '[S]erved to raise a fear of male redundancy that was to persist through the century.'¹²⁶ In 1813 attempts by

¹²² Glen, *Urban Workers in the Early Industrial Revolution*, p.42.

¹²³ Huberman, *Escape From the Market*, p.12; John Mason, 'Cotton Spinning in the Industrial Revolution' in Alan Fowler and Terry Wyke (eds.), *The Barefoot Aristocrats: a History of the Amalgamated Association of Operative Cotton Spinners* (Littleborough, 1987), p.9.

¹²⁴ Clark, *The Struggle for the Breeches*, especially Chapter 2.

¹²⁵ Lazonick, 'Industrial Relations and Technical Change', p.236.

¹²⁶ Mason, 'Mule Spinner Societies and the Early Federations', p.17.

employers to hire female mule-spinners led to mill burning, and in 1824 in Manchester led to a strike.¹²⁷ The prolonged strike of the Manchester mule-spinners in the winter of 1830-31, which resulted in the collapse of the union, was partially concerned with preventing the employment of women on smaller mules.¹²⁸

The local piecemeal exclusion of women by male mule-spinners was extended and formalised at a conference on the Isle of Man in 1829 where women were excluded from all the local mule-spinning unions, and men were banned from training women on this task.¹²⁹ However, the exclusion of women was not simply concerned with gender, the union wished to limit the labour supply as much as possible so as to maximise their remuneration. Following the 1829 conference, it was not only women who could not be trained by members: it was resolved that no spinner should teach a piecer to spin, ‘... except the son, brother, or orphan nephew of spinners, and the poor relations of the proprietors of the mills.’¹³⁰ Whilst the union did not have complete control of the trade at this time, they were already powerful and growing sufficiently in strength to be able to enforce rigid piece-rate lists covering most workers in the industry in the second half of the nineteenth century.¹³¹

The gender egalitarianism of the powerloom weavers’ unions, which from the beginning saw men and women taking industrial action together to defend the same jobs and wages, has attracted much attention from historians of women’s work.¹³² However, even here men tended to dominate

¹²⁷ Walby, *Patriarchy at Work*, p.99.

¹²⁸ Mason, ‘Mule Spinner Societies and the Early Federations’, p.30.

¹²⁹ Walby, *Patriarchy at Work*, p.99.

¹³⁰ Cited in Kirby and Musson, *The Voice of the People*, p.93.

¹³¹ There was considerable regional variation in when these lists were adopted. They were in place in Bolton from 1813, and Manchester from the 1830s, but only came to cover most of Lancashire post-1850. See, Huberman, *Escape from the Market*, pp.133-36.

¹³² For example, see, Clark, *The Struggle for the Breeches*, pp.128-29, 133, 204; Rose, *Limited Livelihoods*, pp.157, 167-68; Walby, *Patriarchy at Work*, p.94.

the union hierarchy.¹³³ Men's willingness to cooperate with women in defence of work standards rather than seek to exclude them can be explained by the early dominance of this trade by females, therefore in contrast to mule-spinning where strength and supervisory advantage had enabled men to already dominate the labour market, any male attempt at exclusion of females would have ended in failure. Whilst the behaviour of the early powerloom weaving unions is instructive for showing how ideology regarding gender can be discarded as a result of economic factors, the unions did not have much effect on women's pay and conditions in the period under study. Although local unions were striking from at least as early as 1818 (in Stockport, when operatives struck over the restoration of a deduction for gas lighting), and the unions mushroomed in the 1830s, and again in the early 1840s, these unions were all unstable and quickly disappeared. 'It was not until Blackburn ... formalised their association in 1854, that the movement amongst Lancashire weavers struck a solid base and the model for all other towns and villages in the county created.'¹³⁴

The wave of Luddism that struck Lancashire in 1812 and the general strike of 1842 (also known as the Plug Plot riots) represented the largest protests to affect the Lancashire cotton industry in the first half of the nineteenth century and drew wide support both geographically and across occupations. Women took an active part in these protests, reflecting the fact that they were seen as defending whole communities and ways of life, rather than narrow, sectional, job-specific protest which tended to be more male dominated. In the Lancashire Luddite uprising the women were extensively involved in rioting and providing support and encouragement for the crowd. However, they do not seem to have been involved in any of the limited planning of the protests.¹³⁵ Women were extensively involved in the Plug Plot disturbances as well, including accounting for

¹³³ Rose, *Limited Livelihoods*, p.168.

¹³⁴ Andrew Bullen, *The Lancashire Weavers Union: a Commemorative History*, (Manchester, 1984), p.5.

¹³⁵ Thomis and Grimmett, *Women in Protest*, p.48.

around one-third of the crowd numbering above 1000 which brought Stalybridge mill to a halt, and having a high degree of involvement in the protests in Manchester (including attacking a factory). Once again, women were uninvolved in the organisational aspects of the protests, playing no part in the meetings that followed, even though these meetings were between spinners, powerloom weavers, self-acting mule workers and card-room hands, and so represented the interests of many female workers.¹³⁶ Women's lack of involvement in organisation or possession of authority has clear parallels with resistance to female supervision in the workplace, further supporting the notion that it was worker preferences, rather than employer ideology, that was instrumental in limiting women's access to occupations which involved them holding authority. More broadly, this exclusion follows a similar pattern to that found in religious movements at this time, where women lost influence as formalised hierarchies were introduced.¹³⁷

The geographical spread of handloom weavers, the ease with which their trade could be learnt, and the relatively low cost to employers of strike action, meant that strikes by these workers tended to be sporadic and largely ineffectual.¹³⁸ These traditional disadvantages for outworkers, were compounded by an increase in labour supply and the downward trend of piece-rates from around the turn of the century.¹³⁹ Attempts at permanent unionisation, unsurprisingly, failed. Women were extensively involved in protests by handloom weavers and their actions in the 1808 campaign by handloom weavers for the Minimum Wage Bill led *The Times* newspaper to declare that, 'The women are, if possible, more turbulent and mischievous than the men. Their

¹³⁶ Thomis and Grimmett, *Women in Protest*, pp.82-83.

¹³⁷ See, Madge Dresser, 'Sisters and Brethren: Power, Propriety and Gender among the Bristol Moravians, 1746-1833', *Social History* 21 (1996), p.305; Deborah Valenze, *Prophetic Sons and Daughters: Female Preaching and Popular Religion in Industrial England* (Guildford, 1985), pp.61, 63, 274-80.

¹³⁸ Bythell, *The Handloom Weavers*, p.39.

¹³⁹ Bythell, *The Handloom Weavers*, pp. 94-100. It should be noted that the downward trend in piece-rates was not uniform, with piece-rates rising in certain years, even as late as the mid-1830s. See, Timmins, *The Last Shift*, p.92.

insolence to soldiers and special constables is intolerable and they seem to be confident of deriving immunity from their sex.’¹⁴⁰

The high degree of female involvement in protests by handloom weavers can be attributed to the desire to protect a source of earnings which could be performed within the home, and so did not conflict with expectations regarding their familial responsibilities. The lack of permanent organisation, and thus an establishment of a union hierarchy, would also have improved their relative status. However, as was the case with powerloom weaving unions in the first half of the nineteenth century, the protests were largely unsuccessful. The sporadic and short-lived nature of these ‘organisations’ may have enhanced women’s relative opportunity to contribute, but also meant that they were far less likely to be successful.

There is a broad consensus that the worst exploitation of workers occurred under small-scale employers. The higher probability and greater regularity with which small firms went bankrupt meant that unions had less influence here.¹⁴¹ Union influence was further negated by the fact that small firms were disproportionately reliant on water power (and, therefore, more likely to be located in the countryside), and had lower levels of fixed capital employed in factories.¹⁴² The lower level of fixed capital would also give these employers less incentive to pay a premium for labour categorised as more highly skilled. All these factors can be expected to have reduced the premium paid to male workers and their ability to exclude women from certain occupations entirely. Thus, although small-scale employers appear to have offered lower pay and worse conditions to their workers on aggregate, it seems likely that gender inequality of employment would have been lower here. Unfortunately, small employers are the hardest to find information

¹⁴⁰ Cited in Hammonds, *The Skilled Labourer*, p.80.

¹⁴¹ See above, p.37.

¹⁴² Gatrell, ‘Labour, Power, and the Size of Firms in Lancashire Cotton in the Second Quarter of the Nineteenth Century’, pp.103, 110.

on; not only are they the least likely to have left records, they are also almost certainly underrepresented in the 1833 and 1834 Reports. However, it is probable that the lack of union influence and the tendency of smaller firms to produce coarser products,¹⁴³ would have made it easier for women to access work here, especially in mule-spinning.

It is well known that the early factory masters targeted female and child labour, because of their cheapness and perceived docility.¹⁴⁴ Pinchbeck cites Peter Gaskell stating that men were more ‘difficult to manage’ and more likely to cause trouble by their combinations, to support her claim that manufacturers continued to be anxious to employ women wherever possible throughout this period.¹⁴⁵ The 1807 strike by male mule-spinners at George Lee’s Salford cotton mill led Lee to replace them with women. Similarly, in 1810 M’Connel and Kennedy started to employ women as mule-spinners in an ultimately failed attempt to reduce wage costs and act, ‘as a sort of check upon the combinations of the men.’¹⁴⁶ This does seem to have been largely the case, suggesting that an ideological climate increasingly hostile to the employment of women, did not significantly affect the economic actions of employers.

Labour Market Competitiveness and Paternalism

Evidence from the mills of Henry Ashworth, a large paternalist employer, who ran two mills with his brother Edmund near Bolton (at Turton and Egerton), shows that he paid adult male labour above the Lancashire average, and women and children below the average, as a means of

¹⁴³ Huberman, *Escape from the Market*, pp.23-24, 52.

¹⁴⁴ Stanley D. Chapman, *The Early Factory Masters: the Transition to the Factory System in the Midlands Textile Industry* (Newton Abbott, 1967), p.157; Lazonick, ‘Industrial Relations and Technical Change’, p.234.

¹⁴⁵ Pinchbeck, *Women Workers and the Industrial Revolution*, p.187. See also, E. P. Thompson, *The Making of the English Working Class*, 2nd ed. (Harmondsworth, 1968), p.274.

¹⁴⁶ Huberman, *Escape from the Market*, pp.28-29; Kirby and Musson, *The Voice of the People*, pp.13-14.

discouraging married women from working.¹⁴⁷ William Cooke-Taylor found that in 1842 at the Turton mill, ‘Daughters from most of the houses, but wives, as far as I could learn, from none, worked in the factory.’ Women were commonly found working in their homes performing winding and repairing work for low pay.¹⁴⁸ Similarly Leon Faucher, in 1844, found that at both of the Ashworths’ mills, as was also the case at Thomas Ashton’s mill at Hyde, married women were not employed in the factories, only being given low-paid winding and repairing work which was performed at home.¹⁴⁹ The picture is clouded slightly by Angus Reach finding that although,

They do as much as they [Henry Ashworth and his brother Edmund] can to discourage the working of married women with young families in the mill ... Not above four women of the class in question labour in Messrs. Ashworth’s Egerton mills.¹⁵⁰

In 1835 more than 400 operatives were employed at Egerton, and there is no reason to believe that this number decreased over the following fourteen years.¹⁵¹ Thus, women with young children accounted for less than one-percent of the Egerton workforce. We are left in no doubt from Faucher and Reach that the Ashworths strove to avoid married women working in the mill.¹⁵² And, Cooke-Taylor describes how workers who rented cottages from Ashworth were strictly required to keep children of different sexes in separate bedrooms.¹⁵³ However, there is scant evidence of other employers taking the approach of the Ashworths and Ashton. Further, it could be argued that for these employers these forms of gender segregation were an economically-motivated strategy designed to attract family labour to his rural mills due to its appeal to working-

¹⁴⁷ The wage data used for this comparison is from 1844, see, Rhodes Boyson, *The Ashworth Cotton Enterprise: the Rise and Fall of a Family Firm* (Oxford, 1970), pp.105-06.

¹⁴⁸ Boyson, *The Ashworth Cotton Enterprise*, p.106; Cooke-Taylor, *Notes of a Tour in the Manufacturing Districts of Lancashire*, p.32.

¹⁴⁹ Faucher, *Manchester in 1844*, p.112.

¹⁵⁰ Reach, *A Cotton-Fibre Halo*, p.117.

¹⁵¹ Boyson, *The Ashworth Cotton Enterprise*, p.47.

¹⁵² Faucher, *Manchester in 1844*, pp.112-13; Reach, *A Cotton-Fibre Halo*, p.117.

¹⁵³ Cooke-Taylor, *Notes of a Tour in the Manufacturing Districts of Lancashire*, p.32.

class families, rather than a willingness to accept a diminution in his profits. Moreover, the labour market faced by rural paternalists such as the Ashworths and Ashton was very different to that faced by most employers.

The product market was highly competitive. Although attempts were made by spinning firms to form cartels to restrict output during times of depression, competitive forces were too strong and attempts at collusion in this way were short lived.¹⁵⁴ The level of competitiveness in the labour market was much more variable than in the product market. Huberman describes how for urban mule-spinners there was a transition from the loose labour market of around 1800 to one in which workers and firms cooperated. There was considerable regional variation in the timing of this change, it occurred in Bolton from around 1810, but did not emerge in Preston until the middle of the nineteenth-century.¹⁵⁵ Although, ‘... the industry by the 1840s was still far from the oligopoly which observers feared’,¹⁵⁶ it is clear that urban labour markets had become much less fluid.

Huberman claims that, ‘both parties ultimately rejected it [the market]’, but this rejection seems to have been primarily driven through the workers.¹⁵⁷ The spinners in Bolton were well-organised from very early on and this is where we see piece-rate lists first being successfully introduced and maintained. Whereas in Preston, which had notoriously weak unions, the transition was slowest. And this was despite the employers here being the earliest to formally coalesce with the explicit objective of defending their interests against those of the workers, with the Preston Masters’ Association being a model for the spread of millowners’ collective associations in the

¹⁵⁴ Huberman, Michael, ‘Industrial Relations and the Industrial Revolution’, p.351.

¹⁵⁵ Huberman, *Escape from the Market*, pp.5-6.

¹⁵⁶ Gatrell, ‘Labour, Power, and the Size of Firms in Lancashire Cotton in the Second Quarter of the Nineteenth-Century’, p.97. N.b. This statement is based on Leonard Horner’s survey in late 1841 of all Lancashire textile firms, which found that large firms were few, and that small to middling firms were predominant.

¹⁵⁷ Huberman, *Escape from the Market*, p.5.

1830s.¹⁵⁸ Since it was male workers who were the most organised and most likely to be involved in formal negotiations with employers, this movement away from individually negotiated terms of labour would have acted to the detriment of women's employment opportunities. This was especially the case in mule-spinning where male unions were particularly strong.

The labour market faced by rural firms was somewhat different to that found in urban areas. It is important to distinguish between large rural paternalist firms, which often provided housing as well as a number of other benefits to workers, and smaller rural mills which offered workers little beyond a wage. Historians have been attracted to rural paternalists by the large archives they have often left, and the level of contemporary description that was based on visits to the mills of employers such as the Ashworths, the Gregs, and Thomas Ashton.¹⁵⁹ Unfortunately, evidence relating to smaller rural mills remains scarce, however we know that they tended to produce coarser yarn and fabric, and were less subject to the influence of trade unions than urban manufacturers.¹⁶⁰ As I have outlined above, all of these factors can be expected to have promoted women's access to employment within a given factory, but can also be expected to have led to working conditions for the average worker being worse than was the case at other mills.

Although the Ashworths and Thomas Ashton chose policies to discourage women, especially mothers, from working in their mills, there is not much evidence for other paternalists having the same goal. Some aspects of paternalism were used at certain urban mills during the Industrial Revolution period; for example M'Connel and Kennedy paid for medical treatment of their

¹⁵⁸ Anthony Howe, 'The Business Community', in Mary B. Rose (ed.), *The Lancashire Cotton Industry: a History since 1700* (Preston, 1996), p.108.

¹⁵⁹ For contemporary literature, see, Cooke-Taylor, *Notes of a Tour in the Manufacturing Districts of Lancashire*; Gaskell, Peter, *Artisans and Machinery*; Reach, *A Cotton-Fibre Halo*; Ure, Andrew, *The Philosophy of Manufactures*. For historians, see, Boyson, *The Ashworth Cotton Enterprise*; Fitton and Wadsworth, *The Strutts and the Arkwrights*; Rose, *The Gregs of Quarry Bank Mill*; *The Rise and Decline of a Family Firm* (Cambridge, 1986).

¹⁶⁰ Michael Huberman, 'How did Labour Markets Work in Lancashire? More Evidence on Prices and Quantities in Cotton Spinning, 1822-52', *Explorations in Economic History*, 28 (1991), 102n.

employees and contributed to the upkeep of a Sunday school.¹⁶¹ Also, paternalism probably became a more common strategy amongst mill owners in medium-size textile towns such as Ashton, Blackburn, Bolton and Stalybridge in the second half of the nineteenth century.¹⁶² However, it was at isolated rural mills where paternalism could operate most strongly, with the provision of chapels, schools, shops, housing, allotments and various recreational activities, all under the close supervision of the owners.¹⁶³

Certain aspects of life and work at paternalist mills may have improved the ability of women at all stages of the life-cycle to be able to work. The close community ties engendered at these factory communities would have increased the availability of childcare by non-family members, making it easier for mothers to work. Trade unions, which frequently acted to limit women's employment or occupational choice, typically had little or no influence at rural paternalist mills.¹⁶⁴ Workers at paternalist mills often had long attachments; some families remained at Quarry Bank Mill for generation after generation.¹⁶⁵ Labour turnover was considerably higher at urban mills.¹⁶⁶ Long attachments, combined with the close relationship paternalist mill owners typically had with their workers, and the families that lived in the housing provided for them, would have meant that women here could have built up any level of trust with the employer

¹⁶¹ Lee, *A Cotton Enterprise*, p.123.

¹⁶² Joyce, *Work, Society and Politics*, especially pp.82, 94, 125, 148. Koditschek has criticised Joyce's attempts to apply his findings from these towns regarding an increase in paternalism in factories and mill towns from around 1850 to larger industrial cities such as Bradford, where capitalist wealth and power was much more widely diffused. Indeed, Koditschek argues that Joyce considerably overstates the close, paternalistic, relationship between workers and employers even in medium-sized towns. See, Koditschek, *Class Formation and Urban-Industrial Society*, pp.427-30.

¹⁶³ Boyson, *The Ashworth Cotton Enterprise*, p.115-40; Collier, *The Family Economy of the Working Classes in the Cotton Industry*, p.39, 44; Fitton and Wadsworth, *The Strutts and the Arkwrights*, pp.98-102, 253-56; Brian R. Law, *Fieldens of Todmorden: a Nineteenth-Century Business Dynasty* (Littleborough, 1995), p.30; Rose, *The Gregs of Quarry Bank Mill*, pp.103-04.

¹⁶⁴ Boyson, *The Ashworth Cotton Enterprise*, p.102; Rose, *The Gregs of Quarry Bank Mill*, pp.105, 117.

¹⁶⁵ Boyson, *The Ashworth Cotton Enterprise*, p.103; Collier, *The Family Economy of the Working Classes in the Cotton Industry*, p.44.

¹⁶⁶ Huberman, *Escape from the Market*, p.31.

deemed necessary to become an overseer.¹⁶⁷ However, even at rural paternalist cotton mills there is no evidence for women having been employed in such a manner, despite the fact that many of the rooms were dominated by female and child labour.

Conclusion

The labour of both adult and child females was extremely important to cotton production in both the domestic and factory setting. Women's remuneration was significantly lower than men's, but this cannot be attributed to direct discrimination. Strength differentials affected earning power, especially in mule-spinning prior to the spread of the self-actor. However, the difference in strength between men and women is insufficient to fully account for the occupational segregation that was widespread throughout factory production. Women's apparently total exclusion from overseeing is particularly striking, and demonstrates the importance of gender identity for the manner in which labour markets of this period were shaped by gender identity. Some trade unions were able to harness, and perpetuate, gender ideology to exclude women and trade union influence was increasing over this period. It was also the case that support from men and the wider community for defending women's work decreased as it shifted from being carried out in the home to being performed at the factory. However, this was not a period of binary opposition of male and female interests, and many women were willing to accept restrictions on, or exclusions of, their labour if this was perceived to be in the interests of the family economy. The shift to factory production saw women's access to the best paid jobs in cotton decline, in a climate where women's work came to be seen as less desirable.

¹⁶⁷ For the close relationship between employer and workers and their families at rural paternalist mills, see, Huberman, *Escape from the Market*, p.60; Reach, *A Cotton-Fibre Halo*, p.117; Rose, *The Greys of Quarry Bank Mill*, pp.102, 104.

Chapter 4: Wool

Introduction

By far England's oldest textile raw material, wool lost its primacy to the emergent cotton industry by the end of the eighteenth century.¹ There were a few 'so-called Tudor wool factories', which gathered a large number of weavers together with women and children to card, spin, and carry out processes preparatory to weaving (e.g. William Stumpe at Malmesbury, 1543-52),² but these were very rare and the domestic system remained the dominant form of the organisation of production until well into the nineteenth century. Technological innovation and dispersion, the shift to the factory, and output growth were slower in woollen and worsted production than in cotton. As a result these industries have received considerably less historical, as well as contemporary, attention than their more dynamic offshoot. However, wool textile production was by no means static, and the strong growth of the woollen industry in the eighteenth-century was particularly concentrated in the West Riding of Yorkshire.³

At the start of the eighteenth century the West of England (principally Gloucestershire, Wiltshire, Somerset and Devon) had dominated woollen cloth production, but by the end of the century this region was already in rapid decline relative to the West Riding, and not long after the Napoleonic Wars output began falling in absolute terms.⁴ The worsted industry, previously centred in Norfolk and the surrounding area, showed even more spectacular growth than woollens in the West Riding. Having been relatively unimportant there until the late seventeenth-century, it then expanded rapidly, particularly with the expansion of 'stuff' manufacture from the middle of

¹ K. G. Ponting, *A History of the West of England Cloth Industry* (London, 1957), p.82.

² François Crouzet, *The First Industrialists: the Problem of Origins* (Cambridge, 1985), p.22.

³ N.b. throughout this chapter the 'West Riding' is taken to include some of the border areas of Lancashire where wool textile production was also carried out.

⁴ Adrian Randall, 'Work, Culture and Resistance to Machinery in the West of England Woollen Industry' in Pat Hudson (ed.), *Regions and Industries; a Perspective on the Industrial Revolution in Britain* (Cambridge, 1989), p.175.

the eighteenth-century onwards.⁵ Indeed, by 1850 the West Riding had become the undisputed world leader in most branches of wool textile production.⁶ Unlike the worsted trade around Norwich, the West Riding trade was highly centralised and dominated by a small number of wealthy entrepreneurs typically employing proletarianised domestic workers in specific processes. This concentration increased as the eighteenth century progressed.⁷

The West of England woollen trade was organised along similar lines to the worsted trade in the West Riding, whereas the West Riding woollen trade was still dominated by small clothiers, who owned the materials they worked on and performed most processes from buying the raw wool to selling the finished cloth with just the assistance of their family and perhaps a few journeymen.⁸ Even by the start of the nineteenth century, it remained common for West Riding clothiers to own small plots of land which they would farm, in contrast to the wage-dependent workers that characterised West Riding worsted and, particularly, West of England woollens.⁹ Surviving evidence from the West Riding in the eighteenth century regarding the cost of domestic machinery suggests that it was within the reach of a worker wishing to start-up, or move up in the trade, and there was considerable social mobility in the woollen branch of the trade.¹⁰

Jenkins and Ponting divide the production of wool textiles into five main processes, and despite significant technological change from around 1770 onwards, these remained broadly constant.¹¹ The preparatory processes started with the wool being taken from the fleece and

⁵ Hudson, *The Genesis of Industrial Capital*, p.27.

⁶ S. A. Caunce, 'Complexity, Community Structure and Competitive Advantage within the Yorkshire Woollen Industry, c.1700-1850', *Business History*, 39 (1997), p.26.

⁷ Caunce, 'Complexity, Community Structure and Competitive Advantage within the Yorkshire Woollen Industry', pp.19, 27; Hudson, *The Genesis of Industrial Capital*, pp.37-40; Jenkins and Ponting, *The British Wool Textile Industry*, pp.8-9.

⁸ B.P.P. 1806, III, p.1040; Hudson, *The Genesis of Industrial Capital*, pp.13, 26-27, 30; Jenkins and Ponting, *The British Wool Textile Industry*, p.8; Pinchbeck, *Women Workers and the Industrial Revolution*, pp.119-20.

⁹ B.P.P. 1806, III, pp.602, 934; Hudson, *The Genesis of Industrial Capital*, p.19.

¹⁰ B.P.P. 1806, III, pp.1040-41; Hudson, *The Genesis of Industrial Capital*, p.30.

¹¹ Jenkins and Ponting, *The British Wool Textile Industry*, pp.18-19, 23-24.

sorted. Sorting was a skilled process and never became mechanised.¹² Then the wool had to be scoured in water to remove fat and impurities. In some cases, the wool would be dyed straight after scouring. The wool then had to be dried before being picked to get rid of extraneous materials. The preparatory processes were completed by the blending of different types of wool. The next phase was the manufacture of the wool into yarn, which differed significantly in woollen and worsted production. Woollens were made from short wool and these fibres needed to be carded prior to spinning, as was the case in cotton, whereas the long fibres used for worsted needed to be combed. The combed wool was then ready to be spun into yarn. In woollen production the fibres needed to be scribbled prior to carding, and slubbed afterwards.¹³ The woollen or worsted yarn was then ready to be woven, where there was no great technical difference between woollen and worsted.¹⁴ After weaving the cloth had to be finished. For woollen finishing first came cleaning and scouring, then fulling, then gigging, then drying (also known as ‘tentering’) and shearing. At some point in the finishing process burling was performed to get rid of any remaining small pieces of foreign matter. For worsted the finishing processes were simpler: the cloth was scoured, tentered, then sheared. The last aspect of the finishing processes for both fibres was pressing, after which came the final process of dyeing. Of course, this description of the processes is somewhat of a simplification; in 1875, following a visit to Benjamin Gott’s factory, Edward Baines broke down woollen production into thirty-four separate processes.¹⁵ Nevertheless, for the purposes of this chapter this outline is sufficient and the various

¹² Baines reports that no less than ten different qualities of wool could be found in a single fleece. See, Edward Baines, *Baines’ Account of the Woollen Manufacture of England* (Newton Abbot, 1970), p.71.

¹³ Baines, *Baines’ Account of the Woollen Manufacture of England*, p.72; Hudson, *The Genesis of Industrial Capital*, pp.33-35.

¹⁴ However, as Hudson highlights the short fibres used for woollen production made the yarn weaker, and so greater technological sophistication was required for the adoption of the powerloom in woollens than worsted. See, Hudson, *The Genesis of Industrial Capital*, p.29.

¹⁵ Baines, *Baines’ Account of the Woollen Manufacture of England*, pp.71-73.

technologies and processes used according to industry, geography and time are discussed further where appropriate.

Earnings and Employment

As in the cotton industry, prior to mechanisation picking, carding and spinning were dominated by females, with adult males rarely performing these tasks.¹⁶ In worsted, unlike woollens and cotton (where men accounted for the majority of spinners on the dominant technology of the mule), spinning continued to be dominated by women working on water-frames after the shift to the factory. Like cotton, the early powerloom workforce in wool textiles was female dominated, and women had also worked as handloom weavers. Weaving was traditionally perceived as a 'male' job and the employment of women weavers had provoked ire in the fifteenth- and sixteenth-centuries. Women weavers were attacked in Essex in the 1730s and were not allowed to become serge-weavers in Cullompton in Devon from around 1725 until 1825.¹⁷ However, as a rule entry to the occupation was open to women and earnings here were relatively good for females.

Visiting Leeds in 1768, Young found that some women could earn as much on the handloom as men. Good hands could earn as much as 10s6d in a given week, but given the irregular availability of work that was the handloom weaver's lot, over the course of the year they would average 8s per week.¹⁸ In 1771 he found that in Norwich, 'The earnings of the manufacturers [i.e. the handloom weavers] are various, but in general high. Men, on average do not exceed five

¹⁶ Daniel Defoe, *A Tour through the Whole Island of Great Britain*, Pat Rogers (ed.), (London, 1971), p.493; E. Lipson, *The History of the Woollen and Worsted Industries* (London, 1921), p.6; Pinchbeck, *Women Workers and the Industrial Revolution*, p.123.

¹⁷ Sheila Lewenhak, *Women and Trade Unions* (London, 1977), p.26; Lipson, *The History of the Woollen and Worsted Industries*, p.57; Sharpe, *Adapting to Capitalism*, p.33.

¹⁸ Young, *A Six Months Tour through the North of England*, p.137. Leeds almost exclusively produced woollen goods at this time, therefore there should be little interference on these figures from worsted manufacture.

shillings a week; but then many women earn as much, and boys of fifteen or sixteen likewise the same.' This contrasts with the 2s6d-3s paid weekly to the women working as spinners, and the 2s paid to the doublers of yarn who were also women.¹⁹ Female handloom weavers were particularly prominent in West Riding worsted. Nevertheless, in contrast to the fourteenth and fifteenth centuries, when women were employed in every process, enrolled as apprentices and admitted to guilds, by the eighteenth century they were absent from certain occupations. This was particularly so in the West of England. Wool-sorting here had become almost entirely an all-male trade, as had all but the most primitive forms of dyeing and pressing.²⁰ Deirdre Busfield has noted how the disappearance of women woolsorters at some point between the sixteenth and late eighteenth centuries coincided with the increasing organisation of the wool trade and the move of this trade away from the home to workshop production.²¹ Scribbling had become an all-male occupation, as had shearing (also known as cloth-dressing) and gigging.²² Women were also rarely, if ever, employed as wool-combers.²³ Unsurprisingly, these all-male jobs were well paid relative to those elsewhere in the wool textile industries. In West Riding woollens the small master clothiers performed most production processes themselves, with the assistance of family members and journeymen, and the gender division of tasks was less absolute.

¹⁹ Young, *The Farmer's Tour through the East of England*, p.75.

²⁰ Pinchbeck, *Women Workers and the Industrial Revolution*, pp.121-22, 124.

²¹ Deirdre Busfield, 'Skill and the Sexual Division of Labour in the West Riding Textile Industry, 1850-1914' in J. A. Jowitt and A. J. McIvor (eds.), *Employers and Labour in the English Textile Industries, 1850-1939* (London, 1988), p.155.

²² Adrian Randall, *Before the Luddites: Custom, Community and Machinery in the English Woollen Industry, 1776-1809* (Cambridge, 1991), pp.16, 62-64.

²³ It is typically claimed or assumed that this was an all-male occupation. However, see below (p.138) for possible evidence that there may not have been a total absence of women in this trade. For claims or assumptions that wool-combing was an all-male occupation in the eighteenth- and early nineteenth-centuries, see, Koditschek, *Class Formation and Urban-Industrial Society*, p.359; Lipson, *The History of the Woollen and Worsted Industries*, pp.66-67; Pinchbeck, *Women Workers and the Industrial Revolution*, p.123.

Benjamin Gott's firm was by far the largest in the West Riding woollen industry in the first half of the nineteenth century.²⁴ In 1830 at Bean Ing, the largest of his factories and employing at least 1100 workers, the average weekly wage for men was 21.08s and 7.31s for women, giving an adult F:M wage ratio of only 0.37.²⁵ As can be seen from Table 4.1, much of this can be attributed to women's exclusion from the best paid occupations:

*Table 4.1: Average Weekly Wages by Occupation at Bean Ing Mill (1830)*²⁶

Room	Occupation	N	Age and gender	Avg. Wages
wool chamber	overlooker	1	M	38.5
wool chamber	overlooker	1	M	34
wool chamber	labourer	1	M	15
wool chamber	wool sorters	16	M	27.208
wool chamber	menders	4	W	7
wool chamber	boy	1	B	12
wool chamber	boy	1	B	8
slubbing chamber	overlooker	1	M	18
slubbing chamber	overlooker	1	M	31.5
slubbing chamber	slubbers	6	M	26.979
slubbing chamber	slubbers	1	M	30
slubbing chamber	moters	36	W	5.708
slubbing chamber	willyer	1	CH	12

²⁴ Heaton, 'Benjamin Gott and the Industrial Revolution in Yorkshire', p.56.

²⁵ Extracted from *Benjamin Gott & Son Papers*, Volume 203.

²⁶ *Benjamin Gott & Son Papers*, Volume 203. N.b. Although the age and gender column in the original record only ever uses the descriptors 'men', 'women' or 'children', when the occupational descriptor includes (or is exclusively) 'boy' I have assumed that only male children were employed in this occupation. It is not clear in the original record why for some occupations more than one average is given even when only one gender is employed (e.g. those for 'boy', 'boys', 'willyer', 'mule spinners', 'drawers', 'overlooker') although it seems probable that separate averages were given for workers operating different sizes or types of machinery, and for those with a different level of responsibility/authority (i.e. the higher averages for a given occupation are for those workers operating more productive/larger machinery, or for those with more responsibility/authority). I have followed the original document for all descriptors of the 'room' and 'occupation', hence them not being fully grammatically consistent. Confidence that the gender division of occupations in the mill was as strict as the original document describes is given by both men and women being listed separately as 'warpers'. Also, a document still exists which calculated the average weekly wages of all the weavers employed at 'Park Mill' (an alternative name for Bean Ing Mill) for 1830, that gives the first names of the 194 weavers, all of whom were male. See, *Benjamin Gott & Son Papers*, Volume 204.

slubbing chamber	willyer	1	CH	7
slubbing chamber	cleaners	2	CH	7
slubbing chamber	carder fillers	7	CH	6
slubbing chamber	scribblers	7	CH	5
slubbing chamber	piecers	29	CH	3
spinning chamber	overlooker	1	M	24
spinning chamber	mule spinners	14	M	31.833
spinning chamber	mule spinners	1	M	35
spinning chamber	jenny spinners	13	M	15.542
spinning chamber	warpers	6	M	20.125
spinning chamber	winders & sweepers	8	W	6
spinning chamber	warpers	6	W	20.125
spinning chamber	mule piecers	35	CH	5
weaving shops	overlookers	4	M	30
weaving shops	weavers	238	M	16.125
burling chambers	overlooker	1	M	24
burling chambers	burlers	114	W	5.125
burling chambers	numberers	3	W	8
burling chambers	brushers	2	W	10
burling chambers	cook	1	W	6.75
millers	sourers & dryers	7	M	16
millers	overlooker	1	M	30
millers	oldman	1	M	10
millers	millers & stockers	8	M	21.958
dressing shops	overlooker	1	M	42
dressing shops	overlooker	1	M	34
dressing shops	overlooker	4	M	28
dressing shops	overlooker	1	M	26
dressing shops	overlooker	1	M	24
dressing shops	giggers & shearers	182	M	24.021
dressing shops	handle setters	7	M	24.333
dressing shops	frizer	1	M	18
dressing shops	cloth longseers	8	M	36.167
dressing shops	press setters	8	M	36.625
dressing shops	stover	1	M	23
dressing shops	t thornton pensioner	1	M	20
dressing shops	burlers	43	W	6.833
dressing shops	letterers & burlers	20	W	9.917
dressing shops	weading drawers	4	W	8.5
dressing shops	boys	5	B	15
dressing shops	boys	3	B	13.75

dressing shops	boys	7	B	11.417
dressing shops	boys	11	B	10.292
dressing shops	boys	9	B	9.125
dressing shops	boys	15	B	8
dressing shops	boys	17	B	6.875
dressing shops	boys	15	B	5.708
dressing shops	boys	13	B	4.542
dressing shops	boys	6	B	4
dressing shops	boys	5	B	3.417
dressing shops	boys	5	B	2.833
dressing shops	boys carpers	14	B	3
dressing shops	press boy	1	B	7
dressing shops	press boy	1	B	5
dressing shops	press boy	1	B	4
drawers	overlooker	1	M	25
drawers	drawers	30	W	13
drawers	drawers	4	W	11.917
drawers	drawers	2	W	10.833
drawers	drawers	2	W	9.75
drawers	drawers	2	W	5.417
mechanics	overlooker	1	M	60
mechanics	mechanics	16	M	26.729
mechanics	gas man	1	M	20
mechanics	gas man	1	M	16
mechanics	labourers	4	M	16
mechanics	engine men	3	M	36
mechanics	watchmen	2	M	21
mechanics	carters	5	M	16
mechanics	porter	1	M	20
mechanics	old joiner pensioner	1	M	12
dyehouse	overlookers	4	M	32
dyehouse	blue dyers	9	M	18
dyehouse	pattern dyers	9	M	16
dyehouse	black dyers	5	M	16
dyehouse	wool dyers	4	M	16
dyehouse	wood grinder	1	M	21

Women were not employed at all in the ‘weaving shops’ and ‘dyehouse’, nor were they employed as ‘millers’ and ‘mechanics’. Even in the rooms in which women were employed there was a

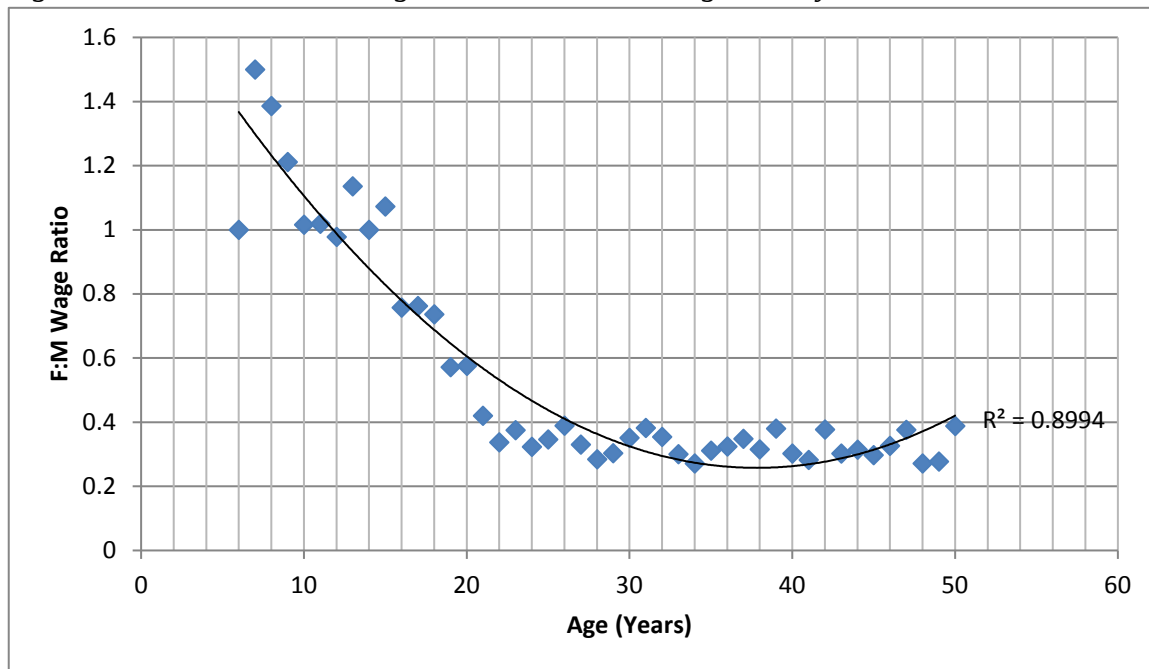
highly rigid division of adult occupations by gender, with ‘warpers’ being the only occupation which employed both men and women. Only men were employed as overlookers, even where all the subordinate workers were women (i.e. ‘drawers’ and those employed in the ‘burling chamber’). This is particularly striking in the burling chambers, where one adult male was employed to supervise the work of 120 women, and was paid 2.40 times as much as the average received by the highest-paid women (‘brushers’) employed in that room of the factory (and 4.68 times the average received by the 114 women employed in that room as burlers). Out of thirty-six distinct occupational titles for adult workers across the firm the only one which was used to describe both men’s and women’s work was ‘warpers’.²⁷ The importance of the gendered division of occupations for limiting women’s earning capability can also be seen in the fact that the average wage of women employed as warpers (20s 1½d, which was the same as the average for men employed in this occupation) was dramatically higher than the next highest average received by women at the firm (13s for most of the ‘drawers’). This strongly suggests that had women been employed in other occupations alongside males their average wages would have been higher.

In the ‘wool chamber’ a man working as a ‘labourer’, which can be assumed to have been unskilled work, earned more than twice the average received by the ‘menders’, the only women employed in this room and whose occupation would have required some skill and learning. The average wage for the ‘wool-sorters’ (the only occupation in this room employing adult males aside from ‘labourer’ and ‘overseer’) was almost four times that of the menders. As can be seen in Table 4.1, this wage gap was by no means unique, with a dramatic difference between the lowest average received by men and the highest average received by women in all of the rooms.

²⁷ When calculating this figure any occupational descriptor that is the same for more than one room (e.g. ‘overlooker(s)’) has been counted as a single entry. ‘Black dyers’ and ‘blue dyers’ have been counted as a single entry. ‘Old joiner pensioner’, ‘old man’, and ‘t thornton pensioner’ have been excluded since it does not seem likely that they were still working, even though they still received an income from Gott.

The adult F:M wage ratio of 0.37 for Gott's workers in 1830 corresponds closely to that given for West Riding factory wool textile production in the 1834 Report, as can be seen in Figure 4.1. Reach's visits to the shoddy mills of Dewsbury and Batley in 1849, which produced much lower quality woollens than at Gott's firm, also reveal a high gender wage gap. The operatives in the sorting and picking area of Messrs. Blakely's mill in Dewsbury were all women aged 18 and above, and received only 6s per week despite the oppressive and squalid conditions of their workplace. The wages of the women he observed working as rag grinders in two Batley mills, again working in filthy conditions, did not exceed 8s per week. Whereas, the men in these mills received at least 18s, with some receiving as much as 22s.²⁸

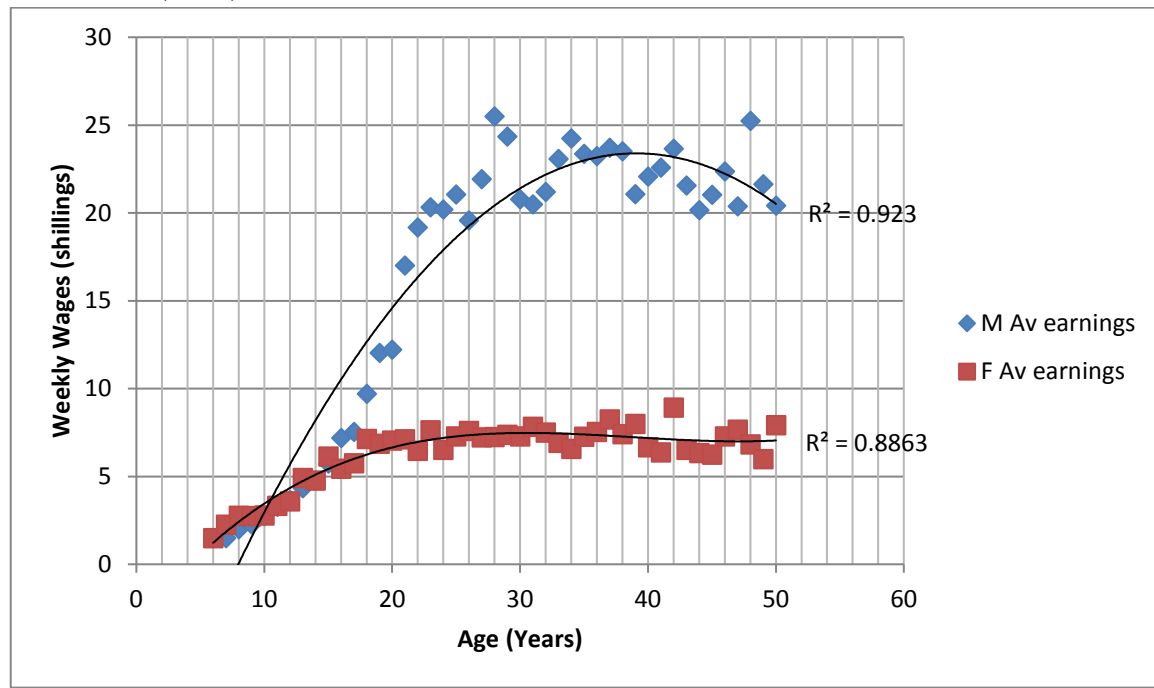
Figure 4.1: Female:Male Wage Ratio in West Riding Factory Wool Textile Production (1833)



Source: See Appendix A2.

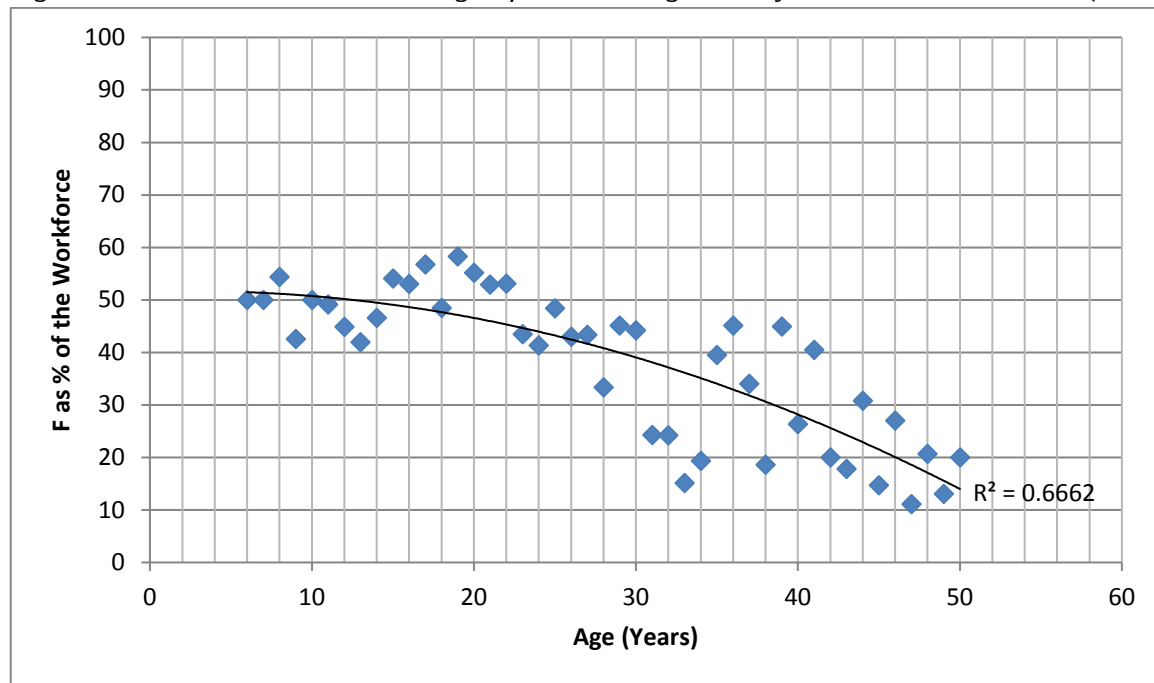
²⁸ Reach, *Fabrics, Filth and Fairy Tents*, pp.18, 21.

Figure 4.2: Male and Female Average Weekly Wages in West Riding Factory Wool Textile Production (1833)



Source: See Appendix A2.

Figure 4.3: Females As a Percentage of West Riding Factory Wool Textile Workers (1833)

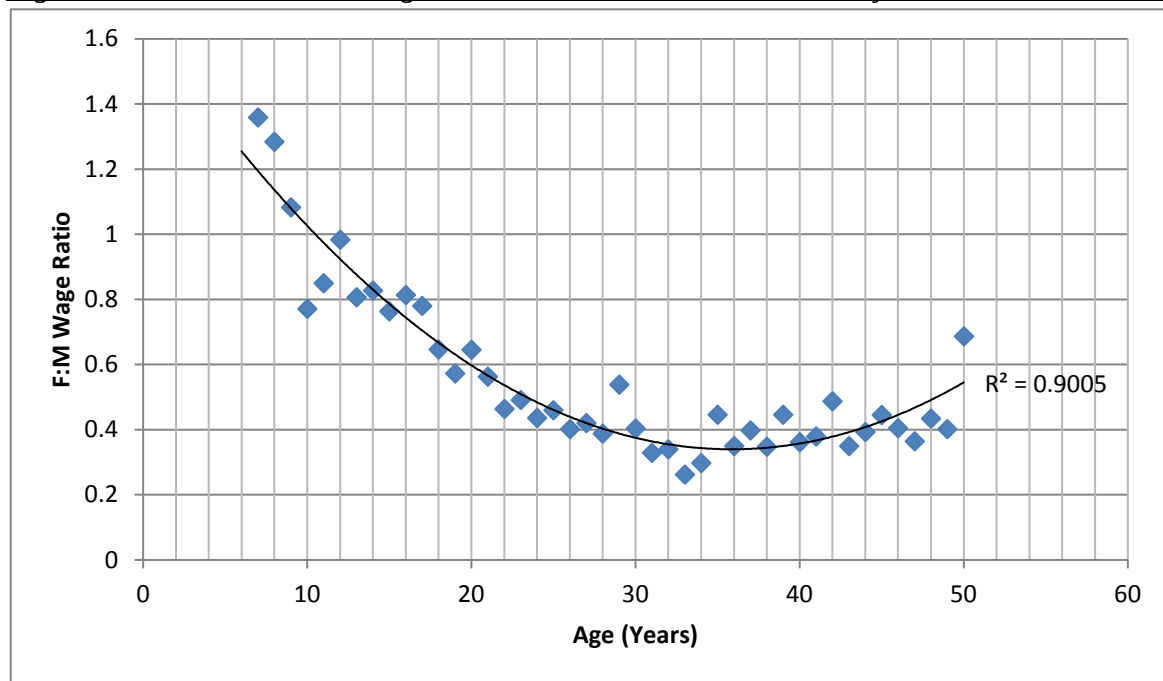


Source: See Appendix A2.

Although the relationship between male and female wages in West Riding factory wool textile production is broadly similar to that which was found in Lancashire cotton factories, it differed in several important aspects. The F:M wage ratio was lower for adult women in the West Riding than in Lancashire. Figure 4.2 shows that this was because women in the West Riding were being paid less than their Lancashire counterparts, rather than men being paid more. It is also notable that male wages decline less from their peak than in Lancashire cotton and start declining at a slightly later age (38 rather than 36), suggesting that strength was less important for male wages here. Therefore, biological factors would seem to explain even less of the gender pay gap than for Lancashire in a region where this gap was even larger. Female wages in the West Riding do not show the sustained increase throughout the 20s that we see in Lancashire, indicating that there was less opportunity for women to acquire valued skills. As in Lancashire cotton, 16 marked the age at which male wages significantly broke away from those of females, with the F:M ratio falling decisively below 1. The F:M wage ratio then plunges dramatically, until stabilising from around the age of 22.

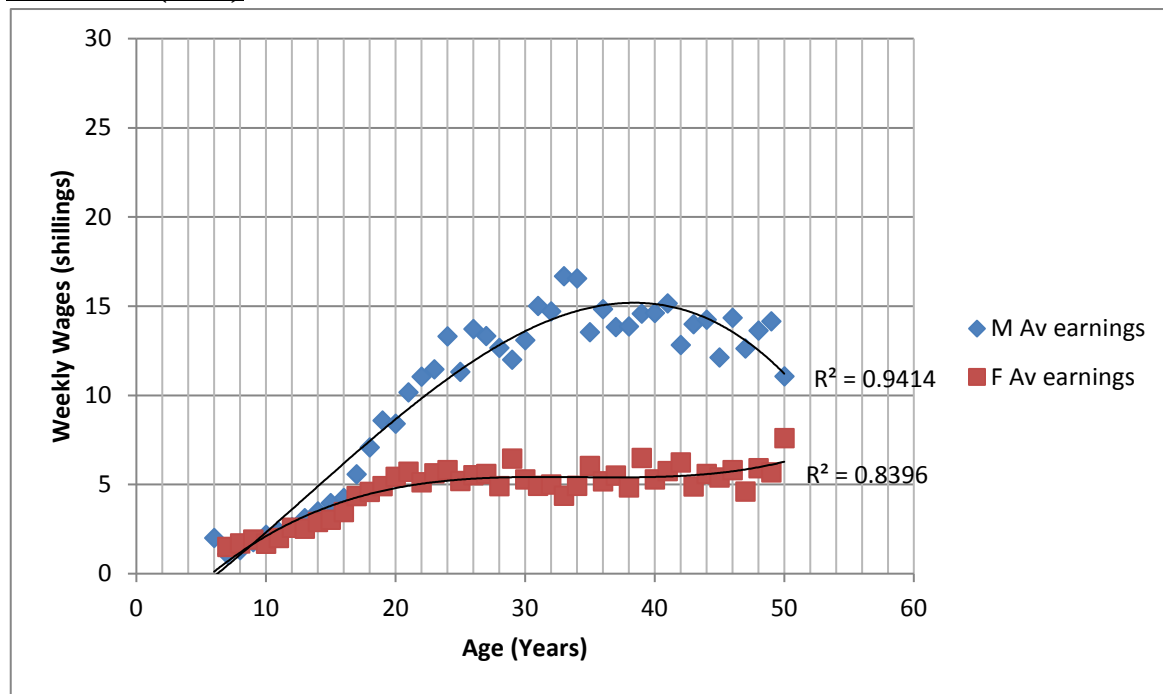
As well as female wages in West Riding factory wool textiles being lower both relatively and in absolute terms than in Lancashire factory cotton, females accounted for a smaller proportion of the workforce. In the West Riding the numbers of males and females employed declined sharply from the age of 16 until the mid-20s, whereas in Lancashire this was only the case for males. Thus, the spike in females as a percentage of the workforce we see in Lancashire (see, Figure 3.1) is nowhere near so apparent in the West Riding, and women here only account for 40.30% of the adult labour force compared with 50.67% in Lancashire. The earlier withdrawal of females in West Riding wool textiles suggests that family decisions regarding the allocation of labour were highly sensitive to the earnings available to individual family members.

Figure 4.4: Female:Male Wage Ratio in Gloucestershire Factory Woollen Production (1833)



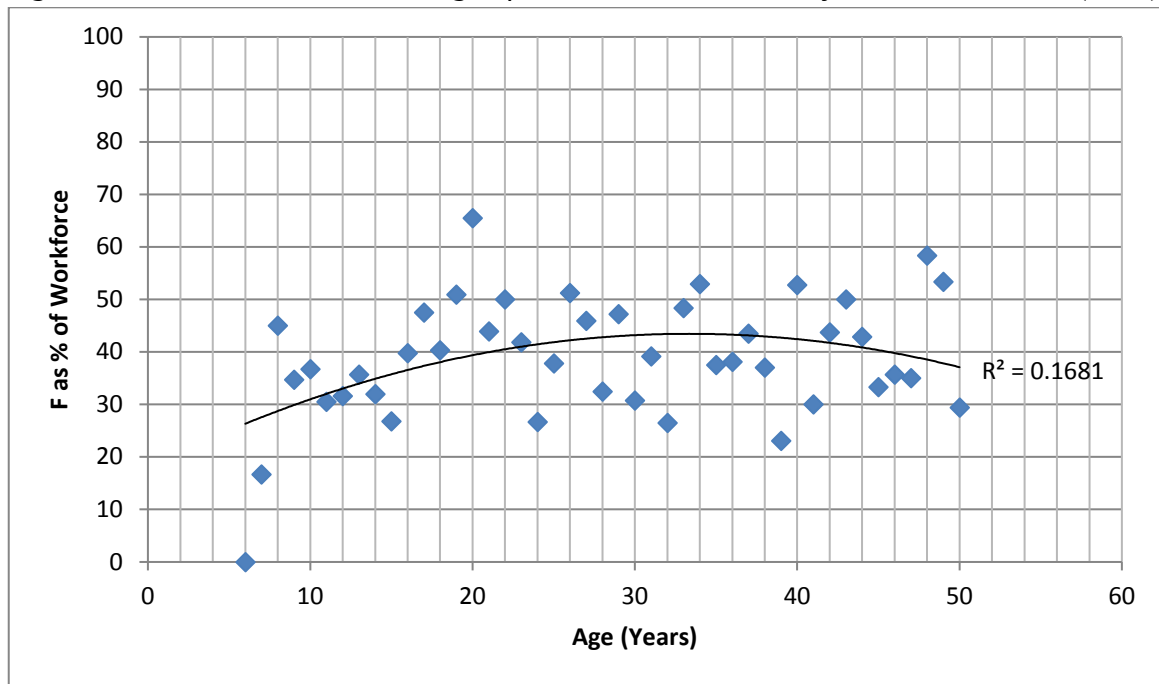
Source: See Appendix A3.

Figure 4.5: Male and Female Average Weekly Wages in Gloucestershire Factory Woollen Production (1833)



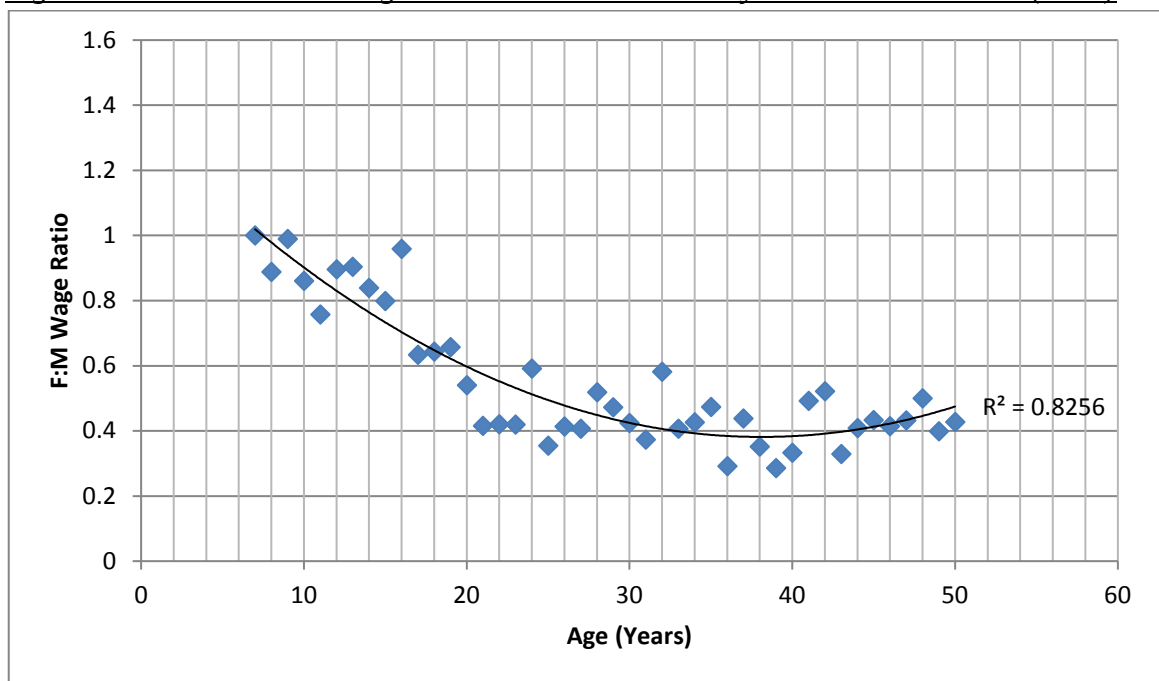
Source: See Appendix A3.

Figure 4.6: Females As a Percentage of Gloucestershire Factory Woollen Workers (1833)



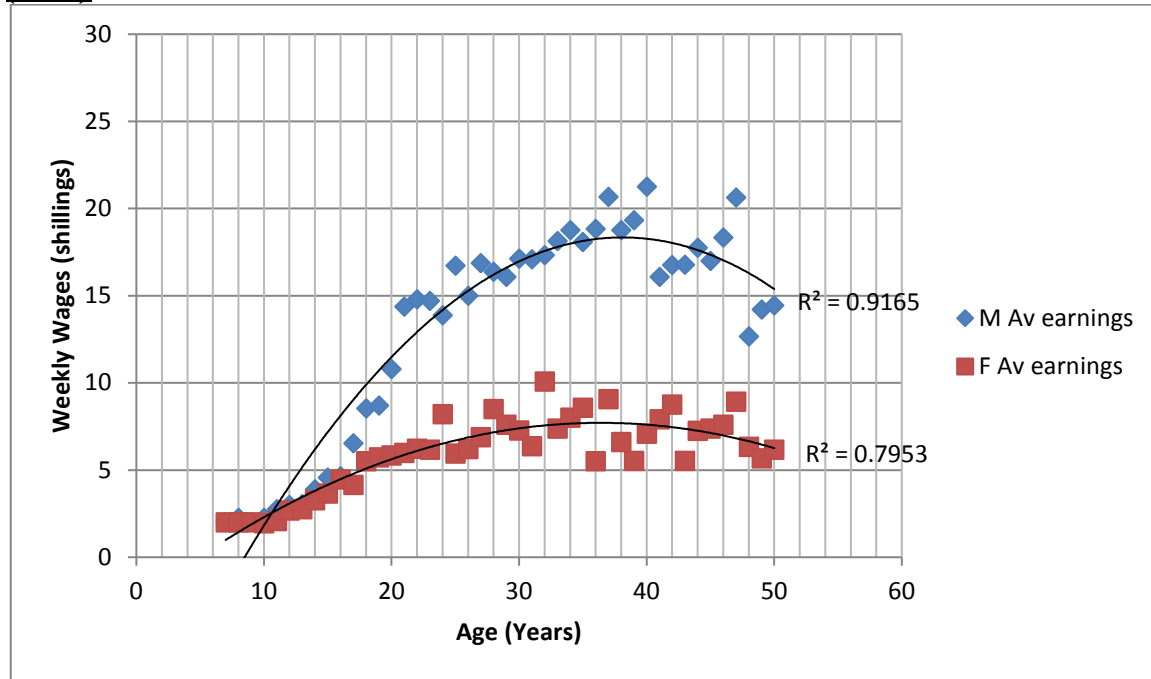
Source: See Appendix A3.

Figure 4.7: Female:Male Wage Ratio in Somerset Factory Woollen Production (1833)



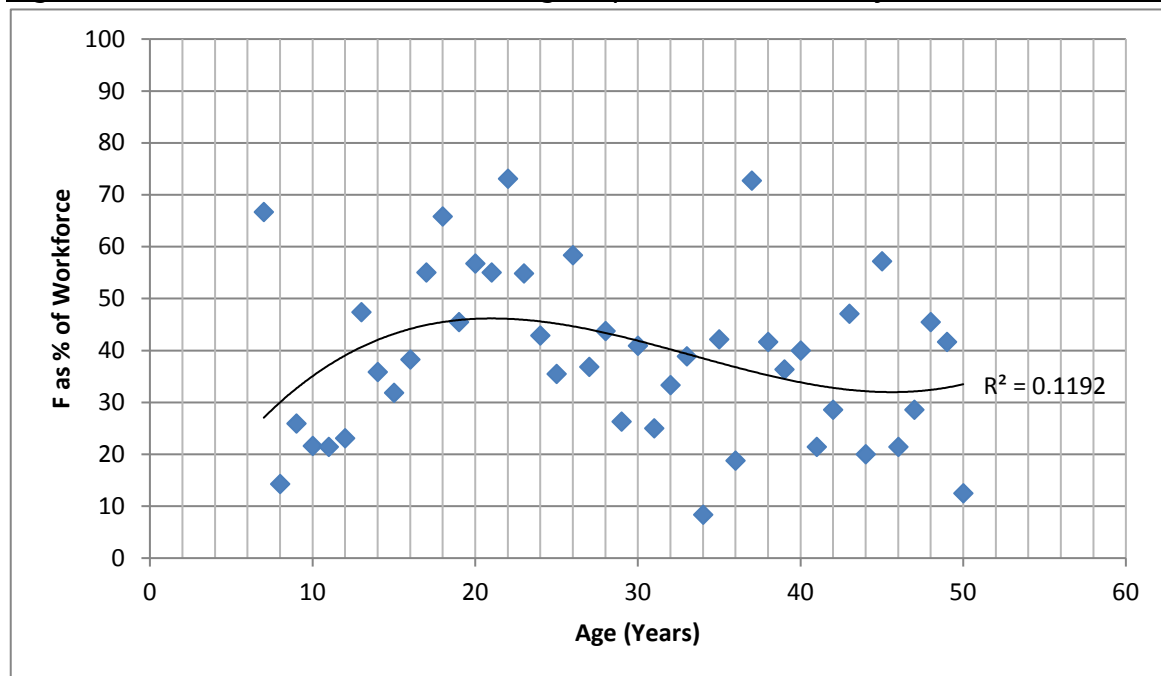
Source: See Appendix A4.

Figure 4.8: Male and Female Average Weekly Wages in Somerset Factory Woollen Production (1833)



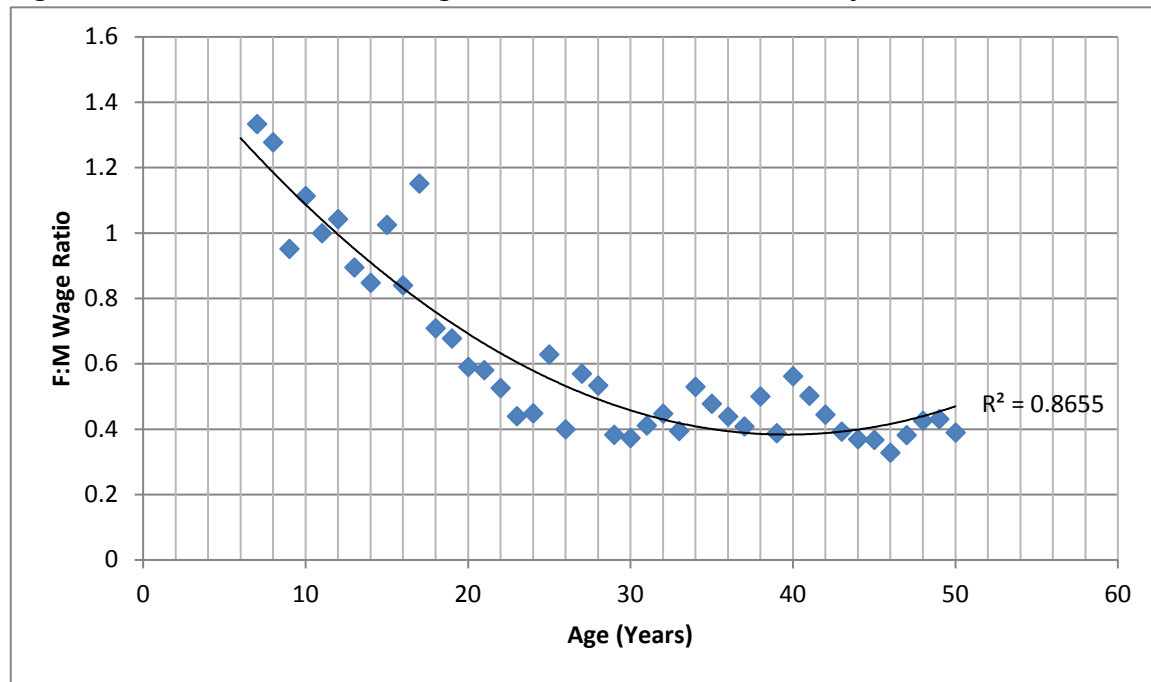
Source: See Appendix A4.

Figure 4.9: Females As a Percentage of Somerset Factory Woollen Workers (1833)



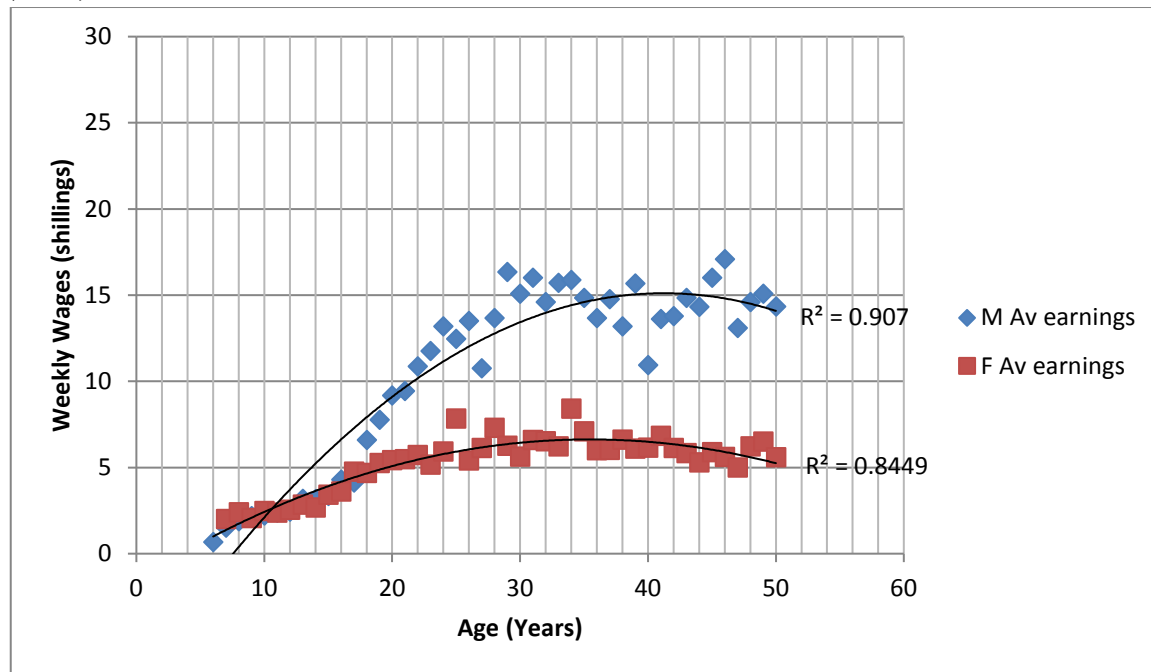
Source: See Appendix A4.

Figure 4.10: Female:Male Wage Ratio in Wiltshire Factory Woollen Production (1833)



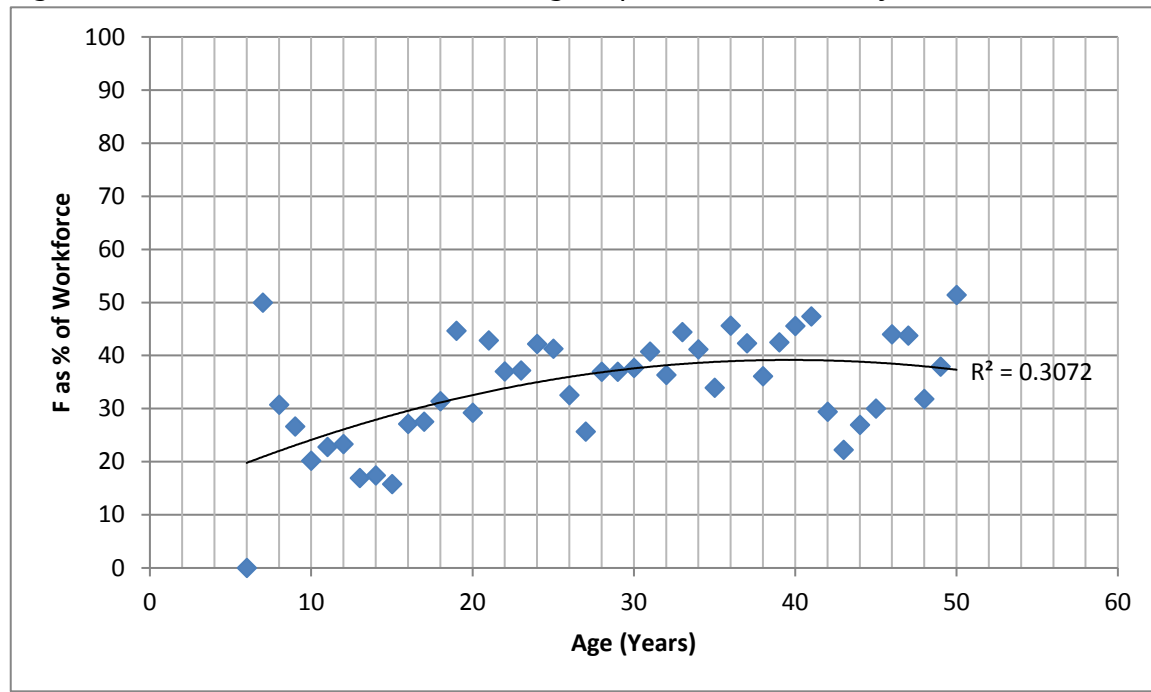
Source: See Appendix A5.

Figure 4.11: Male and Female Average Weekly Wages in Wiltshire Factory Woollen Production (1833)



Source: See Appendix A5.

Figure 4.12: Females As a Percentage of Wiltshire Factory Woollen Workers (1833)



Source: See Appendix A5.

In contrast to woollens in Gloucestershire and Somerset, wool textiles in the West Riding, and Lancashire cotton, in Wiltshire there was no significant peak in the number of females employed around the ages 11-15 (although, as was the case in the other counties there was a significant peak for males). This suggests that there was a particularly high availability of alternative employment for female adolescents in this county.²⁹ As is the case for Yorkshire wool textiles, men's wages in West of England factory woollen production decline less from their peak than in Lancashire cotton, and at a later age than even the West Riding, again indicating that strength was less important here. The lesser importance of strength in the West of England can be explained by this area producing finer quality cloths than the West Riding, so strength can be expected to have been

²⁹ For numbers employed by county, see, Appendices C1-C5.

less important for productivity.³⁰ In the woollen factories of the West of England, as was the case in West Riding wool textiles, there is no dramatic spike in females as a percentage of the workforce in their late teens and early 20s. As a result, women here also account for a lower proportion of the adult factory labour force than in Lancashire cotton (Gloucestershire = 42.41%, Somerset = 42.98%, Wiltshire = 37.78%).

The adult F:M wage ratio is noticeably higher in all of the West of England counties than in the West Riding, with the West of England much more closely approximating Lancashire cotton on this measure. Females accounting for a relatively low proportion of the adult factory labour force combined with a relatively high adult F:M wage ratio suggests that women's employment opportunities relative to those of men in non-factory employment were better here than in Lancashire or Yorkshire. Deborah Valenze has claimed that women's access to dairying work, which was such an important aspect of West of England agriculture, declined dramatically with the increasing application of 'scientific' techniques from the mid-eighteenth century.³¹ However, K.D.M. Snell and Nicola Verdon have persuasively stressed the continued, and perhaps even increased, opportunities for female agricultural work in the West of England at this time in contrast to other regions of England, and the evidence I present here on factory earnings further supports this interpretation.³² The widespread availability of work away from the textile factories for females in the West of England meant that the opportunity cost of factory textile work would have been higher for females relative to males than in the West Riding, helping to increase relative female earnings in this region.

³⁰ For the West of England producing finer cloths than the West Riding, see, Julia de Lacy Mann, *The Cloth Industry in the West of England, from 1640 to 1880* (Oxford, 1971), pp.47-51; Randall, 'Work, Culture and Resistance to Machinery in the West of England Woollen Industry', p.180.

³¹ Valenze, *The First Industrial Woman*, pp.48-67.

³² Snell, *Annals of the Labouring Poor*, pp.40-49; Verdon, *Rural Women Workers in Nineteenth-Century England*, pp.98-106.

It could perhaps be argued that the relatively low level of female participation in the West of England reflected the fact that cloth produced here tended to be finer than that which was produced in the West Riding, therefore requiring greater skill, which would favour male employment. However, if this were the case there should have been a lower F:M wage ratio here, since those women who were employed would have been at a significant disadvantage. Instead, it seems that local labour market conditions were the determining factor. The wages of both men and women were higher in Somerset than in Wiltshire or Gloucestershire. As would be expected, wages for adult males in the West of England counties were substantially below those in Yorkshire, or in Lancashire cotton. However, women in Wiltshire and Gloucestershire only earned a little less than their Yorkshire counterparts, and for Somerset women there was hardly any difference at all, especially for ages from the mid-20s upwards.

Women's wages in the West of England factories were similar to what they seem to have been previously able to earn in this region as handloom weavers: in 1796 Young found that the average wage for both men and women woollen weavers in Devon was 6s per week.³³ One year later, Eden said that women handloom weavers at Inkborough (Gloucestershire) could earn the same as their husbands at the trade, which was 6-8s per week.³⁴ It seems probable that 6s was the minimum that women handloom weavers could earn in Gloucestershire, Somerset and Wiltshire at the end of the eighteenth century, since the trade in these counties was stronger than in Devon by this time. Thus, female factory earnings may have represented no improvement on those which had previously been obtainable under domestic industry. Also, handloom weaving was not limited to just a few select women: John Jones, a woollen manufacturer from Bradford (Wiltshire), estimated in 1803 that two-fifths of the handloom weavers in Trowbridge and Bradford were

³³ Cited in Pinchbeck, *Women Workers and the Industrial Revolution*, p.173.

³⁴ Eden, *The State of the Poor*, Vol.3, p.805.

female.³⁵ Nevertheless, it must be remembered that the West of England trade was in absolute decline by the 1830s, limiting demand for labour. Further, handloom weaving seems to have been the best paid occupation for women prior to the advent of mechanised factory production: in 1795 women employed in the workshops at Frome as pickers, burlers, dressers and machine attendants earned around 8d per day (i.e. 4s per week for a six-day week), and women working as cloth dressers at Trowbridge earned 5s per week. ‘Industrious’ women working as spinners at Inkborough would earn only 4d-9d per day.³⁶

Although domestic spinners’ wages could sometimes rise to a relatively high level they fluctuated wildly with both the state of trade and the fineness of the thread spun. Average wages of spinners certainly seem to have been below that of female handloom weavers.³⁷ Thus, judged solely on wages, factory employment seems to have been good for maintaining, and in some cases improving, the position of women employed in the woollen industry of the West of England. However, this is to ignore the great number of women, especially spinners, displaced by factory production, as well as all the disutility of factory work (which was particularly high for women).

The 1834 Supplementary Report does not provide information on the number of hours worked by different occupations, as it did for cotton. The only information I have from individual mills for the number of hours worked by each worker or in each room of the factory are the returns of J & T Clark, woollen manufacturers based in Trowbridge, to the 1833 Factory Inquiry. Although the females employed here were in the room which worked the shortest number of hours, this difference was small with those in the slubbing-room (who worked the shortest hours) working 12.5 hours per day and those in the cutting-room (who worked the longest hours)

³⁵ B.P.P. 1802-03, VII, p.830.

³⁶ Eden, *The State of the Poor*, Vol.2, p.643; Eden, *The State of the Poor*, Vol.3, pp.800, 805.

³⁷ Lipson, *The History of the Woollen and Worsted Industries*, p.65; Mann, *The Cloth Industry in the West of England*, p.109; Muldrew, ‘“Th’ Ancient Distaff’ and ‘Whirling Spindle’’.

working 13.5 hours per day, i.e. only 8% longer.³⁸ Also, it should be noted that of the 99 workers at this firm, only four were female, and these were all adolescents, and so this should not be taken as representative even for Wiltshire. There is little evidence to suggest that there was a large difference in the number of hours worked by male and female factory employees in the 1830s, and, as is the case with the cotton data, differences in hours worked do not seem likely to explain much, if any, of the gender wage gap for factory workers, especially prior to the Factory Acts of 1844 and 1847.

The West Riding worsted industry is unusual in the sense that for several firms extensive records of payments to domestic workers who are identifiable by gender survive. Whilst only tentative conclusions can be drawn from these sources as a result of the limited and sometimes contradictory or biased nature of the information they provide (see above, pp.51-53), the rarity of this type of source for the textile industries during the Industrial Revolution makes their use worthwhile.

Table 4.2 shows that of the domestic handloom weavers employed by B. & W. Marriner, a worsted firm based in Keighley, for the period 1804-29 the value of payments to individually listed females was 0.61 of those paid to individually listed males.³⁹ And, Table 4.3 shows that the F:M payments ratio paid by Robert Clough, another Keighley-based worsted manufacturer, to individually listed handloom weavers for 1816-32 was 0.56.

³⁸ *J & T Clark Records*, 927/71.

³⁹ N.b. from 1804-08 the firm operated under the name 'William Marriner', see, Pat Hudson, *The West Riding Wool Textile Industry: a Catalogue of Business Records from the Sixteenth to the Twentieth Century* (Edington, 1975).

*Table 4.2: Value in Shillings of Monthly Output of Handloom Weavers Employed by B. & W. Marriner (1804-29)*⁴⁰

	Males			Females						
Year	N	Avg. Output	Avg. PPP	N	Avg. Output	Avg. PPP	Total N	F:M Output Ratio	F:M PPP Ratio	F as % of WF
1804	12	20.56	3.74	7	15.64	3.91	19	0.76	1.04	0.37
1805	21	29.65	3.71	9	14.44	3.75	30	0.49	1.01	0.30
1812	19	18.38	2.06	19	14.82	2.01	38	0.81	0.98	0.50
1813	26	16.57	2.36	30	15.31	2.31	56	0.92	0.98	0.54
1814	7	16.93	2.43	12	20.71	2.46	19	1.22	1.01	0.63
1815	2	20.25	2.25	4	11.13	2.17	6	0.55	0.97	0.67
1816	3	13.92	1.85	6	6.58	1.78	9	0.47	0.96	0.67
1818	7	65.71	6.49	1	45.50	6.50	8	0.69	1.00	0.13
1819	6	60.42	4.97	4	30.88	4.59	10	0.51	0.92	0.40
1820	5	73.40	6.62	2	42.50	4.70	7	0.58	0.71	0.29
1821	11	53.75	6.09	5	35.50	4.88	16	0.66	0.80	0.31
1822	16	45.58	6.91	7	31.18	4.66	23	0.68	0.67	0.30
1823	21	57.11	5.75	10	38.63	4.50	31	0.68	0.78	0.32
1824	20	60.50	5.57	10	44.05	4.31	30	0.73	0.77	0.33
1825	11	51.64	7.06	5	58.40	5.02	16	1.13	0.71	0.31
1826	10	35.48	3.15	7	20.93	2.41	17	0.59	0.77	0.41
1827	8	36.81	3.58	3	43.33	3.66	11	1.18	1.02	0.27
1828	4	17.63	3.68	6	24.29	2.72	10	1.38	0.74	0.60
1829	6	56.33	2.99	12	24.46	3.28	18	0.43	1.10	0.67
1804-29	215	39.05	4.42	159	23.88	3.16	374	0.61	0.71	0.43

Source: *Business Records of R. V. Marriner, Weavers' Account Book, Volumes 1-2.*

Key: PPP = price paid to each worker per piece of cloth produced; WF = workforce.

⁴⁰ Years for which a one-month (June) sample were taken: 1804-05, 1812-16, 1818-29. Unfortunately the full record no longer exists so it was not possible to do the same for 1806-11 and 1817.

*Table 4.3: Value in Shillings of Monthly Output of Handloom Weavers Employed by Robert Clough (1816-32)*⁴¹

Year	Males				Females				Total N	F:M Output Ratio	F as % of WF
	N	Avg. Output	High Output	Low Output	N	Avg. Output	High Output	Low Output			
1816	11	43.32	88.50	15.00	2	15.00	15.00	15.00	13	0.35	0.15
1817	13	39.92	63.00	0.00	2	23.50	32.00	15.00	15	0.59	0.13
1818	36	51.65	93.50	9.00	6	24.00	64.00	0.00	42	0.46	0.14
1819	43	48.83	78.00	15.00	11	27.55	69.00	0.00	54	0.56	0.20
1820	53	49.88	120.00	9.50	10	27.15	72.00	6.00	63	0.54	0.16
1821	84	50.66	120.50	0.00	27	34.67	98.50	9.75	111	0.68	0.24
1822	69	55.49	206.25	5.00	15	27.92	91.50	0.00	84	0.50	0.18
1823	133	36.81	90.00	0.00	68	29.46	115.50	3.50	201	0.80	0.34
1824	138	36.88	90.00	7.00	71	24.35	96.50	5.50	209	0.66	0.34
1825	123	36.21	105.00	4.50	75	26.52	109.75	6.00	198	0.73	0.38
1826	65	19.38	49.50	2.25	52	15.99	33.25	1.75	117	0.82	0.44
1827	141	38.95	120.25	4.75	94	24.00	65.50	4.50	235	0.62	0.40
1828	141	35.59	153.75	4.00	102	20.42	77.00	4.50	243	0.57	0.42
1829	165	37.64	164.25	3.50	100	17.20	74.25	2.00	265	0.46	0.38
1830	150	42.15	207.50	3.50	101	18.68	66.00	2.25	251	0.44	0.40
1831	149	42.42	189.75	5.25	98	23.36	98.00	3.50	247	0.55	0.40
1832	157	43.75	176.00	5.50	97	22.02	80.00	0.00	254	0.50	0.38
1816-32	1671	40.46	207.50	0.00	931	22.63	115.50	0.00	2602	0.56	0.36

Source: Business Records of Robert Clough Ltd, Volumes 18-23.

The figures for the F:M payments ratio in Tables 4.2-4.3 are considerably higher than the adult F:M wage ratio for factory workers in any of the regions or branches of textiles listed in the 1834 Supplementary Report. Worsted handloom weavers in the West Riding could be at least as young as 14 and probably younger, therefore these figures may be biased upwards if they are interpreted as the adult F:M ratio.⁴² However, they accounted for a smaller proportion of the labour force than is typically found in factory production. Moreover, Young's observations from Norwich (see above, pp.106-07) suggest that there was typically little increase in worsted handloom weavers'

⁴¹ One month (June) samples were taken for every year 1816-32.

⁴² B.P.P. 1802-03, VII, p.733. A woollen clothier from Halifax reported at the start of the nineteenth century that he was employing handloom weavers as young as 12 years old, and it seems highly likely that workers this young were also employed as worsted handloom weavers. See, B.P.P. 1806, III, p.994.

wages as workers got older. Further, although I have unfortunately not been able to distinguish females in the dataset by age or marital status, it can be expected that the F:M ratios for handloom weaving at these firms were dragged down by women (especially married women) working shorter hours than men, as seems to have been the case with the cotton handloom weavers at Tottington, whereas, any gender differences in hours worked in factories were minimal.

As well as the abundant information referred to by many historians for female domestic workers working, on average, shorter hours than males; this is indicated by the F:M price per piece ratio at B & W Marriner for 1804-29 being 0.71 (i.e. 16.39% higher than the F:M payments ratio at the same firm). Thus, the gender difference in payments is greater than any differences arising from the complexity of the work or size of the cloth, and so the wage gap seems to have been higher than any differences in skill or human capital.⁴³ There is reason to believe that these datasets may overstate the F:M wage gap for other reasons as well (see above, pp.52-53). The apparently carefree manner in which Clough's bookkeeper switched between listing husbands and wives separately or just under the husbands' name (see above, pp.52-53) could perhaps be interpreted to mean that who received the payment for a family's production was seen as fairly unimportant, contrary to accounts of historians who stress the importance of male dominance and control of family income.

Although powerlooms had been introduced to the worsted industry in the 1820s, by 1836 there were still only 2768 of them in the West Riding. However, they subsequently rapidly increased in number.⁴⁴ By 1849 they dominated worsted weaving whereas they were still rarely

⁴³ My dataset for Robert Clough's payments to handloom weavers does not include the number of pieces produced, so I am unable to calculate the average price per piece paid to males and females at this firm.

⁴⁴ In 1841 there were 11,458, 1843 = 16,870, 1845 = 19,121. Heaton, *The Yorkshire Woollen and Worsted Industries*, p.357.

used in woollens by this time, and even when they were this was only for the most basic cloths.⁴⁵ Since most of the males employed on powerlooms were juveniles whereas many adult women worked on this machinery, the average wages for powerloom weavers working for Robert Clough (1838-62) and John Foster & Son (1844-48) overstate women's wages in this occupation relative to those of men, and little interpretive use can be made of these figures.⁴⁶ However, comparison of the highest wage paid to males and females, suggests that, especially at Foster & Son, some adult males may have been employed given the high level of these payments.⁴⁷ This corresponds with the gender and age balance in the Halifax worsted powerloom workforce in 1849, as described by Reach (see paragraph below). Of all the sample months studied at the two firms only at Foster & Son in 1846 was the male highest weekly or bi-weekly wages above that of the female (and even here it was only by one-quarter of a shilling), indicating good relative earning capability for women in this occupation.⁴⁸

Visiting Messrs. Holdsworth's worsted mill in Halifax in 1849 Angus Reach found that there was only about one man for every ten women and girls working as powerloom operatives, the men averaged around 10s per week, whereas the women and girls only averaged 8s.⁴⁹ At the same factory, 'In the carding, drawing, and spinning departments, the mechanism was almost exclusively looked after by women and girls, at the low wages of 5s and 5s6d. The men employed were overlookers, and earned from 15s to 22s.'⁵⁰ Reach found that in worsted spinning throughout the West Riding, '...the only adult male labour put requisition for the process is that of superintendents or overlookers, each of whom may have a dozen of frames committed to his

⁴⁵ Hudson, *The Genesis of Industrial Capital*, p.44; Reach, *Fabrics, Filth and Fairy Tents*, pp.92-93.

⁴⁶ For Clough's firm the F:M wage ratio in powerloom weaving was 1.06, and Foster & Son it was 0.99 across the periods examined. *Business Records of John Foster & Son*, Volume 99; *Business Records of Robert Clough Ltd.*, Volumes 24-27.

⁴⁷ See, Appendices D1-D2.

⁴⁸ See, Appendices D1-D2.

⁴⁹ Reach, *Fabrics, Filth and Fairy Tents*, p.33.

⁵⁰ Reach, *Fabrics, Filth and Fairy Tents*, p.35.

charge'.⁵¹ At Messrs. Ackroyd's Halifax worsted mill men and women working as weavers averaged around 8s, whereas the other adult males averaged around 17s, and the other women (who worked in the spinning and drawing rooms) averaged 6-6s3d.⁵²

In 1833 adult males in Bradford's (Yorkshire) factories, which almost exclusively produced worsted, received an average wage of 23s6d, which was almost as much as many skilled workers in other industries.⁵³ However, the high wages received by men working in the worsted factories of the 1830s and 1840s not employed on the powerloom were only available to a few: in 1833 adult males only accounted for around 6% of Bradford's factory workforce.⁵⁴ By 1847, following the spread of the powerloom and the further decline of hand-combing and handloom weaving, men accounted for 13.48% of the worsted factory workforce in Yorkshire.⁵⁵ However, even following this increase in the employment of adult males, the continued female dominance of the vast majority of factory worsted occupations makes their exclusion from overseeing extremely difficult to explain without an appreciation of the importance of gender ideology for shaping labour-markets. Trade societies for overlookers in worsted factories, which despite ruling out conducting strikes or supporting strikes by other workers resembled trade unions in many ways, emerged earlier in worsted than in cotton. The earliest such society was established in 1827.⁵⁶ Nevertheless, these do not seem to have explicitly excluded women, and are an insufficient explanation for women's absence from overseeing. Only three overseers in worsted mills were interviewed in the 1833 and 1834 Reports, and their age is not stated. However, given the gender

⁵¹ Reach, *Fabrics, Filth and Fairy Tents*, p.28.

⁵² Reach, *Fabrics, Filth and Fairy Tents*, p.37.

⁵³ Koditschek, *Class Formation and Urban-Industrial Society*, p.360.

⁵⁴ Koditschek, *Class Formation and Urban-Industrial Society*, p.360.

⁵⁵ Extracted from B.P.P. 1847, XLVI, p.612.

⁵⁶ Ittmann, *Work, Gender and Family in Victorian England*, p.65.

and age profile of worsted factory workers, it can be expected that the mean age of overlookers in worsted was lower than in woollen or cotton.

Reach's observations from Halifax indicate that female factory worsted spinners received low wages. Data I have collected from John Foster & Son's mill in Queensbury and William Ackroyd's mill in Otley, covering the dates 1829-33 and 1846-61 respectively, shows that they could earn up to 8s6d per week, but broadly support an average of 5s-6s3d per week. All of the workers in the spinning rooms at these mills received time-rates.⁵⁷ Worsted fibres had proved fairly easy to spin on Arkwright's frames, and the first worsted factory to use this technology was established at Addingham in 1787. The over-supply of labour (especially female labour) in West Riding agriculture meant that the transfer to factory production was initially slow: by 1800 there were still less than twelve worsted establishments using this technology. However, continual improvements in mechanisation meant that by the 1820s hand spinning of worsted was rare.⁵⁸ Factory worsted spinning continued to be dominated by frame- and throstle-spinning and, as was the case in the cotton industry, this machinery was typically worked by low-paid women and children under the supervision of well-paid male overlookers. These male workers at Ackroyd's firm received up to 38s for working a standard six day week.⁵⁹

The application of external power sources to the spinning of woollens came much later than in worsted. Table 4.1 shows that Gott, probably the most technologically advanced of the woollen

⁵⁷ *Business Records of John Foster & Son*, Volume 98; *Business Records of William Ackroyd Ltd*, Volumes 27-28. Since it is not possible to separate adult and child wages in these datasets I have not been able to give the average of women spinners. For a summary of the original data, see, Appendices D3-D4. N.b. the 'Foster & Son' spinning data is actually from a time when the Black Dyke Mills were occupied by George Oxley. Foster & Son started renting the mills from Oxley on 14th February 1834, continued using the same wage book, and the wage records are retained in the Foster & Son archive. See, Eric M. Sigsworth, *Black Dyke Mills: a History* (Liverpool, 1958), p.155n. William Ackroyd's mill at Otley was a separate concern to that of Messrs. Ackroyd (James Ackroyd & Sons) in Halifax which Reach visited.

⁵⁸ Hudson, *The Genesis of Industrial Capital*, pp.43-44.

⁵⁹ *Business Records of William Ackroyd Ltd*, Volumes 27-28. N.b. Overlookers' wages were not listed in the spinning records of Foster's firm and this information does not seem to be available elsewhere in the surviving records. There is inconsistency between firms as to whether overlookers are recorded in the wage book for the room that they overlook, or whether they are recorded in separate wage books.

manufacturers, was using spinning-mules by 1830, but he was still also using jennies at this time. Hudson finds that the mechanisation of woollen spinning did not occur until the introduction of the externally powered mule in the early 1830s and that much woollen yarn continued to be spun at home on jennies by weaving families until the middle of the nineteenth century, and in some cases even later.⁶⁰ In the West of England mules had been introduced in around 1828.⁶¹ The woollen mule-spinners at Gott's Bean Ing Mill were highly paid men (receiving over 30s per week). Since there was only one overlooker in the spinning chamber, where 84 workers were employed (including 15 mule-spinners and 35 mule-piecers), it can confidently be assumed that the mule-spinners here operated the same internal subcontract system that was typical for mule-spinners and their assistants in the cotton industry. There is no reason to believe this was an atypical organisation of labour in woollen mule-spinning.

As Figure 4.3 (which includes both woollen and worsted mills) indicates, adult men were present in larger numbers in West Riding woollen mills than they were in worsted.⁶² Figures 4.6, 4.9 and 4.12 show that this was also the case in West of England woollens. Women accounted for only 281 of the 1100 workers at Bean Ing Mill in 1830, whereas men accounted for 607. This proportion is likely to have been higher than was typical for woollen mills in the West Riding at this time due to the relatively high count of the wool produced by Gott: men were consistently found in large numbers when occupations were more skilled, and as a result higher paid.⁶³ Although male employment can be expected to have been particularly privileged at Gott's firm, there was also far more factory employment available to men in woollens elsewhere than in

⁶⁰ Hudson, *The Genesis of Industrial Capital*, p.44.

⁶¹ Randall, *Before the Luddites*, p.63.

⁶² In contrast to cotton, and to a lesser extent worsted, woollen production was still a long way from being fully mechanised in the 1830s and 1840s, but a considerable amount of nonmechanised work was already been performed on the premises of large capitalists.

⁶³ For the relatively high count of wool produced by Gott, see, Heaton, 'Benjamin Gott and the Industrial Revolution in Yorkshire', p.51.

worsted. As well as the woollen industry employing a much higher proportion of men in spinning than was the case in worsted, it also employed high proportions of men as slubbers, dyers, fullers, raisers and finishers.⁶⁴ In Huddersfield in 1849 male workers employed in these occupations, along with spinners, were believed by Reach to have earned an average of around 18s per week, whereas the women who worked as pickers or boilers received only approximately 7s. Taking into account the men and women employed as handloom and powerloom weavers in the mills, he stated women's wages as averaging around 8s6d, and men's to be around 14-15s.⁶⁵

Just as in worsted and cotton, all of the highly paid overseeing jobs in the woollen factories seem to have been performed by men. The ages of nine woollen overseers are given in the 1833 and 1834 Reports. They have a mean age of 44.95 years. Tenure at present firm is given for two observations, the mean of which is 19 years. These high figures reflect the fact that there was a large proportion of adult males employed in factory woollen production, providing a large pool of potential overseers.

In the data I have gathered from individual firms, there is no evidence for direct discrimination.⁶⁶ It is not possible to test for this in the 1833 factory data, but there is no evidence in the primary or secondary literature to suggest direct discrimination was occurring at wool textile factories at this time. The only evidence for direct discrimination in wool textiles during this time comes from a Parliamentary Commissioner's report on handloom weavers in the declining West of England trade in the late 1830s, where women received lower piece-rates with the natural consequence that the lighter branches came to be dominated by women.⁶⁷ It should be

⁶⁴ These occupational titles are general descriptors, see, Table 4.1 for an idea of how much further they can be subdivided, especially at a large firm with a highly extended division of labour such as Gott's.

⁶⁵ Reach, *Fabrics, Filth and Fairy Tents*, p.6.

⁶⁶ *Benjamin Gott & Son Papers; Business Records of John Foster & Son; Business Records of R. V. Marriner; Business Records of Robert Clough Ltd; Business Records of William Ackroyd Ltd; John Brigg & Co. Records.*

⁶⁷ Pinchbeck, Ivy, *Women Workers and the Industrial Revolution*, p.178.

noted that there was no mention of this practice occurring in the West of England (or anywhere else) in the parliamentary reports on wool textiles of 1802-03 and 1806. Since these were very extensive investigations examining all aspects of domestic workers' grievances, if gender differentiated piece-rates were being paid it can be expected that this would have been recorded since they would have been limiting men's access to work because of the incentive it would have given to employers to hire women.⁶⁸ This suggests that the direct discrimination we see in the West of England in the late 1830s was a recent development. Direct discrimination may have become more common over the course of the nineteenth century, since at the start of the twentieth century Clapham found that in some areas of the West Riding male powerloom weavers received higher piece-rates than women.⁶⁹

The Causes of Occupational Segregation

Opposition to female supervision seems to have been highly important for restricting women's earning capabilities. Women are not found as overseers in the records of any of the individual mills I have examined. Nor is there any mention of women working as overseers in any of the reports relating to the 1833 Factory Inquiry. The burling chambers at Gott's firm are particularly illustrative of the apparent inhibition to employing females in a supervisory capacity; one man was paid 24s to supervise a process he is highly unlikely to have had any experience of performing as a subordinate worker, and as a result he would have struggled to assess the performance of the workers under his supervision. Given that the highest earning women in the room earned an average of only 10s, and the vast majority earned much less than that (see, Table

⁶⁸ B.P.P. 1802-03, VII; B.P.P. 1806, III.

⁶⁹ 'In some districts men and women are paid on different scales for the same work; in others the sexes are on equal footing. About Huddersfield, for example, men are paid 15 per cent. more than women in both woollen and worsted; but in such places where the male weaver is rare such a privilege cannot be maintained.', see, J. H. Clapham, *The Woollen and Worsted Industries* (London, 1907), p.199.

4.1), in the absence of ideological resistance to female authority it seems clear that a woman with a thorough understanding of the production process could have been employed as the overseer for considerably less expense to the employer.

Because of a lack of evidence it is difficult to say that no women worked as mule-spinners or slubbers in woollen factories, but there is little doubt that these were at the very least predominantly male occupations.⁷⁰ It seems probable that the strength required for woollen mule-spinning was similar to that for cotton. Strength again seems insufficient to fully account for few or no women working in this occupation. The operation of the internal subcontract system in slubbing and mule-spinning would have reduced women's access to these jobs, as happened in cotton mule-spinning. The subcontract system was not a feature of factory worsted production, and this helps to explain why adult men were so rarely found here, with the cheaper labour of women and children being deemed capable of performing all the tasks required of machine operatives. Even aside from the operation of a subcontract system on mules necessitating the supervision of subordinate workers, the negative impact on female employment following the shift to factory production can be seen in all of the jenny-spinners employed at Bean Ing Mill in 1830 being men, despite domestic jenny-spinning having been female dominated. The cotton jenny-spinners employed in workshops in Stockport in the 1810s also seem to have been predominantly, if not exclusively, men.⁷¹

There appears to have been greater gender equality in handloom weaving of worsted than of woollens in the West Riding. Although it was not uncommon in the eighteenth-century to find journeywomen woollen weavers, and wives of weavers commonly wove themselves, there is generally little evidence to suggest women acted as the small master weavers which were much

⁷⁰ J & T Clark Records, 927/71; Reach, *Fabrics, Filth and Fairy Tents*, p.28; Table 4.1.

⁷¹ B.P.P. 1824, V, *First Report from Select Committee on Artisans and Machinery*, pp.427-29.

more prevalent in West Riding woollens.⁷² However, it should be noted that in 1775 Alice Halstead, who lived in the woollen-producing town of Morley was fined £5 15s 6d for failing to take a parish apprentice.⁷³ This strongly suggests she was operating as a master weaver, but may be explained by the fact that she was a widow, and it was otherwise not normal for women to perform such a role. Unfortunately, a lack of evidence makes a definitive statement regarding women's role as master weavers or otherwise impossible.

Strength requirements excluded all but a 'few muscular women' from certain well-paid branches of woollens such as broadcloths, blankets, and carpets.⁷⁴ The erosion of the apprentice system in the eighteenth century enabled more women and girls to become weavers, particularly with the application of power-spinning, with the subsequent boom in yarn production increasing demand for weavers. However, these women (like many of the new male entrants to the trade) rarely had a knowledgeable grasp of the whole trade, and often relied on the master weaver to do the beaming and fixing up the loom.⁷⁵ As well as having less skill, women woollen weavers were typically subordinate either to a male head of household or a putting-out merchant, unlike the male small master weavers who owned the raw materials and marketed the cloth themselves. The more proletarianised nature of worsted weavers in the region, as well as the work typically requiring a smaller range of skills,⁷⁶ almost certainly meant that more women were employed as weavers here, and earning opportunity by gender was more equal, than in the woollen industry. For these reasons, and that any gender differences in the number of hours worked or the importance of strength are likely to have been just as large in West Riding woollens as in worsted,

⁷² B.P.P. 1802-03, VII, p.306; Heaton, *The Yorkshire Woollen and Worsted Industries*, p.293; Pinchbeck, *Women Workers and the Industrial Revolution*, pp.158-59.

⁷³ William Smith, *Rambles about Morley: with Descriptive and Historic Sketches, also, an Account of the Rise and Progress of the Woollen Manufacture in This Place* (London, 1866), p.47; Hudson, *The Genesis of Industrial Capital*, p.28.

⁷⁴ Pinchbeck, *Women Workers and the Industrial Revolution*, p.166.

⁷⁵ Pinchbeck, *Women Workers and the Industrial Revolution*, pp.160-62.

⁷⁶ Heaton, *The Yorkshire Woollen and Worsted Industries*, pp.310-11.

it seems probable that the gap between the wages of male and female handloom weavers employed in woollens in this region was higher than in the data for handloom weavers employed by Clough and Marriner.

The figures in Tables 4.2-4.3 give some evidence to suggest that male earnings were prioritised in times of extreme distress. 1816 was a year of acute depression across the country following the end of the Napoleonic Wars. Koditschek and Jenkins and Ponting claim that the worsted trade was not badly affected, but they base this on factory building and factory employment, and trade figures respectively.⁷⁷ Worsteds handloom weavers were badly affected. The average PPP (price paid to each worker per piece of cloth produced) for both men and women at Marriner's in 1816 was less than 2s, a level lower than that encountered by either gender in any other year in the dataset. At Clough's the F:M wage ratio is lower in this year than for any of the other years in the dataset, and at Marriner's 1829 was the only one year to have a lower F:M wage ratio than 1816. However, it is not possible to determine from the data whether this depression of the F:M wage ratio was being driven through family decision-making or through employers, and given the low number of observations at both firms any inference drawn can only be tentative. It should also be noted that in 1826, a year of deep recession in the worsteds industry, although the F:M payments ratio amongst Marriner's workers was very low, this was not the case for those employed by Clough, where it was actually higher than for any other year in the dataset. A higher level of confidence can be placed, given the much higher number of observations involved, in the trend in the Clough data for women to account for a much larger proportion of the handloom workforce in the period 1823-32 than in 1816-22. Absolute numbers of men were larger in the second period as well, reflecting the growth of Clough's firm over this period.

⁷⁷ Jenkins and Ponting, *The British Wool Textile Industry*, p.65; Koditschek, *Class Formation and Urban-Industrial Society*, p.82.

The increasing proportion of women as worsted handloom weavers at Clough's firm from 1823 onwards partially reflects the high wages available to men at this time in the easily learned worsted occupation of hand-combing.⁷⁸ It is not clear how much strength was required for wool-combing, and in the Middle Ages women in England commonly combed wool.⁷⁹ A small number of women were prosecuted for combing wool in mid-eighteenth-century Württemberg (Germany), contrary to the guild regulations which excluded them from this occupation.⁸⁰ Thus, it seems that strength requirements were insufficient to completely prevent women from performing this task. However, it seems probable that more strength was required for this occupation than most forms of worsted handloom weaving, giving men a comparative advantage for combing relative to weaving. Wages in this trade had traditionally been high,⁸¹ but although viable machinery for this operation was not perfected until the late 1840s wages had been in serious decline over the course of the 1830s and 1840s (i.e. before any technological unemployment occurred). Displaced handloom weavers and agricultural labourers from rural areas of the West Riding moved into the trade in the 1830s, and were joined in the 1840s by immigrants from Leicestershire, Devon and Ireland.⁸²

In 1849, Reach found that hand-combing was the only branch of 'manufacturing industry' (i.e. cotton, silk and wool textiles in Lancashire, Cheshire and Yorkshire) to employ a 'fair proportion' of adult Irish males, indicating the low pay and low status of this work by this time.⁸³ Although Koditschek finds that combers in Bradford could earn 14-18s per week in the boom of

⁷⁸ For hand-combing being easy to learn, see, Heaton, *The Yorkshire Woollen and Worsted Industries*, pp.310-11; Reach, *Fabrics, Filth and Fairy Tents*, pp.28, 44.

⁷⁹ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, p.269.

⁸⁰ Sheilagh Ogilvie, *A Bitter Living: Women, Markets and Social Capital in Early Modern Germany* (Oxford, 2003), p.297.

⁸¹ John James, *History of the Worsted Manufacture in England* (London, 1857), pp.249, 277-78, 322.

⁸² Hudson, *The Genesis of Industrial Capital*, p.45; Koditschek, *Class Formation and Urban-Industrial Society*, pp.356-57.

⁸³ Reach, *Fabrics, Filth and Fairy Tents*, p.46.

the mid-1830s, by the mid-1840s a woolcomber fortunate enough to have full-time work would earn only 7-9s per week.⁸⁴ The charcoal that was burned to heat the combs released noxious fumes, and by this time the majority of combers were compelled to live and sleep in the same cramped rooms where they worked (which were often shared with other combers), to the inevitable detriment of the health of themselves and their families.⁸⁵ Like cotton handloom weaving, wages in this domestic/workshop industry declined prior to mechanisation due to a mass influx of labour.⁸⁶ As had also happened in cotton handloom weaving, and seems to have happened in wool textile handloom weaving, the declining piece-rates caused the combers to work ever longer hours (up to sixteen or seventeen hours per day), with the resultant overproduction further reducing piece-rates.⁸⁷

Unlike weaving and spinning, the transition to machine-combing was extremely rapid at many firms. At John Foster's Black Dyke Mills in Queensbury machine combing was first introduced in 1852 and by 1855 no more hand-combers were being employed, whereas at the same firm handloom weavers had continued to be employed for around twenty years after powerlooms had first been introduced.⁸⁸ By 1854 of the massively shrunken population of hand-combers in Bradford only 27% were fully employed, 40% were partially employed and 33% were completely unemployed. Those who had to support dependents reported average weekly household incomes of less than 2s per head.⁸⁹ Also differing from weaving was that the mechanisation of combing did not result in a substantial substitution of female for male labour.⁹⁰

⁸⁴ Koditschek, *Class Formation and Urban-Industrial Society*, pp.354-57.

⁸⁵ James, *History of the Worsted Manufacture in England*, p.548; Reach, *Fabrics, Filth and Fairy Tents*, pp.47-48.

⁸⁶ Hudson, *The Genesis of Industrial Capital*, p.45.

⁸⁷ Koditschek, *Class Formation and Urban-Industrial Society*, p.354.

⁸⁸ Sigsworth, *Black Dyke Mills*, p.198.

⁸⁹ Koditschek, *Class Formation and Urban-Industrial Society*, p.359.

⁹⁰ Sigsworth, *Black Dyke Mills*, p.197.

It is typically assumed that prior to mechanisation all wool-combers were men, although sometimes calling on the assistance of wives and children for the preliminary stages.⁹¹ This is supported by the evidence left by the firms of Robert Clough and John Brigg, with all of the combers recorded on the dates I have examined from 1838-1860 being men.⁹² And, I have found no evidence to definitively reject the idea that wool-combing was solely the preserve of male workers. However, it should be noted that the rules of the wool-combers union, agreed in Coventry in 1812 and which applied across Britain, included two references to ‘mistresses’ when discussing regulation regarding apprenticeship, and there was no mention of females being excluded from learning the trade. Whereas, any Irish men who were not already members of the union were explicitly excluded.⁹³ Thus, it seems that women may have been employed in wool-combing in small numbers at least somewhere in Britain in the nineteenth century.

Trade Unions and Worker Protest

Since wool-combing was easily learnt, a strong union was essential for its practitioners to maintain the highest wages in the worsted trade in the eighteenth century, and such a union was in place from at least as early as the 1730s.⁹⁴ The control of the industry they had, and the complexity of their organisation, is illustrated by wool-combers being the only group of workers in the wool textile trade to operate a tramping system.⁹⁵ Following the repeal of the Combination

⁹¹ See above, p.107n.

⁹² Years for which a one-month (May) sample was taken for Brigg: 1838, 1840. Years for which a one-month (June) sample were taken for Clough: 1842, 1843, 1846, 1850, 1854, 1858, 1860. N.b. the number of hand combers was dramatically lower by 1858 than in 1854, suggesting that Clough was primarily using mechanically combed wool by this time. Clough seems to have stopped employing hand-combers completely by 1862. *Business Records of Robert Clough Ltd*, Volumes 61-63; *John Brigg & Co. Records*, Handcombers' Wage Book.

⁹³ A. Aspinall, *The Early English Trade Unions: Documents from the Home Office Papers in the Public Record Office* (London, 1949), pp.128, 135.

⁹⁴ Heaton, *The Yorkshire Woollen and Worsted Industries*, pp.318-19.

⁹⁵ Jenkins and Ponting, *The British Wool Textile Industry*, p.48; John Rule, *The Labouring Classes in Early Industrial England* (Harlow, 1986), p.258.

Acts the combers' union joined with the weavers union in the West Riding, and in June 1825 they struck against three employers in Bradford, calling for an end to undercutting and equalisation of piece-rates. By August, the dispute had 'engulfed the region', and it lasted until November. The strike did not succeed in its aims but ended with the union being recognised by Bradford manufacturers. However, the union was defeated in a strike in 1827, marking the end of successful trade organisation amongst the combers.⁹⁶

After the defeat of 1825, and even more so after 1827, the combers lost control over entrance to the trade and there was soon a large over-supply of labour.⁹⁷ The collapse of the wool-combers union resulted in a dramatic decline of the status and pay of these workers. By the 1830s and 1840s they were earning pitifully low wages and were unable to exclude even Irish immigrant workers, whereas shortly before they had the status, and high wages, of 'labour aristocracy'.⁹⁸ The low status of Irish workers in the labour market, and therefore of any trades in which they were found in considerable numbers, is indicated by the near total absence of Irish men and women from factory employment even by midcentury, by which time there was already a large Irish population in the West Riding.⁹⁹ Where Irish women did have factory employment by this time, it was typically low-paid and very hard and unpleasant work.¹⁰⁰

⁹⁶ Malcolm Chase, *Early Trade Unionism: Fraternity, Skill and the Politics of Labour* (Aldershot, 2000), p.127; Koditschek, *Class Formation and Urban-Industrial Society*, p.354. There was another strike by wool-combers in 1832, which began at Dolphin Holme Mill and then spread to Leeds and Bradford, but this was unsuccessful. See, James, *History of the Worsted Manufacture in England*, p.435.

⁹⁷ Ittmann, *Work, Gender and Family in Victorian England*, pp.12-13; Koditschek, *Class Formation and Urban-Industrial Society*, p.354.

⁹⁸ For wool-combers being labour aristocracy at this time, see, Hudson, *The Genesis of Industrial Capital*, p.45.

⁹⁹ For large-scale Irish immigration by this time, see, Koditschek, *Class Formation and Urban-Industrial Society*, pp.356-57.

¹⁰⁰ Visiting Messrs. Blakely's mill in Dewsbury in 1849, Reach found that sorting and picking in the shoddy mills was done entirely by women aged over 18, who were paid 6s per week for working 10 hours per day. 'In this mill, and at this species of work - the lowest and foulest which any phase of the factory system can show - I found, for the first time, labouring as regular mill hands, Irish women.' Visiting Batley shortly afterwards, he found that rag grinding was also done by Irish women, with the rag grinders at Bridge Mill and Albion Mill earning a maximum of 7-8s per week. Reach, *Fabrics, Filth and Fairy Tents*, pp.18, 20.

Trade unions and spontaneous protest seem to have been more common amongst the domestic workers of wool textiles than in the later developed cotton industry where communities were less stable and worker identities less entrenched. The level of protest and riotousness was particularly high in West Riding worsted and West of England woollens. Differences in industrial structure were highly significant in determining workers' attitudes towards technological change. Aside from some preparatory and finishing work, all the production processes in West Riding woollen domestic industry could be performed at home within an extended family production unit, thus there was relatively little incentive for these workers to oppose new technology, since they stood to benefit from any increase in productivity at any one given stage in the production process. Whereas workers focused on one specific process, as was the case in West Riding worsted and even more so in West of England woollens, stood to lose from labour-saving developments, resulting in a higher level of opposition to technological change. The opportunity for social mobility in West Riding woollens also reduced a binary self-identification between employees and masters, encouraging cooperation.¹⁰¹

From the start of the eighteenth-century there were strikes and rioting over wage-rates from West Riding worsted workers, especially wool-combers and the clothworkers ('clothworkers' was a term for those employed in the finishing processes) in Leeds woollens.¹⁰² There was a similar

¹⁰¹ Josiah Tucker, a Rector from Bristol writing in the 1750s, had no doubts about the importance of industrial structure for determining worker behaviour. Contrasting woollen production in the West of England with the West Riding, 'Thus it is that the working people [in the West Riding] are generally Moral, Sober, and Industrious, that the goods are well made and exceedingly Cheap; and that a Riot or a Mob is a Thing hardly known among them. Whereas in *Gloucestershire, Wiltshire* and *Somersetshire*, the Manufacture is carried on by a quite different Process, and the Effects are accordingly.' [author's italics] He compared the unequal relationship between masters and workers in the West of England to that between planters and slaves in the American colonies, and thought it inevitable that these workers would sometimes see their master as a tyrant. He described how the gathering together of workers in shops in the West of England gave them greater power to 'vitiare and corrupt each other'. For the West of England workers, 'The Motives to Industry, Frugality, and Sobriety are also subverted by this one Consideration, viz. That they shall always be chained to the same Oar, and never be but Journeymen. Therefore their only happiness is to get Drunk and to make Life pass away with as little Thought as possible.' See, Josiah Tucker, *Instructions for Travellers* (Dublin, 1758), pp.36-39.

¹⁰² Heaton, *The Yorkshire Woollen and Worsted Industries*, pp.316-17.

desire to enforce both formal (i.e. codified by law) and informal (brought about by protest and ‘collective bargaining by riot’) regulation of wage levels and payment type amongst the woollen workers in the West of England. West of England clothiers complained to parliament in 1718 and 1724 that weavers, ‘threatened to pull down their houses and burn their work unless they would agree with their terms’, showing a strong desire to standardise piece-rates.¹⁰³ The riots in Wiltshire and east Somerset in 1726-27, in Wiltshire in 1738, and in Gloucestershire in 1727 and 1756, were all by weavers objecting to the level of wages, or unfair practices by employers (such as truck payments or using false measures) which reduced earnings.¹⁰⁴

Despite the levels of violence displayed by the West of England weavers in defence of their interests, the occasional instances of hostility to female handloom weavers mentioned early in this chapter were by no means typical and there was relatively little gender hostility regarding entrance to the trade. Since weaving could be performed at home women could combine it with mothering duties and household chores, diminishing male resistance to it. Instead, attempts by weavers to control entry to their trade primarily focused on trying to enforce apprenticeship regulations. This approach is demonstrated by the mixed gender Manchester worsted smallware weavers’ society, whose articles drawn up in 1747 demonstrated a desire to enforce the rule of

¹⁰³ Cited in E. J. Hobsbawm, *Labouring Men: Studies in the History of Labour*, 2nd ed. (Trowbridge, 1968), p.7.

¹⁰⁴ Mann, *The Cloth Industry in the West of England*, pp.108-09. Despite the riots of 1726-27 attracting much sympathy from country gentlemen, and even some clothiers, the only regulation of the Acts passed in an attempt to address the weavers’ grievances which was consistently observed was the obligation to pay weavers by the yard, and even this merely applied to the superfine branch of the Wiltshire trade. The Acts had also prohibited truck payments and arranged for the fixing of wages by the magistrates but these provisions were widely ignored, despite in 1728 an order for the rate of wages being made at the Michaelmas Quarter Sessions. No regulation was introduced in response to the Wiltshire riots of 1738. Although an Act directing the justices to set piece-rates was introduced in 1756 following the Gloucestershire riots, this was ignored by many of the clothiers and repealed in 1757 following their complaints. See, Hammond and Hammond, *The Skilled Labourer*, pp.157-59; Mann, *The Cloth Industry in the West of England*, pp.109-10.

seven years apprenticeship, enforce membership of the union, and limit the number of apprentices a master weaver could employ.¹⁰⁵

The sixteenth-century ‘Act Touching Weavers’, which specifically stated that nobody could become a weaver without being apprenticed, and the 1563 Statute of Artificers, which controlled entry to the trade, remained on the statute books until 1809 and 1813 respectively. But these rules were already being widely disregarded in woollens by the beginning of the eighteenth century, especially in the West of England, and fell into further disuse as the century progressed. Although some form of apprenticeship was still common, particularly in West Riding woollens, it was rare for the full seven years to be served or for a formal contract to exist.¹⁰⁶ When a seven year apprenticeship was served, this was increasingly for children put out by the parish. Since parishes frequently took little interest in the standard of the apprenticeship being given these are unlikely to have typically fostered a great level of skill transmission.¹⁰⁷ As the worsted industry had only begun in Britain after the sixteenth century, it was not clear whether the Act Touching Weavers and the Statute of Artificers applied to the trade and the greater subdivision of labour here than in West Riding woollens meant that less time was needed to learn the trade.¹⁰⁸ This helps to explain the higher apparent gender equality in worsted weaving than in West Riding woollen weaving.

The decline of formal apprenticeship can be expected to have benefited women’s earning capability both absolutely and relatively. Although strict apprenticeship laws did not prohibit women from learning the trade, given the lesser willingness of parents and women themselves to invest in their human capital, enforcement of a full seven-year apprenticeship term would have

¹⁰⁵ Thomis and Grimmett, *Women in Protest*, p.72; Wadsworth and Mann, *The Cotton Trade and Industrial Lancashire*, pp.343-44.

¹⁰⁶ B.P.P. 1802-03, VII, p.787; Heaton, *The Yorkshire Woollen and Worsted Industries*, pp.301, 308-11; Mann, *The Cloth Industry in the West of England*, p.105; Pinchbeck, *Women Workers and the Industrial Revolution*, pp.159-61.

¹⁰⁷ B.P.P. 1806, III, p.940; Heaton, *The Yorkshire Woollen and Worsted Industries*, pp.303-11; Pinchbeck, *Women Workers and the Industrial Revolution*, pp.125-26.

¹⁰⁸ Heaton, *The Yorkshire Woollen and Worsted Industries*, pp.310-11.

limited their access. The new shorter and cheaper form of apprenticeship would have been more accessible for women, and whilst perhaps not giving them enough knowledge to operate as a master weaver, made it relatively easier for them gain the necessary degree of training to enter what was at the time still a well-paid occupation. The increasing proportion of female woollen weavers as the eighteenth century progressed is at least partially attributable to the decline in enforcement of apprenticeship regulations. This decline in enforcement also meant that children were able to enter the trade. Handloom weaving was the only ‘man’s’ textile trade where downward pressure on wages arose due to competition from child labour, and even this occupation became decreasingly perceived as a ‘man’s’ job as the Industrial Revolution progressed. Whereas, competition from child workers would have acted to depress wages in the women-dominated occupations of powerloom weaving, throstle spinning and domestic spinning.¹⁰⁹

Unsurprisingly, given women’s lower tendency to unionise and their dispersed location, spinners (who were almost exclusively women and children in the West of England and the West Riding), apart from temporarily halting the introduction of spinning jennies in the West of England, had few means of exerting pressure to try and regulate their widely fluctuating and often pitifully low wages.¹¹⁰ By contrast the all-male clothworkers seem to have had the most success in limiting entry to their trade of any branch in the eighteenth century, benefiting from, and perpetuating, an all male workforce which worked together in shops making communication easier than for dispersed domestic workers such as weavers and spinners. This would have increased the levels of trust needed for effective unionization, and their bargaining power also benefited from performing a vital stage in the production process. Thus, in Wiltshire and

¹⁰⁹ For the presence of children in these occupations, see above, p.58; Table 3.1; Appendix B1-B8.

¹¹⁰ Lipson, *The History of the Woollen and Worsted Industries*, p.66; Mann, *The Cloth Industry in the West of England*, p.109.

Somerset by the end of the eighteenth century they were able to impose high entry fees on journeymen from elsewhere, with the resultant limitation on worker numbers meaning that their earnings, in Wiltshire at least, had almost doubled.¹¹¹

It seems that the nature of worsted fibre made it unsuitable for use with spinning-jennies (invented c.1764-65, and first used in the cotton industry), whereas woollen fibre was extremely well suited to it. The jenny was first introduced to the West Riding in Holmfirth in 1776, and then spread to the Huddersfield district and across the region.¹¹² Since the jenny could be used at home, was cheap to purchase and the weaving family production unit that characterised West Riding woollens benefited from cheaper and more plentiful yarn, there was little opposition and it soon spread across the region, dominating woollen spinning well into the nineteenth century.¹¹³ As Hudson outlines, the spread of the jenny was occasioned by the increased demand for thread that arose from the use of the flying-shuttle (this was introduced to Yorkshire woollens around 1763-64, and was in fairly general use by domestic weavers by the 1770s).¹¹⁴ The spread of the flying-shuttle in the West Riding was itself somewhat slow. It had been introduced to wool textile production in Essex in the 1730s, and Lancashire fustian production around 1760.¹¹⁵ Despite its relatively late introduction to the West Riding, and it facing some initial resistance (including a riot against it in Leeds in 1770), it had been completely accepted there by the end of the 1770s.¹¹⁶

The much later introduction and spread of the flying-shuttle in the West of England supports Adrian Randall's view that, 'The rebellious culture of the West of England woollen workers undoubtedly had an impact on innovators. Their tradition of violence deterred all but the most

¹¹¹ Mann, *The Cloth Industry in the West of England*, p.109.

¹¹² Randall, *Before the Luddites*, p.72.

¹¹³ Heaton, 'Benjamin Gott and the Industrial Revolution in Yorkshire', p.49; Hudson, *The Genesis of Industrial Capital*, p.42.

¹¹⁴ Hudson, *The Genesis of Industrial Capital*, p.42.

¹¹⁵ Hammond and Hammond, *The Skilled Labourer*, p.49; Pinchbeck, *Women Workers and the Industrial Revolution*, p.115; Sharpe, *Adapting to Capitalism*, p.33.

¹¹⁶ Hudson, *The Genesis of Industrial Capital*, p.42; Mann, *The Cloth Industry in the West of England*, p.140.

determined from confrontations over machinery.’¹¹⁷ The first evidence we have of it being introduced to the West of England is at Trowbridge in 1792, which resulted in a riot. A clothier from Stonehouse tried to introduce it in 1793-95, but was persuaded by other Gloucestershire clothiers to withdraw it, due to their fear of worker opposition.¹¹⁸ Around 1798, when trade was good and enlistment in the army had led to a shortage of weaving labour, it was adopted by the majority of Gloucestershire weavers, but was still far from universal there by 1803. Elsewhere in the West of England ‘it was hardly known’ by this time and faced continued worker opposition, with the antipathy of the Wiltshire and Somerset weavers ensuring that it was not introduced to these counties until well after the Napoleonic Wars.¹¹⁹

In the West of England worker opposition meant that the jenny did not become common until the early 1790s, despite the first attempt at introducing it to the region also being in 1776.¹²⁰ In that year twelve Shepton Mallet clothiers, having successfully quelled opposition by local weavers, attempted to introduce the new technology and set up jennies in the town’s workhouse as a public experiment. However, the fear of this machinery was so great that the machinery was attacked by a mob consisting of weavers, shearmen and other woollen workers mainly from Frome and Warminster. The mob, which can be assumed to have predominantly, if not exclusively, consisted of men, broke into the workhouse and destroyed the machines. They also broke all the windows of the workhouse and broke into the house of one gentleman and destroyed all his furniture (the gentleman concerned was possibly John Billingsley, a prominent clothier and one of the twelve who had been responsible for introducing the jenny to Shepton Mallet). The riot ended with troops, who were already stationed in the town (indicating that violent opposition to

¹¹⁷ Randall, ‘Work, Culture and Resistance to Machinery in the West of England Woollen Industry’, p.192.

¹¹⁸ Mann, *The Cloth Industry in the West of England*, p.140.

¹¹⁹ B.P.P. 1802-03, VII, p.575; Mann, *The Cloth Industry in the West of England*, pp.140-41; Randall, *Before the Luddites*, p.100.

¹²⁰ Randall, ‘Work, Culture and Resistance to Machinery in the West of England Woollen Industry’, p.176.

the machinery had been anticipated), firing into the crowd, killing one man and wounding six more.¹²¹ By the spring of 1781 at least one jenny and carding engine had been set up in Frome, but these were destroyed by a Whit-Monday mob, with troops having to be called in to suppress the disturbance.¹²² At Keynsham in 1790 the colliers and their wives attempted to destroy the jennies being introduced, and again dragoons had to be sent to deal with the rioters.¹²³

The level of violence and geographical mobility displayed by the mob at Shepton Mallet in 1776, many of them travelling 15-20 miles, displayed a powerful willingness among members of the labouring classes to protect their communal self-interest, even if this was ultimately doomed to failure. Unlike in the West Riding, where the industrial structure meant that labour saving technology in weaving and spinning benefited woollen workers, in the West of England it provoked fierce resistance from communities who stood to suffer. Indeed, Randall calculates that the introduction of the jenny reduced demand for spinners in the West of England by 75%, representing a substantial threat to the income of many families in the region.¹²⁴ Craig Muldrew has recently estimated that over 750,000 individuals were employed in wool textile spinning across England in 1770, so this new machinery threatened the ability of a vast number of women to contribute to family income.¹²⁵ Men seem to have led the protests against spinning machinery, but women were also involved. One woman was arrested alongside three men as a result of the disturbances in Frome in 1781.¹²⁶ At some point in the 1780s an informal union of female woollen hand-spinners in Leicester stirred up their men-folk to riot against the introduction of

¹²¹ Mann, *The Cloth Industry in the West of England*, p.123; Randall, *Before the Luddites*, pp.72-73, 73n; Randall, 'Work, Culture and Resistance to Machinery in the West of England Woollen Industry', pp.192-93.

¹²² Randall, *Before the Luddites*, pp.74-75.

¹²³ Mann, *The Cloth Industry in the West of England*, pp.125, 128.

¹²⁴ Randall, 'Work, Culture and Resistance to Machinery in the West of England Woollen Industry', p.183.

¹²⁵ Including flax and hemp he estimates that as many as 1,500,000 may have been employed in hand-spinning at this time. See, Muldrew, 'Th' Ancient Distaff' and 'Whirling Spindle'.

¹²⁶ Randall, *Before the Luddites*, p.75.

spinning machinery in the area.¹²⁷ The strong opposition of men to spinning machinery, which would severely affect female employment, stands in contrast to the opposition many men had to women's work after the transition to factory production. Domestic spinning was no threat to male jobs, and neither did it interfere with traditional expectations regarding their childbearing and child-rearing role. The behaviour of men in these instances regarding the defence of women's work mirrors that which occurred in the cotton industry around Blackburn in 1779.¹²⁸

Action to defend women's work depended not only on the desires of the community, but also their capability: the spread of the jenny had 'disastrous consequences' for the non-textile producing areas of Wiltshire and Somerset where women from agricultural families had previously had by-employment as spinners, 'Yet these non-textile areas succumbed without demur. With no tradition of organised protest and living in a more tightly controlled and dependent environment, resistance had no community platform.'¹²⁹ Although Keynsham was outside of the main textile districts the community and work culture engendered by the men working in the mines provided such a platform.¹³⁰

The government investigations of 1802-03 and 1806 show some of the opposition amongst weavers to the transition to factory production being based upon the fear that the factories offered no chance for the survival of the family production unit, and failing to provide sufficient alternative work for women and children.¹³¹ Even if male wages were higher in the factories,

¹²⁷ There is some confusion amongst historians as to when exactly this disturbance occurred: Drake, and Thomis and Grimmett, date it at 1788, whereas Sheila Lewenhak states that it was in 1780. See, Drake, *Women in Trade Unions*, p.3; Lewenhak, *Women and Trade Unions*, pp.16-17; Thomis and Grimmett, *Women in Protest*, p.72.

¹²⁸ See above, p.91.

¹²⁹ Randall, 'Work, Culture and Resistance to Machinery in the West of England Woollen Industry', p.189. See also, Muldrew, 'The Ancient Distaff' and 'Whirling Spindle'.

¹³⁰ Mann, *The Cloth Industry in the West of England*, pp.128-29; Randall, *Before the Luddites*, p.91.

¹³¹ B.P.P. 1802-03, VII, pp.563, 592; B.P.P. 1806, III, pp.643, 673, 938.

which was not necessarily the case, it was believed that family income would decline.¹³² The distance required for travelling to work in factories each day could be up to six miles, representing a major loss of time in the day when compared to a putting-out merchant coming to visit individual dwellings, hamlets or villages.¹³³ As was the case with the rioters in Shepton Mallet and Keynsham, these men demonstrated a very different attitude towards the importance and desirability of work of women than had become the vogue by the factory-dominated 1840s. Male attitudes regarding their desirability of women's work were influenced both by whether it was compatible with their domestic and mothering responsibilities, and also as to whether it was in competition with their own labour.

Despite the support that was demonstrated in defence of women's domestic work, it was still men's work that was most powerfully defended, and unlike spinning and weaving, the preliminary and finishing occupations that were all-male tended to have powerful unions. They also shared the ability to raise community support for short-term protest. Randall concludes that in both the West of England and the West Riding:

Machinery was only consistently opposed where it threatened adult male employment ... in the case of the spinning jenny, while opposition to its introduction in the West of England was fierce until the late 1780s, it seems to have encountered little resistance when it was brought in in large numbers there in the early 1790s since booming trade offered alternative employment for those woollen workers' wives who were displaced by it. Paternalists and ratepayers were most acutely conscious that the real casualties from the jenny were the wives of agricultural labourers. The woollen workers found it advantageous to point to this when trying to secure influential support but after 1790 they showed no continued solidarity of support with the jenny's victims.¹³⁴

¹³² B.P.P. 1802-03, VII, p.863; B.P.P. 1806, III, p.616. N.b. This problem was seen as particularly acute for the youngest children, with workers expressing dismay at factories rarely being willing to employ children under the age of eight or nine. See, B.P.P. 1802-03, VII, p.567.

¹³³ B.P.P. 1802-03, VII, pp.557, 566, 589.

¹³⁴ Randall, *Before the Luddites*, p.101.

Scribbling engines were first introduced to the West Riding woollen industry in the early 1780s as machines adapted from the carding engines then being used in the Lancashire cotton industry. They provoked some resistance, with the women in Hunslet rising in a mob to destroy the first batch of machine-made slubbings produced by Mr. Copley.¹³⁵ Resistance was fiercer and more prolonged in the West of England, especially in Wiltshire, where it did not become introduced on a wide scale until the boom in trade of 1795-97.¹³⁶ The scribbling engine made scribblers superfluous and it was claimed in 1794 that one man and a boy working an engine could do the work of twenty scribblers. Randall claims that the practice of continuing to employ only adult males on the machines did not last long, with scribbling and carding engines being kept in a unit with an adult male slubber supervising two children on scribbling engines, two children on carding engines and one child piecer. This claim is supported by his citation of the returns of J & T Clark to the 1833 Factory Inquiry.¹³⁷ Four adult male slubbers (aged between 29 and 43) were employed, three of whom supervised five children, the other supervising three children. The slubbers that did have work at the firm were well paid for Wiltshire at this time, all of them receiving 20s per week. However, as well as reducing the number of workers, the machinery dragged down average wages by replacing men with children: the eldest child assisting each slubber received 4s2d per week, which is considerably below what pre-mechanisation scribblers can be expected to have received, and the other children received only 2s6d per week.¹³⁸

The croppers were workers employed in the finishing processes of the woollen trade, who had to raise the nap of the cloth with teazles and then cut it with an enormous pair of shears. Their

¹³⁵ Randall, *Before the Luddites*, pp.78-79.

¹³⁶ Mann, *The Cloth Industry in the West of England*, pp.129-30; Randall, *Before the Luddites*, pp.80, 84. When scribbling engines were first introduced to Wiltshire at Bradford-on-Avon in May 1791, the riot resulted in the death of three protesters, see, Randall, *Before the Luddites*, p.80.

¹³⁷ Randall, *Before the Luddites*, p.78.

¹³⁸ *J & T Clark Records*, 927/71.

position was threatened by the gig-mill (mechanically operated rollers for raising the nap), and the shearing-frame (which set up the previously used hand-shears on a power-operated frame).¹³⁹ The Institution (the organisation of the West Riding croppers) fought powerfully against this machinery, and were particularly successful in preventing its introduction to the Leeds area. The shearing-frame was first patented in 1787, and another patent was granted in 1794, but it did not become widespread in Wiltshire and Somerset until after 1815.¹⁴⁰ It was introduced in 1800 at Bradley mills, near Huddersfield, before being withdrawn and then reintroduced in 1803. At least two other firms in the West Riding were using this technology by 1806, and their use was subsequently extended.¹⁴¹

The often violent protests of 1802 against the gig-mill in Wiltshire and Somerset reflected its spread over the previous decade. As in the West Riding, the workers believed it to be prohibited by an Act of Edward VI, and an inconclusive legal action had been brought against a Wiltshire clothier who had tried to introduce it in 1794.¹⁴² The confusion was due to whether the machinery now being used in the gig-mill was the same as that prohibited by the Act. In Gloucestershire it had long been used for coarse cloth, and at the end of the eighteenth century had been extended to fine cloth without much opposition.¹⁴³ However, in Wiltshire and Somerset it was fiercely resisted and remained rare until after the end of the Napoleonic Wars.¹⁴⁴ The gig-mill had been introduced in Huddersfield before 1784 and was in fairly general use here and in Halifax by the early 1810s. Whereas, the power the Institution had in Leeds meant that in 1813 Benjamin Gott was still having all his finishing work done by hand, and other Leeds merchants who did not own finishing

¹³⁹ Malcolm Thomis, *The Luddites: Machine Breaking in Regency England* (Newton Abbot, 1970), p.50.

¹⁴⁰ Mann, *The Cloth Industry in the West of England*, pp.150-51; Thomis, *The Luddites*, p.54.

¹⁴¹ Thomis, *The Luddites*, pp.54-55.

¹⁴² B.P.P. 1806, III, p.571; Mann, *The Cloth Industry in the West of England*, p.141.

¹⁴³ B.P.P. 1802-03, VII, p.747; Mann, *The Cloth Industry in the West of England*, pp.141-42.

¹⁴⁴ Mann, *The Cloth Industry in the West of England*, pp. 150-51.

shops were sending their cloth to the Halifax and Huddersfield areas to be finished.¹⁴⁵ The Institution had demonstrated their power with a riot and complete destruction of a gig-mill at Beeston in 1797.¹⁴⁶ And, around 1799, a mill employing gig-mills at Holbeck had been burned to the ground.¹⁴⁷ Unlike the small master weavers that typified much of the production process of West Riding woollens, the finishing workers did not stand to benefit from labour-saving technology, and so responded in the same way as workers employed on the same processes in the West of England.

Although the finishing workers were ultimately unsuccessful in preventing the introduction of the gig-mill and the shearing-frame, their union in the West Riding continued to wield considerable power. In 1831 there was a nine-month strike at Gott's Bean Ing mill. The support given to the workers at Gott's factory from fellow members of The Institution was instrumental in enabling the strikers to last for nine months and secure a wage increase. The union then switched their attention to other mills in Leeds individually in 1832 and no masters challenged them. Huddersfield members of the same union were also successful in gaining wage increases at this time.¹⁴⁸

The level of organisation demonstrated by the finishing workers was not apparent in industrial protest featuring high proportions of women. Women's lack of organisation meant that they were unable to sustain protest over such long periods of time, or to adopt the kind of strategic approach used by The Institution whereby employers were targeted one at a time. Thomis and Grimmett argue that there was an increasing level of protest by women workers in the West Riding in the 1830s, but it should be pointed out that these expressions of dissatisfaction with

¹⁴⁵ Thomis, *The Luddites*, pp.54-55.

¹⁴⁶ Heaton, 'Benjamin Gott and the Industrial Revolution in Yorkshire', p.58.

¹⁴⁷ Thomis, *The Luddites*, p.54.

¹⁴⁸ Chase, *Early Trade Unionism*, p.157.

industrial conditions tended to be spontaneous and short-lived. This is demonstrated by the examples of women's increased propensity to protest they provide in support of their argument. On 1st February 1832 around 500 workpeople (chiefly young women and boys) went on strike at Burley Mill near Leeds, but this was apparently unsuccessful. At Peep Green in May 1833, a crowd said to contain 1500 women resolved not to set any more cards for less than half a penny per thousand, and also condemned the widespread use of truck payments. In the same month women in Wakefield were charged with assaulting a 'black sheep'. At Brand's woollen mill in Bradford in 1838 women complained about having to use damaged looms and the low rates they were given, but their protest resulted in them being fined for leaving work unfinished and forced to return (except for one woman who chose to spend a month in the House of Correction instead). Perhaps the greatest level of organisation and success was shown by the striking female weavers at Elland who attacked a cart containing cloth woven by blackleg labour and forced it to return to Balmforth's mill. Balmforth then attempted to deliver the load himself but was forced back by 200 women and eventually agreed to employ the women at the old rates as they had demanded.¹⁴⁹

Unsurprisingly, given their dependence on the cheap and predominantly unorganised labour of women, female unionisation was greatly feared by employers. The *Leeds Mercury*, the organ of the West Riding manufacturing class, deemed the protests of female carders at Peep Green to represent an even greater menace to established institutions than the education of the 'lower orders'.¹⁵⁰ However, female unionisation never seems to have become extensive. Attempts in Bradford at general unionisation in the mid-1840s only managed to attract a tiny minority of the female powerloom weavers.¹⁵¹ Lower levels of unionisation amongst females in wool textiles

¹⁴⁹ Thomis and Grimmett, *Women in Protest*, pp.76-77.

¹⁵⁰ Thomis and Grimmett, *Women in Protest*, p.76.

¹⁵¹ Koditschek, *Class Formation and Urban-Industrial Society*, pp.481-82.

occurred for the same reasons as it did in cotton: lower pay, shorter attachments at firms, and less time spent in the workforce.

Attitudes Towards Women's Work

As well as having less economic incentive and material capability to unionise, the women of the 1830s and 1840s were operating in an ideological climate that was frequently hostile to their factory work. The opposition of the West Riding Short-Time Committee to women working in factories has been cited above (pp.84-85). William Dodd described the preponderance of females in the worsted and flax mills of the West Riding as 'excessive'.¹⁵² Opposition to factory work on moral grounds had been displayed by workers well before this. The abandonment of the family production unit threatened by the shift to the factory had been strongly opposed by domestic workers not just due to feared potential effects on family income (see above, pp. 147-48), but also because of the possible negative moral effects of children no longer being supervised by their fathers, as well as factories themselves sometimes being perceived as immoral places, since they featured, 'A great many people, men and women, getting together, and great irregularities I understand take place'.¹⁵³ At a meeting of the woollen workers around Huddersfield in 1806 it was 'resolved unanimously':

That the domestic system is highly favourable to the cultivation of paternal, filial, and fraternal affections, the springs of family happiness, and to the cultivation of good, moral, and civil habits, the sources of public tranquillity; that the factory system tends to the prevention of these affections and habits, and leads youth sooner into the strongest temptations, by which they are in danger of being corrupted, even to their ruin.¹⁵⁴

¹⁵² Dodd, *The Factory System Illustrated*, p.35.

¹⁵³ Testimony of William Child, a journeyman weaver from the West Riding, B.P.P. 1806, III, p.705.

¹⁵⁴ B.P.P. 1806, III, p.1042. See also, B.P.P. 1802-03, VII, pp.566, 592; B.P.P. 1806, III, pp.643, 714.

This attitude was not limited to wool textile workers. Visiting Middleton in 1849, a village where thirty years earlier almost everyone had been employed in the handloom weaving of cotton but had subsequently switched to the handloom weaving of silk, Reach spoke to a ‘very intelligent, chubby old man’. Despite the low wages he declared that, ‘This is better nor factory work! Ay, that it is. You see you keep your children at home about you, and you don’t lose control over them.’¹⁵⁵ The local Reverend informed Reach that:

The Middleton weaver keeps not only his sons and daughters, but often his sons and daughters in law, long about him; while the children who are too young, and sometimes the adults who are too old for the heavy labour of the loom, turn the winding wheel, and prepare the glistening silk for the frame.¹⁵⁶

This kind of close family working relationship would not survive the transition to factory production, and it is not surprising that so many domestic workers feared the new organisation of production.

Robert Baker, the Inspector of Factories for the Bradford District, writing in 1851, accepted that the large-scale employment of women and children in factories had inverted the moral order. However, he also pointed out that it benefited the employer by providing him with a more docile workforce who could be paid lower wages.¹⁵⁷ Although gender ideology *may* have influenced employers in not employing women in overseeing positions (i.e. rather than solely responding to workers’ ideological driven preferences on this issue), there is little evidence for gender ideology affecting other aspects of their recruitment and treatment of the labour force. Further, as I have argued in Chapter 1, employer-led discrimination is highly unlikely to persist over time where there is competition between employers. It is possible that the highly gendered division of

¹⁵⁵ Reach, *A Cotton-Fibre Halo*, pp.174, 177.

¹⁵⁶ Reach, *A Cotton-Fibre Halo*, p.182.

¹⁵⁷ Cited in, Ittmann, *Work, Gender and Family in Victorian England*, p.143.

occupations at Gott's firm was unusual. This would have been aided by the scale of his operation enabling an even higher degree of specialisation of task than was the case at most woollen factories. It may also be that separation of task, and to a degree location within the factory, was an aspect of his 'model employer' approach, either as a response to working-class desires or as satisfying middle-class notions of respectability.¹⁵⁸ However, male privilege seems to have been a feature of factory woollen production across factories in the West Riding and the West of England, and it is difficult to know whether Gott's factory was unusual in the degree of separation of the genders. There seems to have been a lower degree of specialisation by task in worsted, and aside from overseeing being an all-male preserve, women dominated the adult workforce. The men employed in non-overseeing roles in worsted earned what could perhaps be called 'women's wages'.

It is also important to note that criticism of the morals of female factory workers was by no means universal even amongst members of the middle-classes. John James, writing in the mid-1850s, stated that:

The factory girl of Bradford ... is cleanly, prone to smart dressing, and astonishes the stranger on Sundays or holidays by the respectability of her appearance. That licentiousness does not exist to any alarming extent among the female worsted operatives seems obvious from the small number of illegitimate children born in Bradford, compared with other districts ... To the often repeated allegation, that females employed in factories neglect their homes and families, that they are deficient in the practice of cookery, domestic economy, and needlework, it may be counterstated that such is also the

¹⁵⁸ 'Owen ranked him, along with Oldknow and other big employers, as one of his 'friends, though not disciples' of his New View of Society. He retained old employees as pensioners, inspected Boulton and Watt's sick club in 1793, set up a similar club at Bean Ing, paid part or full wages to workers absent from sickness, and full wages to those absent as a result of accidents. He employed very few children under ten years of age, and his hours of labour were never longer than from 6 a.m. to 7 p.m., with two hours for meals. He allowed no deductions to be made from children's wages on account of lost time, and encouraged regular attendance at Sunday school by giving a shilling to those who showed certificates of regular attendance. He forbade slubbers at one time to chastise the children to help them with anything but a ferrule, and later forbade all corporal punishment of children.' And, in the depression following the end of the Napoleonic Wars Gott refused to reduce wages when all the other employers in his district were doing so. See, Heaton, 'Benjamin Gott and the Industrial Revolution in Yorkshire', pp.60-61. As can be seen in Table 4.1, Gott was still paying (generous) pensions to certain former employees in 1830.

condition of females engaged in agricultural labours, whose homes are, in like manner, left uncared for whilst working in the fields. Wherever the married woman has to pursue any avocation to earn her bread, so far will her domestic duties be neglected. The factory operative, however, is in cleanliness and domestic management vastly superior to the female labourers of Wiltshire, Devon, and Dorset.¹⁵⁹

W. R. Hickson, in his 1840 report for the government on the condition of hand-loom weavers argued that factory work, before marriage at least, could be positively beneficial for females' morals and happiness:

One of the greatest advantages resulting from the progress of manufacturing industry, and from severe manual labour being superseded by machinery, is its tendency to raise the condition of women ... The great drawback to female happiness, among the middle and working-classes is, their complete dependence and almost helplessness in securing the means of subsistence ... In Lancashire profitable employment for females is abundant ... A young woman, prudent and careful, and living with her parents, from the age of 16 to 25, may, in that time, by factory employment, save £100 as a wedding portion. I believe it to be the interest of the community that every young woman should have this in her power. She is not then driven into an early marriage by the necessity of seeking a home; and the consciousness of independence, in being able to earn her own living, is favourable to the development of the best moral energies.¹⁶⁰

It is difficult to assess the feelings of the working class regarding the morality of female factory work in the West Riding and the West of England because of the lack of information. However, it is important to distinguish between single and married women (especially mothers) when looking at labour supply decisions. Koditschek's analysis of the 1851 census data for Bradford revealed that most working-class housewives continued to stay at home whenever economically feasible,

¹⁵⁹ He also remarked that, 'It is well known that factory girls form an important portion of the religious congregations in Bradford and other towns of the West-Riding.' James, *History of the Worsted Manufacture in England*, pp.553, 556.

¹⁶⁰ B.P.P. 1840, XXIV, p.44. Samuel Bamford, who occupied a somewhat ambiguous class position, also defended the morals and respectability of factory workers in writings that were first published in 1844. See, Samuel Bamford, *Walks in South Lancashire and on Its Borders: with Letters, Descriptions, Narratives and Observations, Current and Incidental* (Brighton, 1972), pp.30-31, 86, 132.

whereas factory work was still the norm for single women there.¹⁶¹ Although there is some limited evidence for a breakdown in intra-family economic support, Koditschek convincingly argues that this was far from the norm.¹⁶² Indeed, in mid-nineteenth-century Stockport, in many ways a typical northern textile town:

... even after marriage, working children tended to live at home with their parents into their mid-to-late twenties, an indication of a solidarity of family relationships that an established pattern of contribution of secondary wage earners to family budgets might create.¹⁶³

Where poverty did dictate that the wife/mother go out to work, families could often absorb the childrearing and domestic functions expected of her. Reach, visiting the courts of one of the Irish quarters in Huddersfield, found a solitary house of English people containing an old man, his wife, their daughter, her husband, and the infant of the latter couple. The grandfather had always worked in woollen mills but was now refused employment for being too old. The family were entirely supported by the son-in-law's earnings of 13s per week. The daughter, '...was to go into a mill the moment the infant could be left with its grandmother.'¹⁶⁴ An Irish woman he visited in Bradford, whose house and person Reach reported to have been very clean and tidy, went out to work at a mill, earning 6s per week. Her son also worked at a mill, receiving 2s per week, and her seven-year-old daughter looked after the two younger children and did other domestic work.¹⁶⁵

¹⁶¹ Koditschek, *Class Formation and Urban-Industrial Society*, p.377.

¹⁶² Koditschek, *Class Formation and Urban-Industrial Society*, p.377; Reach, *Fabrics, Filth and Fairy Tents*, pp.48-49.

¹⁶³ Burr-Litchfield, 'The Family and the Mill: Cotton Mill Work, Family Work Patterns and Fertility in Mid-Victorian Stockport', p.192.

¹⁶⁴ Reach, *Fabrics, Filth and Fairy Tents*, p.14.

¹⁶⁵ Reach, *Fabrics, Filth and Fairy Tents*, p.51.

Conclusion

Pinchbeck seems to have been correct to assert that:

Women's work was most varied where the influence of capital in the trade was negligible, as among the small Yorkshire clothiers. When every process from the fleece to the woven piece of cloth was undertaken in the home, the women of the family commonly assisted in all operations. Big capitalistic production, on the other hand, meant a division of labour in which women were relegated to certain occupations, the number of which tended to be reduced as capitalistic organisation developed.¹⁶⁶

This development was occurring to various degrees in all branches and regions of wool textile production in the eighteenth and early nineteenth centuries. However, the decline and end of apprenticeship regulation over the same period had enabled more women to enter what was at the time the well-paid occupation of handloom weaving. The transfer of production to the factory greatly increased the proportion of adult women employed in this industry relative to men, but the well-paid overseeing occupations were not available to them. Women's perceived inability to supervise labour helps to explain why they accounted for a smaller proportion of the adult workforce in woollens, where spinning, slubbing and scribbling were organised on the sub-contract system. Information on unions at this time is somewhat sketchy, but it seems that the various male woollen unions were much more successful in preserving male privilege than those in worsted, where occupations were less sub-divided. Strength undoubtedly explains some of the difference in earnings and occupations between the genders, and why more men were found in factory woollen production than was the case in worsted, but this appears to have been even less important than in cotton. The importance of an appreciation of local labour market conditions for the work of men and women is demonstrated by the relatively low level of female participation in factory work in the West of England, despite their wages being relatively high here.

¹⁶⁶ Pinchbeck, *Women Workers and the Industrial Revolution*, p.121.

Chapter 5: Silk, Flax and Lace

Introduction

Silk had been thrown and woven in England at least as early as the fourteenth century but was largely restricted to the production of ribbons until the late seventeenth century.¹ This changed with the revocation of the Edict of Nantes, in 1685, which led to a mass migration of Huguenots to England who brought new techniques, and a large labour force well acquainted with the silk industry, resulting in a rapid expansion of the trade.² Silk was the first industry to successfully apply external power to production within a modern factory environment. Inspired by the silk throwing mills he had observed in Italy, Thomas Lombe constructed a throwing mill in Derby between 1718-21 which utilised complex throwing machinery driven by water power from the River Derwent, and was reported to have employed around 300 people.³ The success of this mill was such that it provided the model for the early water-powered cotton mills built in the last three decades of the eighteenth century.⁴ Its success also led to the early spread of silk throwing mills; in Essex there were at least four by the middle of the 18th-century, in Macclesfield by the early 1760s there were nineteen mills employing nearly 4000 hands, and in Stockport a further 2000 were employed in throwing mills.⁵ The earliest throwing mills primarily catered to the needs of

¹ Dorothy George, *London Life in the Eighteenth Century* (London, 1925), p.176; Lown, *Women and Industrialisation*, pp.9-10. N.b. in silk production 'throwing' is the process used to produce silk yarn and is equivalent to spinning in cotton, wool textiles or flax.

² George, *London Life in the Eighteenth Century*, p.177.

³ Baines, *History of the Cotton Manufacture in Great Britain*, p.185; Chapman, *The Early Factory Masters*, p.40; S. R. H. Jones, 'Technology, Transaction Costs, and the Transition to Factory Production in the British Silk Industry, 1700-1870', *Journal of Economic History*, 47 (1987), pp.75-76. The mill was described thus by Daniel Defoe when he visited Derby around 1725, 'Here is a curiosity in trade worth observing, as being the only one of its kind in England, namely, a throwing or throwster's mill, which performs by a wheel turned by the water; and though it cannot perform the doubling part of a throwster's work, which can only be done by a handwheel, yet it turns the other work, and performs the labour of many hands.' Defoe, *A Tour through the Whole Island of Great Britain*, pp.16, 458.

⁴ Chapman, *The Early Factory Masters*, p.40.

⁵ Glen, *Urban Workers in the Early Industrial Revolution*, p.17; Jones, 'Technology, Transaction Costs, and the Transition to Factory Production in the British Silk Industry', p.77; Lown, *Women and Industrialisation*, p.18; Wadsworth and Mann, *The Cotton Trade and Industrial Lancashire*, p.305. N.b. the silk industry in Stockport

the handloom weaving community based around Spitalfields in London, but towards the end of the century the location of weavers became more dispersed. By the end of the eighteenth century weaving was being carried out in various places across England, including Macclesfield and a number of towns in Essex.⁶ Even more so than in cotton and wool textiles, silk weaving was slower to mechanise than throwing/spinning, a dozen or so factories first introduced powerlooms 1825-32, but handlooms continued to be used in some areas up until the end of the nineteenth century.⁷

The Just Complaints of the Poor Weavers, published in 1719, specifically mentions women working as silk weavers, and women continued to work in such a capacity throughout the eighteenth and nineteenth centuries.⁸ In 1769, a clause was inserted to the Book of Prices for the Spitalfields silk trade which excluded women from the better paid classes of work for some years, and women in Coventry were prevented from using the more productive double-loom from around 1770 until 1812.⁹ However, domestic silk weaving was generally open to women and employed them in considerable numbers, albeit with a tendency for concentration in low-skilled and low-paid branches.¹⁰ By contrast few women were employed as handloom weavers in linen, with the high level of strength required for this work favouring male labour.¹¹ As was the case in worsted, and cotton and woollens before the introduction of the spinning-mule, the labour force in spinning/throwing and other preparatory processes in silk and flax was dominated by low paid

collapsed in the early 1770s, never to recover, but was replaced by the emergent cotton industry. See, Glen, *Urban Workers in the Early Industrial Revolution*, pp.31-33.

⁶ Lown, *Women and Industrialisation*, p.19; Gail Malmgreen, *Silk Town: Industry and Culture in Macclesfield, 1750-1835* (Hull, 1985), p.21.

⁷ Jones, 'Technology, Transaction Costs, and the Transition to Factory Production in the British Silk Industry', pp.82, 93.

⁸ '...the grand cause of the weavers wanting work is the covetousness of the masters and mistresses in taking so many apprentices for the sake of the money they have with them.' Cited in George, *London Life in the Eighteenth Century*, p.180.

⁹ Pinchbeck, *Women Workers and the Industrial Revolution*, pp.168-70.

¹⁰ Pinchbeck, *Women Workers and the Industrial Revolution*, p.169; Sharpe, *Adapting to Capitalism*, p.38.

¹¹ Pinchbeck, *Women Workers and the Industrial Revolution*, p.168.

women and children.¹² The domestic lace trade primarily employed women and children working for putting-out merchants. Although a few women working in the highly skilled branches could earn good wages, this was not the case for most of the workers in the industry, and wages were highly variable in a trade where demand fluctuated so much according to fashion.¹³

In 1700 England spun little flax commercially, and much of the linen produced in the eighteenth-century was made by families for their own use.¹⁴ In the early eighteenth century English linen production was limited by the demand for heavy linens at home, and competition from a growing Irish industry. However, English producers benefited from protectionist policies from the early eighteenth century onwards, with growth being particularly strong in the third quarter of the eighteenth century. By 1830 England was dominating European production of flax yarn, albeit that much of the yarn was exported to be woven elsewhere.¹⁵ The factory flax trade was centred in Yorkshire, particularly Leeds.¹⁶ By the 1830s and 1840s a large factory silk labour force had emerged, with the East Cheshire/Lancashire border areas being the leading centre, but considerable levels of factory employment also developing in East Anglia, Derbyshire, Staffordshire, Yorkshire and Warwickshire.¹⁷ Factory lace production had also begun by this time, albeit on a smaller scale.¹⁸

¹² George, *London Life in the Eighteenth Century*, p.183; Pinchbeck, *Women Workers and the Industrial Revolution*, p.146.

¹³ Pinchbeck, *Women Workers and the Industrial Revolution*, pp.203, 205-06.

¹⁴ Pinchbeck, *Women Workers and the Industrial Revolution*, p.131.

¹⁵ Rimmer, *Marshalls of Leeds*, pp.2-5.

¹⁶ In 1847 64.73% of the English flax factory labour force worked in Yorkshire. Extracted from, B.P.P. 1847, XLVI, p.613.

¹⁷ See, B.P.P. 1847, XLVI, p.614.

¹⁸ The 1834 Report only reported age and wages figures in lace from one mill in Tiverton and several factories 'in and about Derby'. See, B.P.P. 1834, XIX, p.278.

The Textile Workforce by Gender and Age

As Tables 5.1 show, the silk and flax factories employed very high proportions of females. These levels were considerably higher than the proportion employed in cotton, which itself attracted so much contemporary attention. Lace factories employed a considerably higher proportion of males than silk or flax factories, particularly amongst the adult sector of the workforce.

*Table 5.1: The Factory Textile Workforce by Age, Gender, Region and Industry (1833)*¹⁹

Industry	Region		Age < 13		Age 13-17		Age > 17		Aggregate	
			M	F	M	F	M	F	M	F
Silk	E Anglia	N	27	567	12	633	15	418	54	1618
		As % of WF	1.61%	33.91%	0.72%	37.86%	0.90%	25.00%	3.23%	96.77%
	Somerset	N	89	144	35	155	25	279	149	578
		As % of WF	12.24%	19.81%	4.81%	21.32%	3.44%	38.38%	20.50%	79.50%
	Derby	N	256	317	244	469	404	783	904	1569
		As % of WF	10.35%	12.82%	9.87%	18.96%	16.34%	31.66%	36.55%	63.45%
Flax	Leeds	N	262	284	276	683	430	582	968	1549
		As % of WF	10.41%	11.28%	10.97%	27.14%	17.08%	23.12%	38.46%	61.54%
Lace	Derby	N	30	56	70	90	95	95	195	241
		As % of WF	6.88%	12.84%	16.06%	20.64%	21.79%	21.79%	44.72%	55.28%
	Tiverton	N	81	14	104	85	263	232	448	331
		As % of WF	10.40%	1.80%	13.35%	10.91%	33.76%	29.78%	57.51%	42.49%
Cotton	Lancashire	N	686	594	1074	1185	1927	2056	3687	3835
		As % of WF	9.12%	7.90%	14.28%	15.75%	25.62%	27.33%	49.02%	50.98%
Woollens	Gloucs	N	258	131	304	170	584	430	1146	731
		As % of WF	13.75%	6.98%	16.20%	9.06%	31.11%	22.91%	61.05%	38.95%
	Somerset	N	119	36	108	79	329	248	556	363
		As % of WF	12.95%	3.92%	11.75%	8.60%	35.80%	26.99%	60.50%	39.50%
	Wilts	N	325	98	532	137	873	530	1730	765
		As % of WF	13.03%	3.93%	21.32%	5.49%	34.99%	21.24%	69.34%	30.66%

Source: See Appendices C1, C3-C11.

¹⁹ I have not included Yorkshire wool textiles in this table as it combines woollen and worsted production, which as Table 5.4 shows had very different employment patterns. The lace trade is not included in the 1847 census of workers. See, B.P.P. 1847, XLVI.

Table 5.2: The Factory Textile Workforce by Age, Gender, Region and Industry (1847)

Industry	Region		Age < 13		Age 13-17		Age > 17		Aggregate	
			M	F	M	F	M	F	M	F
Silk	Norfolk	N	3	73	28	429	150	1155	181	1657
		As % of WF	0.16%	3.97%	1.52%	23.34%	8.16%	62.84%	9.85%	90.15%
	Suffolk	N	55	107	42	206	11	185	108	498
		As % of WF	9.08%	17.66%	6.93%	33.99%	1.82%	30.53%	17.82%	82.18%
	Essex	N	67	166	89	503	253	1149	409	1818
		As % of WF	3.01%	7.45%	4.00%	22.59%	11.36%	51.59%	18.37%	81.63%
	Somerset	N	119	252	61	506	76	634	256	1392
		As % of WF	7.22%	15.29%	3.70%	30.70%	4.61%	38.47%	15.53%	84.47%
	Derbyshire	N	255	575	504	1084	737	1989	1496	3648
		As % of WF	4.96%	11.18%	9.80%	21.07%	14.33%	38.67%	29.08%	70.92%
	Lancashire	N	329	674	640	2070	1609	3045	2578	5789
		As % of WF	3.93%	8.06%	7.65%	24.74%	19.23%	36.39%	30.81%	69.19%
	Cheshire	N	1475	1680	1433	2320	2793	4468	5701	8468
		As % of WF	10.41%	11.86%	10.11%	16.37%	19.71%	31.53%	40.24%	59.76%
Flax	Yorks	N	626	579	1552	3056	2538	4491	4716	8126
		As % of WF	4.87%	4.51%	12.09%	23.80%	19.76%	34.97%	36.72%	63.28%
Worsted	Yorkshire	N	3362	3794	3985	9868	6362	19,928	13709	33590
		As % of WF	7.11%	8.02%	8.43%	20.86%	13.45%	42.13%	28.98%	71.02%
	Norfolk	N	17	16	83	292	106	831	206	1139
		As % of WF	1.26%	1.19%	6.17%	21.71%	7.88%	61.78%	15.32%	84.68%
Cotton	Lancashire	N	7821	4625	24401	35185	57548	71993	89770	111803
		As % of WF	3.88%	2.29%	12.11%	17.46%	28.55%	35.72%	44.53%	55.47%
Woollens	Yorkshire	N	3222	2238	6756	5346	14629	6546	24607	14130
		As % of WF	8.32%	5.78%	17.44%	13.80%	37.76%	16.90%	63.52%	36.48%
	Gloucs	N	28	12	880	820	1583	1985	2491	2817
		As % of WF	0.53%	0.23%	16.58%	15.45%	29.82%	37.40%	46.93%	53.07%
	Somerset	N	26	14	383	322	713	722	1122	1058
		As % of WF	1.19%	0.64%	17.57%	14.77%	32.71%	33.12%	51.47%	48.53%
	Wilts	N	7	1	679	448	1253	877	1939	1326
		As % of WF	0.21%	0.03%	20.80%	13.72%	38.38%	26.86%	59.39%	40.61%

Source: Extracted from PP 1847 XLVI, pp.610-14.

The data in Table 5.2 should be more representative of the whole industry than the data in Table 5.1. In 1833 response to the survey was voluntary for factory owners, whereas the 1847 data comes from an attempt to compile a census of all factory employment, by which time there was a well-established national inspectorate for factories. It can be expected that there is less big firm

bias in the data from 1847 than that from 1833. However, differences in the figures are not purely down to differing survey methods; changes in the composition of the factory workforce occurred over this period. Particularly noticeable is the decline in the proportion of the workforce aged under 13 between 1833 and 1847, which occurred as a result of the restrictions placed on the hours children could work in textile factories by the Factory Act of 1833, and to a lesser extent the Act of 1844. Even Clark Nardinelli, who otherwise tries to downplay the effect of state legislation, accepts that after the implementation of the 1833 Act in 1835, ‘a large decline [in the number of children aged less than 13 employed in textile factories] did take place.’²⁰ The data I present in Tables 5.1-5.2 further supports this conclusion.

Females as a proportion of the total labour force in silk factories varied considerably by region, demonstrating the importance of local labour market conditions. The 1833 and 1847 data show that females accounted for over 80% of the factory silk workforce in all of the East Anglian counties and in Norfolk this figure was above 90%. In Somerset females accounted for 79.50% in the 1833 data and 84.47% in the 1847 data. Whereas the 1847 data for Cheshire shows females to account for just under 60% (Lancashire and Derbyshire were in between the extremes of Cheshire and East Anglia/Somerset). The 1833 factory returns show that in Macclesfield and Congleton, the main centres of factory silk production in Cheshire, females accounted for 63.23% of the workforce. In nearby Manchester this figure was 65.30%.²¹

A significant proportion of handloom weaving had been moved into the factory by Macclesfield masters from 1815.²² Thus, it could be claimed that the difference between Cheshire and East Anglia regarding the proportion of factory workers that were female may have been

²⁰ Nardinelli, *Child Labour and the Industrial Revolution*, p.107. See also, Bolin-Hort, *Work, Family and the State*, p.102.

²¹ Extracted from B.P.P. 1834, XIX, p.448.

²² Jones, ‘Technology, Transaction Costs, and the Transition to Factory Production in the British Silk Industry’, p.78.

because some of the handloom weaving in Macclesfield was being performed within the factory, since this occupation tended to employ more males, but this explains only some of the difference at most. The shift of handlooms into the factory in Macclesfield was an attempt by the employers to bypass the relatively expensive labour of adult males, so the factory handloom workforce can be expected to have employed a lower proportion of males than the domestic handloom workforce.²³ Support for this can be found in the occupational tables in the 1834 Report, where factory weaving is described as a job performed by ‘men’ in Manchester, ‘principally men’ in Congleton, but ‘men, women, boys and girls’ in Macclesfield.²⁴ Also, females accounted for an extremely high proportion of the Norfolk worsted factory labour force (84.68% in contrast to the national average of 70.78%, and an average of 71.02% for Yorkshire, the predominant worsted producing county) demonstrating that textile factories in East Anglia generally employed a very high proportion of female workers.²⁵ Further, John Hall and Samuel Courtauld, the two largest Essex employers had been amongst the technological vanguard, introducing powerlooms in the 1820s. The huge Norwich firm of Grout, Baylis & Co. had also taken the unusual step of moving some of their handloom weavers into the factory.²⁶ Finally, weaving was heavily feminised in East Anglia. All of the powerloom weavers at Courtauld’s factory were female, as were two-thirds of the handloom weavers employed by him in 1838. At Grout, Baylis & Co., in 1838, of the 410 handloom weavers employed inside and outside of the factory 386 were female.²⁷

²³ Jones, ‘Technology, Transaction Costs, and the Transition to Factory Production in the British Silk Industry’, p.78.

²⁴ See, Appendices B1-B3.

²⁵ National worsted data extracted from B.P.P. 1847, XLVI, p.612. Cotton, woollen, worsted and flax were not produced in Somerset or Essex factories on a sufficient scale to make such comparisons for these counties possible. See, B.P.P. 1847 XLVI, pp.610-14.

²⁶ Jones, ‘Technology, Transaction Costs, and the Transition to Factory Production in the British Silk Industry’, p.80. The vast size of this firm is shown by Joseph Grout’s testimony to the 1833 Factory Inquiry, where he stated that the firm employed around 2700 workers across its various factories. See, B.P.P. 1833, XX, p.1109.

²⁷ D. C. Coleman, *Courtaulds: an Economic and Social History*, Vol.1 (Oxford, 1969), p.231.

Table 5.2 shows that, for the 1847 data, in all of the main silk producing counties females outnumbered males in all of the three age categories (i.e. under 13, 13-17, above 17). This was unusual for textile production, the only other county-industry this was true for was Yorkshire worsted. Females outnumbered males in the adult factory workforce for all counties-industries in the table except for Yorkshire and Wiltshire woollens. Females outnumbered males in the age 13-17 category except for in all of the woollen counties. However, as Tables 5.3-5.4 show, the ratio of females to males was typically lower for workers aged less than 13 than for the older age categories.²⁸ In the 1833 data, only in Derby lace and Wiltshire woollen factories was the ratio for the number of female workers to male workers lower for the ages 13-17 than under 13. In the more comprehensive and reliable 1847 data this only occurred in Derbyshire silk. The higher proportion of factory workers that were females in the higher age groups can partially be explained by the lack of alternative employment for adult females. However, it is also explained by the common finding that young female children were expected to help out with domestic and childcare responsibilities more than male children. In 1816 Richard Arkwright said that although children aged less than 10 had not been employed in his mills for around ten years, he thought that in many ways boys should begin in the factory at 9 years old since, ‘I see them often running about, and in mischief.’ Whereas, the girls, ‘have to nurse their younger brothers and sisters, or they work at home, or they do something; but boys have nothing to do unless they go to school.’²⁹

Textile factory work offered relatively good wages for young male children, and they accounted for a high proportion of the pre-teenage workforce. Textile factory wages were also

²⁸ The exceptions for age above 17 are Derby lace in the 1833 data and Norfolk silk, Lancashire silk, and Yorkshire wool in the 1847 data. The exceptions for age 13-17 are Derby lace and Wiltshire wool in 1833 data, and Norfolk silk, and Derbyshire silk in 1847 data.

²⁹ Cited in, Fitton and Wadsworth, *The Strutts and the Arkwrights*, p.227. For further evidence that girls were expected to perform domestic and childcare responsibilities more than boys were, see, Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, p.118; Lown, *Women and Industrialisation*, pp.84, 147; Reach, *Fabrics, Filth and Fairy Tents*, p.51.

quite good for adolescent males, but their relative withdrawal from the textile factory workforce at ages 13-17 would seem to reflect the importance of the teenage years for human capital formation: adult males had plenty of alternative forms of employment, and so teenage males would have had an incentive to move into alternative industries at an age that was crucial for the skill acquisition that could determine lifetime earnings. For females alternative high-paying adult jobs were in short supply, and so factory textile work was relatively much more attractive to them than males during teenage years and adulthood. This was the case even in West of England wool production, which had low female wages relative to male wages, lower proportions of female workers than the other textile industries, and good female employment opportunities in agriculture compared to most of England.³⁰

Table 5.3: Ratio of F:M Workers in Factory Textile Production (1833)

Industry	Location	Age < 13	Age 13-17	Age > 17	Aggregate
Silk	E Anglia	21.00	52.75	27.87	29.96
	Somerset	1.62	4.43	11.16	3.88
	Derby	1.24	1.92	1.94	1.74
Flax	Leeds	1.08	2.47	1.35	1.60
Lace	Derby	1.87	1.29	1.00	1.24
	Tiverton	0.17	0.82	0.88	0.74
Cotton	Lancs	0.87	1.10	1.07	1.04
Woollen	Gloucs	0.51	0.56	0.74	0.64
	Somerset	0.30	0.73	0.75	0.65
	Wilts	0.30	0.26	0.61	0.44

Source: See Appendices C1, C3-C11.

³⁰ See, Figures 4.4-4.12, Tables 5.1-5.2. For female employment opportunities in agriculture being relatively good here, see above, Chapter 4.

Table 5.4: Ratio of F: M Workers in Factory Textile Production (1847)

Industry	Location	Age < 13	Age 13-17	Age > 17	Aggregate
Silk	Norfolk	24.33	15.32	7.70	9.15
	Suffolk	1.95	4.90	16.82	4.61
	Essex	2.48	5.65	4.54	4.44
	Somerset	2.12	8.30	8.34	5.44
	Derbs	2.25	2.15	2.70	2.44
	Lancs	2.05	3.23	1.89	2.25
	Cheshire	1.14	1.62	1.60	1.49
Flax	Yorks	0.92	1.97	1.77	1.72
Worsted	Yorks	1.13	2.48	3.13	2.45
	Norfolk	0.94	3.52	7.84	5.53
Cotton	Lancs	0.59	1.44	1.25	1.25
Woollen	Yorks	0.69	0.79	0.45	0.57
	Gloucs	0.43	0.93	1.25	1.13
	Somerset	0.54	0.84	1.01	0.94
	Wilts	0.14	0.66	0.70	0.68

Source: Extracted from B.P.P. 1847, XLVI, pp.610-14.

Silk

Figures 5.1-5.2 show that women in East Anglian silk production received low wages relative to women working in the Derby silk industry, and even more so relative to women working in the factories of Lancashire cotton and West Riding wool textile production (see, Figures 3.3, 4.2). Although the average wages for some of the women aged 40 and above in the silk factories of East Anglia were quite high, this age group accounted for a mere 0.06% of the adult female workforce. The average wages of females aged 18 and above in the region were only 4.34s per week. In Somerset this figure was 5.13s and in Derby it was 6.56s. In West Riding wool textiles females aged 18 and above earned an average of 7.15s, and in Lancashire cotton they earned 8.37s. Females aged 18 and above in Somerset woollen production earned an average of 6.70s,

well above the wages of women employed in the silk factories here.³¹ This strongly suggests that the low wages of women in factory silk production was partly as a result of a lower return on skill being available for female work than in factory woollen production.

The low wages of females combined with female dominance of the workforce in the East Anglian silk mills reflect the fact that women's employment opportunities had declined dramatically here since the early eighteenth century because of changes in agriculture and the collapse of hand-spinning, as well as the decline of other occupations related to wool textiles as production was mechanised and shifted to the West Riding.³² The changes occurring in wool textiles had also reduced demand for female labour in Somerset. The straw-plait industry had provided only partial and very temporary relief for the decline in demand for women's labour in East Anglia, and was not at all common in Somerset.³³ It is unsurprising that a decline in the availability of one form of textile employment in these two regions, led to many women being available for a new form of textile employment, with their weak position in the labour market allowing low wages to be paid. In East Anglia this was exacerbated by the fall in demand for female labour in agriculture.

The fact that some very high average wages, indeed higher than any given in the 1833 data for cotton and wool textiles, are reported for adult men employed in East Anglian and Derby silk factories at certain ages from 29 upwards is slightly misleading. The very low number of observations for men of this age in the silk industry means that there is much greater variance in the average wages figures, some older men would also have earned figures at least this high in the

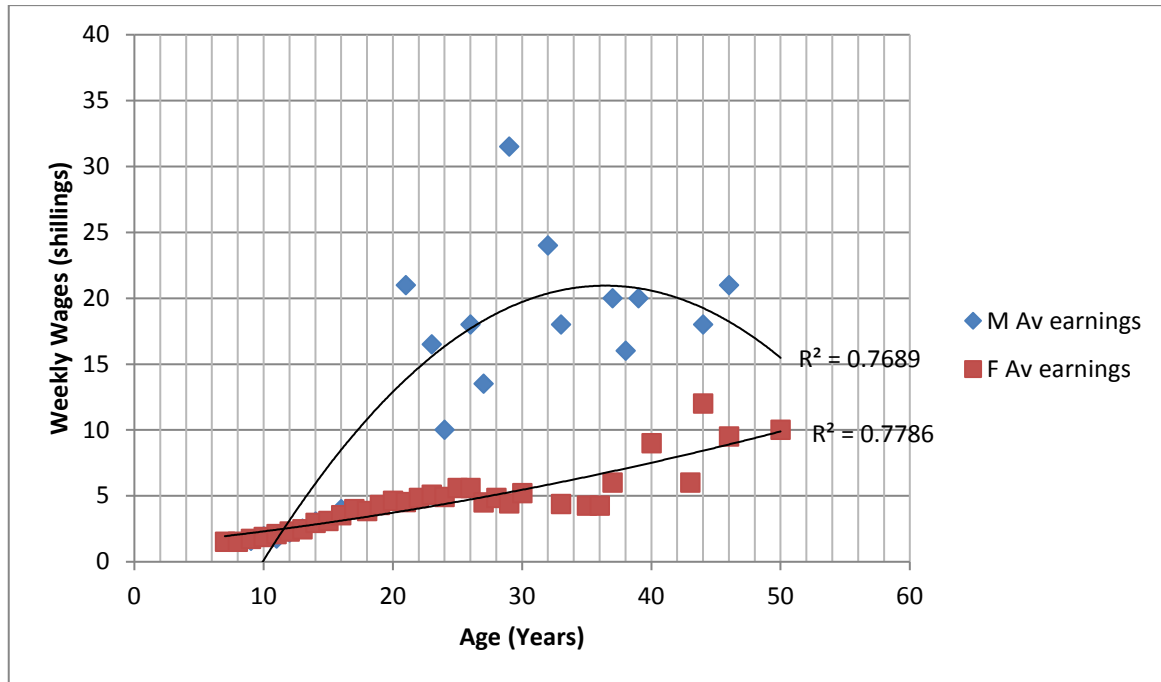
³¹ Figures extracted from Appendices C1-C2, C4, C6-C8.

³² Sharpe argues that Snell overstates the importance of agricultural change for women's worsening labour market position in Essex, instead highlighting the decline of hand-spinning. It is beyond the scope of this thesis to determine the relative importance of the decline of women's employment in each industry, but there is no doubt that the decline of both together had a very significant impact on women's employment in East Anglia. See, Sharpe, *Adapting to Capitalism*, Chapters 2, 4; Snell, *Annals of the Labouring Poor*, Chapter 1. See also, Verdon, *Rural Women Workers in Nineteenth-Century England*, pp.99-102, 121-25.

³³ Pinchbeck, *Women Workers and the Industrial Revolution*, pp.215-16, 218, 221.

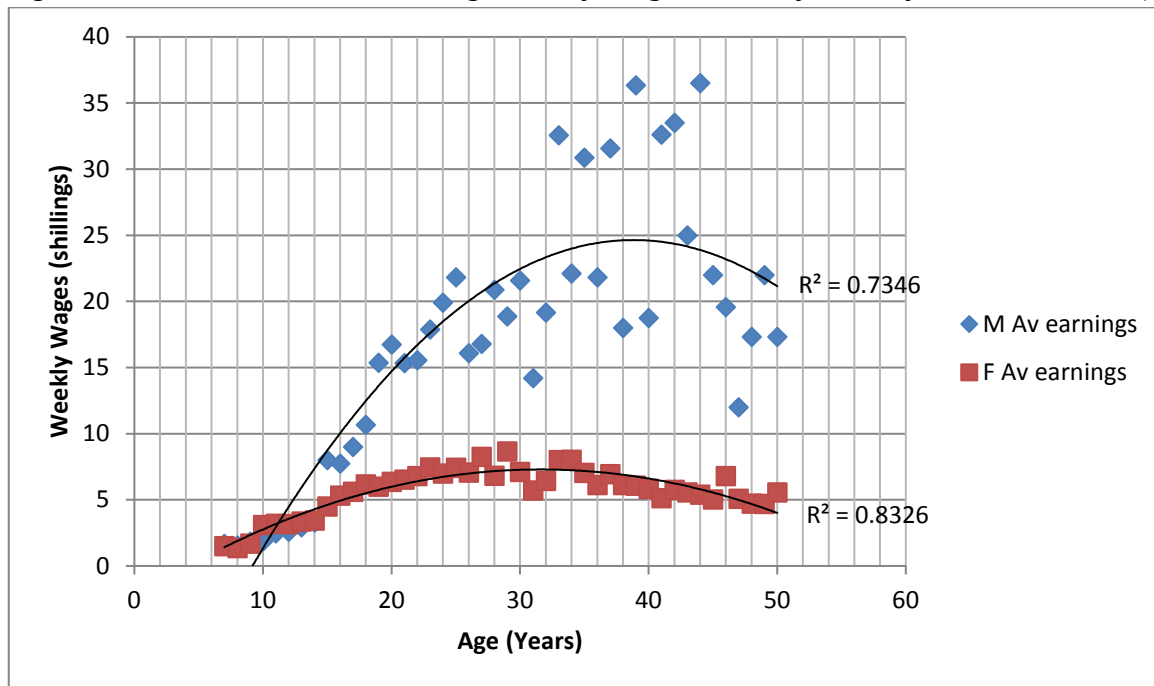
cotton and wool textile industries but these are hidden in 1833 data by the average being reported for a much higher number of workers at this age level (see, Appendices C1-C8).

Figure 5.1: Male and Female Average Weekly Wages in East Anglian Factory Silk Production (1833)



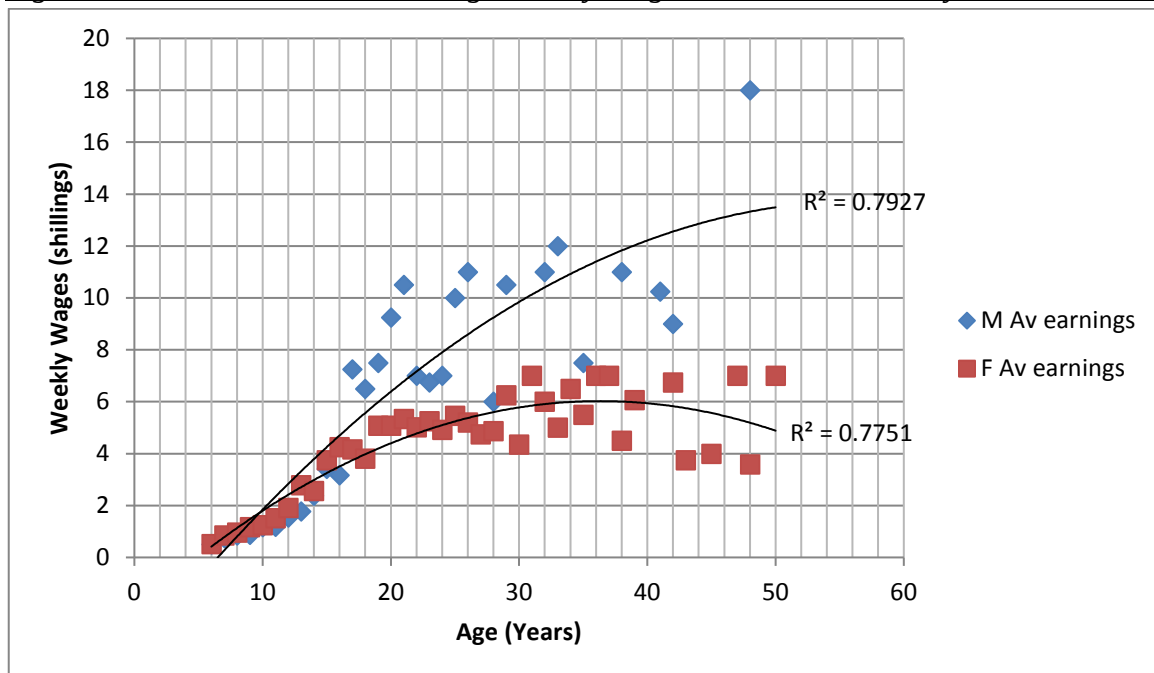
Source: See Appendix A7.

Figure 5.2: Male and Female Average Weekly Wages in Derby Factory Silk Production (1833)



Source: See Appendix A7.

Figure 5.3: Male and Female Average Weekly Wages in Somerset Factory Silk Production (1833)



Source: See Appendix A8.

Table 5.5: Wages by Occupation in Manchester, Macclesfield and Congleton Factory Silk Production (1833)

Occupation	Sector	Age and gender	N	Avg. Wages	Avg. hours
Overlookers	Weaving	M	15	19.52	267.7
Overlookers	Throwing	M	105	15.83	272
Warpers	Weaving	M & W	105	13.29	269.5
Weavers	Weaving	Principally M	322	10.19	271
Throwers	Throwing	M & B	443	8.03	271.4
Danthers	Throwing	W & G	126	7.27	271
Winders	Weaving	W & G	329	6.69	279.1
Winders	Throwing	Principally G	1910	3.30	271.3

Source: Extracted from PP 1834 XIX, p.448. N.b. the average wages of ‘engineers, mechanics, &c.’, who were all adult males was 16.84s/week. However, these only accounted for 5.27% of the adult male workforce. These workers have not been included in the above table because they are listed separately to the above information in the Report, and the information on them seems to have been derived in a different manner to that of the data given above. ‘Danthers’ are referred to as ‘dunters’ by Reach, and I have used this spelling in my text. See, Reach, A Cotton-Fibre Halo, p.156.

The 1834 Report does not provide the necessary evidence required to enable the construction of age-earnings profiles for the silk industry in Manchester, Macclesfield and Congleton (hereafter referred to as MMC), but the breakdown of occupational wages by age and gender it does provide (see, Table 5.5) indicates that women here were even better paid than the women in Derby. Nevertheless, men still monopolised the top-paying overlooking occupations. The high wages for women silk workers in MMC given in Table 5.5 are supported by the findings of Angus Reach, who visited Macclesfield in 1849. He found that the women employed as sorters were generally paid 10s per week. After sorting the silk was plunged into hot water, which was generally done by men, who were also employed in other odd jobs around the mill, and who earned 15-20s. When the raw silk had been separated from the cocoons, it was ready for winding on to bobbins. The ‘dunters’, who were female and were in charge of the winding machines, received around 7s6d. Young girls working as assistants to the dunters got 5s6d-6s. Next, the silk that had been wound

onto the bobbins needed to be cleaned, girls performing this operation typically earned 6-6s3d. Doublers, who were typically young women, were paid an average of 7s6d. 'Spinners' (the workers in the silk industry that Reach describes as 'spinners' are usually referred to as 'throwsters') were men operating machinery that sometimes operated at above 3000 revolutions per minute, and received around 12s, 'some a little more, some a little less'. The boys who assisted them received around 6s6d. After being spun the silk had to be dyed to the desired colour. Then, it had to go through reeling and winding again, the young women and girls who did this were paid 7s6d-8s. Then the thread would be woven. The highest-paid job available to women was 'bear-warping', one of the technical processes that had to be performed after weaving according to the sort of pattern that was being woven, with these women being paid not less than 12s. Another of these finishing technical processes was known as 'coupling and knitting'. This light and low-skilled work employed young women who earned only 5s, and young girls who earned up to 3s. Their superintendents earned 10s (unfortunately Reach does not mention their gender, but it seems at the very least plausible, given the type of workers being supervised and the relatively low wages being paid to workers performing an overseeing function, that these superintendents were female).³⁴

Although the powerloom was being used to weave some low quality silk pieces in Macclesfield by 1849, handlooms were still the dominant technology at this time. Coarse silks produced on the handloom were generally manufactured by workers in their own homes, whereas higher quality goods were produced on handlooms in the mills due to fear of embezzlement on the part of the employer.³⁵

³⁴ Reach, *A Cotton-Fibre Halo*, pp.156-59.

³⁵ Reach, *A Cotton-Fibre Halo*, pp.159-60.

A Jacquard weaver in full work, at a superior piece of goods, can still earn as much as 35s a week; but taking the year round, including his seasons of enforced idleness, his wages, at least so far as Macclesfield goes, may be stated as averaging 10s to 11s. In this estimation masters and men very generally agreed.³⁶

It is noticeable that although Reach describes most processes as being performed by females, where boys are mentioned (as assistants to spinners/throwsters), it involves one of the few occupations where the subordinate workers worked alongside men. This apparent gender division within the silk factories supports Humphries' thesis regarding the working class by this time seeking gender segregation of occupations as a means of controlling the sexual behaviour of children.³⁷ As was the case in the equivalent table for the cotton industry (see, Table 3.1), Table 5.5 gives no reason to believe that female factory workers worked shorter hours than males in 1833. Indeed, winders in the weaving department worked the longest of any occupation in Table 5.5. When these data are presented for Manchester, Macclesfield and Congleton individually winders work the longest, or joint longest, hours of any occupation in each given district. In all of the districts winders are described as 'women and girls'.³⁸

The few highly paid women observable in Figure 5.1 may have been working in some kind of supervisory/overseeing capacity. The very high proportions of female labour in the East Anglian silk industry should have made it easier for women to become overseers, since resistance to female supervision seems to have been strongest amongst adult males. Indeed, the only concrete evidence for female supervisors in textile factories I have found comes from the Courtauld mill in Essex. In the 1810s Samuel Courtauld, as his father George had done, employed females, including his sisters, as overseers at his mill. These females oversaw the labour of female parish apprentices in the winding rooms. As ideas of gentility spread, Samuel Courtauld's sisters

³⁶ Reach, *A Cotton-Fibre Halo*, p.160.

³⁷ Humphries, "...The Most Free From Objection...", pp.929-49.

³⁸ Appendices B1-B3.

were withdrawn for a life of domesticity or work deemed more suitable for a middle-class female.³⁹ The records of this firm for the 1830s-60s, show that women from the lower orders continued to be employed in an overseeing position in the winding room. However, these women were only employed as ‘female assistant overseers’, and not as ‘second-class overseers’ or ‘principal overseers’, with their job titles indicating a relative lack of authority, seniority and control over workers at the mill. It is also highly significant that although the winding room was employing ‘free’ labour by this time, they were the youngest workers anywhere in the factory (excluding overseers, boys aged under 16, and girls aged under 18).⁴⁰ Once again, we see that female supervision of adult labour was not deemed acceptable.

The earning capacity of Courtauld’s female assistant overseers was commensurate with their low status relative to the male overseers: they typically earned 8s6d per week in the 1850s, whereas second-class overseers and principal overseers could earn up to 25s and 40s respectively.⁴¹ The wages of the female assistant overseers were less than the 10s typically received by the women working as gauze examiners, who were the highest paid women at the mill.⁴² It was also not much, if at all, higher than the wages available in some of the other women’s jobs at the mill, as can be seen in Table 5.6. Further, employment as a female assistant overseer was only available to a very small number of women: of the overseers who are recorded in the *Wages Book, 1852-1876* as working at Halstead prior to 1860 there were only four female assistant overseers, whereas there were ten men who had attained the status of ‘principal overseer’ and another twenty who worked as ‘second-class overseers’.⁴³ Eleven women are listed in the

³⁹ Coleman, *Courtaulds*, p.43.

⁴⁰ Lown, *Women and Industrialisation*, pp.53-4, 57-8.

⁴¹ *Courtauld Papers*, DF/3/3/27. Of the four female assistant overseers listed in this document three of them (two of whom are aged 57, and the other aged 30) receive 8s6d per week. Marianne Barker was first employed in this occupation aged just 17, receiving 7s6d per week.

⁴² Their wages ranged from 9s6d-10s6d per week. See, *Courtauld Papers*, DF/3/3/27.

⁴³ *Courtauld Papers*, DF/3/3/27.

more highly paid occupation of gauze examiner. Women being so predominant in the workforce here, combined with their receiving much lower wages compared with the male overseers, would surely have led to them being employed in positions of greater authority and remuneration if the prevailing ideology of the time had not been so resistant to women occupying positions of authority. If a lengthy attachment at a single firm were important for a worker ascending to the position of overseer, this was also something that the women employed at the Courtauld Halstead mill possessed:

The common pattern for young women entering the mill in their early teens was to remain millworkers for the rest of their lives with marriage and childbirth representing short and temporary absences from work.⁴⁴

Table 5.6: Average Wages in Various Women's Occupations at the Courtauld Mill in Halstead (1853 & 1855)⁴⁵

Occupation	1853	1855
Warpers	8s4d	9s7d
Twisters	8s5d	7s2d-9s9d (avg. = 8s5½d)
Plug Winders	6s6d	6s5d-7s5½d (avg. = 7s)
Powerloom Weavers	4s5d-8s1d (avg. = 6s½d)	4s7½ d-8s4½ d (avg. = 6s6d)
Mill Hands	7s	6s9d
Drawers	4-6s (avg. = 5s)	4s7½d-6s2d (avg. = 5s4½d)

Source: Courtaulds Records, DF/3/3/27.

The table from the 1834 report that I have reproduced as Table 5.5 lists only men as working as overseers in the silk factories in Manchester, Macclesfield and Congleton. This remains the case

⁴⁴ Lown, *Women and Industrialisation*, pp.59-60.

⁴⁵ The wages are the weekly averages recorded for a week in June. All of the workers worked for 60 hours per week. All of these workers received piece-rates. It is not clear why the bookkeeper sometimes records the full range of wages in an occupation, in addition to the average, but in other cases does not. The bookkeeper states that the wages of warpers and weavers increased between 1853 and 1855 due to them finding a more efficient arrangement for working and increasing output, piece-rates had remained the same. Here 'women' are defined as females aged 17 and above. For all of these occupations employing only females aged 17 and above, see, Lown, *Women and Industrialisation*, p.59.

for tables of the same format for each of these towns individually.⁴⁶ Although Reach's observations from Macclesfield suggest the possibility that the young women and girls employed in coupling and knitting were supervised by women, the widespread absence of female overseers in a trade as female dominated as silk provides further strong evidence for resistance to female authority lowering women's earning opportunities during the Industrial Revolution.

Contrasting Table 5.5 with Table 3.1 implies that earning ability was not so determined by gender in silk as it was in cotton, with women employed in reasonably high numbers in the well-paid occupation of warping. However, this initial impression is somewhat misleading. In the localised occupational tables, warpers are described as men in both Congleton and Manchester. Whilst some women may have worked in these towns as warpers, if they did so they would have been low in number. Only in the table for Macclesfield are women listed as doing this job, with the occupation described as being 'principally [performed by] women'. Here warpers were paid considerably less than in Manchester or Congleton (an average of 9.80s per week as opposed to 20.15s and 13.93s). This was not due to Macclesfield factory silk workers having wages that were generally considerably lower than their counterparts in Manchester or Congleton. The ratio of the average wages for an occupation in Macclesfield to the average for MMC is much lower for warping than any other occupation in Macclesfield (0.74 as opposed to 0.90 for the next lowest, which is weaving).⁴⁷ This would seem to confirm the common finding that the presence of women in an occupation reduced average wages. However, it is necessary to be cautious about placing too much emphasis on this finding, since this source is contradictory on the issue of feminisation of an occupation reducing wages. For Manchester, the occupation with by far the

⁴⁶ See, Appendices B1-B3. The approach for designating gender-age categories for each occupation is the same as that which I have described in Chapter 3, Table 3.1. For why there was a possibility that women could be listed as overseers when the results are presented by individual town, see above, p.66.

⁴⁷ See, Appendix C2.

lowest ratio for its average wages to that of MMC is weaving (0.72 as opposed to 0.99 for the next lowest, which is winding in the throwing department). Weaving in Manchester is described as being performed by ‘men’, whereas in Macclesfield it is ‘men, women, boys and girls’, and in Congleton is ‘principally men’.

Despite some uncertainty over the interpretation of some of the figures in the 1833 data for Manchester, Macclesfield and Congleton, there is a clear relationship between age-gender and earning capability in factory silk production. Chadwick’s survey of silk manufacturers in Manchester and Salford suggests this relationship was very strong indeed (see, Table 5.8). As was the case at the Courtauld factory in the mid-nineteenth century,⁴⁸ Chadwick’s survey finds that all of the factory workers were expected to work 60 hours per week following the introduction of the Ten Hours Act (1847). Prior to this they were expected to work 66 hours per week.⁴⁹ Gender or occupation does not seem to have made any difference to the number of hours factory workers were typically expected to perform.

Table 5.7: Number of Male and Female Workers Aged above 17, 25 and 30 as a Proportion of the Factory Workforce in the English Silk Industry (1833)

Region		Age > 17		Age > 25		Age > 30	
		M	F	M	F	M	F
Derby	N	404	783	209	297	144	179
	As % of WF	16.34%	31.66%	8.45%	12.01%	5.82%	7.24%
E Anglia	N	15	418	11	38	8	11
	As % of WF	0.90%	25.00%	0.66%	2.27%	0.48%	0.66%
Somerset	N	25	279	13	74	10	37
	As % of WF	3.44%	38.38%	1.79%	10.18%	1.38%	5.09%

Source: See Appendices C6-C8.

⁴⁸ See, *Courtauld Papers*, DF/3/3/27.

⁴⁹ Although, of course, it is highly improbable that the workers in the mills that Chadwick surveyed worked these exact hours. For comparison, see, Tables 3.1, 5.5.

Table 5.8: Wages by Occupation in Manchester and Salford Factory Silk Production (1839-59)

Silk throwing and manufacturing							
		1839		1849		1859	
Occupation	GA	Weekly Hours	Wages	Weekly Hours	Wages	Weekly Hours	Wages
Warpers	M	66	21	60	21	60	24
Overlookers	M (assumed)	66	19	60	19	60	22
Weavers	M	66	18	60	18	60	20
Mill men and throwsters	M (assumed)	66	14	60	14	60	17
Spinners	Young M & B	66	7.5	60	7.5	60	10
Doublers	W	66	7.5	60	7.5	60	8.75
Winders	W	66	6.5	60	6.5	60	7
Cleaners	W & G	66	5	60	5	60	6

Source: D. Chadwick, 'On the Rate of Wages in Manchester and Salford and Lancashire, 1839-59 (2nd ed)', Manchester, 1860. N.b. Chadwick left the gender-age descriptor blank where it appears that he believed it would be obvious to the reader that this job is performed by men (i.e. in the case of 'Overlookers' and 'Mill men and throwsters').

It is notable that in figures 5.1-5.3 there is a clear decline in the average wages of females in Derby after the age of 34, whereas in East Anglia female wages rise, and in Somerset (where the number of observations is very low) the evidence is ambiguous. Strength does not seem to have been important for silk production, particularly in the occupations in which women were employed, so declining strength does not seem a valid explanation for the decline of female wages in Derby. However, given the delicate nature of silk it can be expected that the nimble fingers possessed by younger workers would have been a significant advantage, and as nimbleness declined, productivity would have done as well, reducing wages. Physical conditions associated with ageing, such as arthritis, would have been particularly problematic for the productivity of older women employed here. Table 5.7 shows that there was a high proportion of adult males in Derby factory silk production compared to Somerset and East Anglia. This is particularly relevant

for the ages above 25 and above 30, when workers would have been more eligible for jobs which would reward experience and knowledge within the trade, whilst at the same time the nimbleness of their fingers would have declined. Any women in Derby wishing to take on such jobs (e.g. assistant overseers, gauze examiners) would have faced much more competition from males than the women in East Anglia and Somerset. The low level of adult males employed in the factories of East Anglia and Somerset would also have meant that there were more occupations/rooms which employed only females and/or children, reducing ideological barriers to women being employed in jobs which involved them having authority over fellow workers.

The only evidence I have found for even an attempt at direct discrimination in the silk, flax and lace industries comes from Spitalfields silk in the early nineteenth-century. In 1810 a master refused to pay a journeywoman the appropriate piece-rate for her work as stipulated by the Spitalfields Acts (which regulated the piece-rates to be paid to workers according to what they produced).⁵⁰ This should probably be interpreted as an attempt at breaking the list-prices for all workers by subjecting them to unregulated competition, rather than reflecting a specific desire to discriminate against women. Initially, two magistrates ruled against the master, in light of the fact that (as was stated later), ‘... the masters have uniformly paid their journeywomen the same prices as they did to their journeymen for these works, conceiving that the act of parliament applied to females as well as to men.’ As a result, the Magistrates fined the master £50.⁵¹ Yet when the master appealed to Quarter Sessions, the assembled magistrates were uncertain whether the existing Act, which specified the piece-rates that should be paid to ‘journeymen’, included women. The case was referred to the attorney and Solicitor General, who recommended that the

⁵⁰ *Board of Trade in-letters 1/66: ff142-45, (December 1810)*, Public Record Office, The National Archives, London. I am extremely grateful to Jo Innes for providing me with her notes on these documents and advice on writing the above passage. Pinchbeck dates this as occurring in 1811, however the court documents make it clear that it actually occurred in 1810. See, Pinchbeck, *Women Workers and the Industrial Revolution*, p.177-78.

⁵¹ *Board of Trade in-letters 1/66: ff145.*

Act should be extended to explicitly cover journeywomen.⁵² Despite it having been the prevailing practice in the trade to have paid men and women the same for performing the same work, the ruling opened the possibility that women could in future be paid lower piece-rates than men:

We incline to think that journeywomen are within the act, but it is a doubtful question, for it seems to have been the intention of the Legislature to establish from time to time one rate of wages for all journeymen, whereas the service of women working in the same way may not be so valuable, and consequently their wages ought to be set at a lower scale. For this reason we think it will be advisable to apply to parliament for an act, enabling the magistrates to execute the same power over journeywomen, which they now possess over journeymen.⁵³

Thus, it seems that the magistrates were obliged to explicitly set piece-rates for women, but they would be able to set these to a different scale as to the rates paid to men if they so chose. This ruling made little sense since the piece-rate list was already adjusted for size and quality of cloth woven, so the fact that women were concentrated in the lower-skilled branches should not have mattered.⁵⁴ There is no evidence to suggest that women were subsequently paid lower piece-rates than men for performing the same work in the Spitalfields silk weaving trade.

Flax

Figure 5.4 shows a very small decline in male wages past the age of 30 in factory flax spinning, indicating that strength was relatively unimportant for male wages in this trade. However, this did not prevent there being very low female wages relative to those of men. Reach found in Leeds in 1849 that the skilled adult men working as sorters (sorting was the first stage of flax manufacture) received 21-25s per week. The boys who assisted them, and were learning the trade, were paid around 5s. It is notable that only boys were employed as assistants here, given that sorting was the

⁵² *Board of Trade in-letters 1/66: ff151.*

⁵³ *Board of Trade in-letters 1/66: ff151.*

⁵⁴ For women being concentrated in the less skilled branches of silk-weaving, see below, pp.200-02.

only well paid adult job in flax aside from overseeing and was performed exclusively by men. The labour market was operating to exclude females from learning the skills necessary to receive high wages from a young age. The next process after sorting was 'breaking', the machinery used for this operation was tended by boys earning around 4s6d. After this came 'heckling', the half-time boys and girls employed tending this machinery earned from 1s6d-1s8d, and the full-time children (i.e. those aged 13 and above) received double that.⁵⁵ The child workers employed in breaking and heckling were supervised by overlookers, who, as in the other rooms of the flax mills, received 20-25s. Following heckling came a long series of 'drawing' operations to prepare the flax for spinning, all of these processes were performed exclusively by girls and women, operating one frame each, who were paid 5-5s6d.⁵⁶ The spinners worked on water-frames, and were also all women and girls, earning around the same as those employed in drawing. After spinning came reeling, the workers employed here were generally adult women and 'the most expert and industrious amongst them' could earn 8s. Factory weaving of flax was unusual in England, but at Marshall's mill the small amount of weaving that was carried out was performed exclusively by women, earning 8-9s.⁵⁷

Reach does not state the gender of the overlookers in the flax mills, but given the high wages they received and the fact that Reach can be expected to have remarked on the gender if it was different to what he had typically observed elsewhere in the textile factories of Lancashire and the

⁵⁵ In 1821 William Brown found that piece-rates for heckling, which at the time was largely unmechanised, were around 50% higher in Leeds than Scotland, representing a significant cost disadvantage for Leeds manufacturers. However, he stated that by this time, 'Two or three of the principal mills dress their flax by machines - the chief advantage of which is the getting rid of troublesome hecklers. The machines are superintended by boys and do the work at about the same expense, and to the same perfection as hand heckling.' Since Reach does not mention any heckling being performed by hand it would seem that this machinery had become universal, or near-universal, by 1849. See, William Brown, *Early Days in a Dundee Mill, 1819-23*, John Hume (ed.), (Dundee, 1980), p.103; Reach, *Fabrics, Filth and Fairy Tents*, pp.61-65.

⁵⁶ This finding is supported by William Brown stating that in 1821 card-feeders and rovers (i.e. workers employed in drawing operations) in the Leeds flax mills earned 5-6s per week. See, Brown, *Early Days in a Dundee Mill*, p.100.

⁵⁷ Reach, *Fabrics, Filth and Fairy Tents*, pp.61-64.

West Riding, it is implicit that they were men. And, all eighty-four of the overseers in flax mills interviewed in the 1833 and 1834 Reports were men. However, the testimony of Mark Best, a former overseer in flax-spinning mills, to the 1833 factory commission suggests that a small number of women may have been employed in such a role at this time:

Mr. Hamond offered me a job at 10s a week. I used to have 27s for the same kind of job five or six years ago. It was to be overlooker. It came into my head they had taken an antipathy against me for speaking on this factory question; but I can't speak to any thing positive. I think he has got a young woman there now for overlooker. I don't know what he gives her. It would not be more than 6s or 7s. I don't know whether that is the same room.⁵⁸

It may be the case that Best had not been replaced by a woman and was suggesting this as a means to elicit sympathy for him no longer having a 'man's' job at a wage level he deemed appropriate. Support for this interpretation can be found in his unwillingness to state definitively that a woman is now working there as overlooker. Doubt is also cast on the accuracy or truthfulness of his testimony by his uncertainty as to whether his supposed replacement even worked in the same room as he had previously been employed in. However, since all the subordinate workers in the spinning rooms were women and girls, it is at least possible that one or two employers experimented with employing female overseers in these rooms. 'The Doffing Mistress' ('doffers' were responsible for removing and replacing full bobbins of thread from the spinning machines), a folk song originating in the flax factories of Ulster at some point in the nineteenth century, reveals women here to have been employed in some sort of supervisory position:

⁵⁸ B.P.P. 1833, XX, p.408.

Oh do you know her or do you not
 This new doffing mistress we have got?
 Elsie Thompson it is her name
 And she helps her doffers at every frame.

Chorus (after each verse):

Fol de ri fol ra
 Fol de ri fol ray

And Monday morning when she comes in
 She hangs her coat on the highest pin.
 Turns around just to greet her friends,
 Crying, 'Hi, doffers, tie up your ends!'

Some times the boss he looks in the door,
 'Tie your ends up, doffers,' he will roar.
 Tie our ends up we surely do,
 For Elsie Thompson but not for you.⁵⁹

Only being in charge of the doffers, who it can be assumed were all women and/or children, does not indicate a particularly high position in the authority structure of the mill. It is revealing that the workers feel motivated to do their work so as to please Elsie Thompson (i.e. the Doffing Mistress) and are grateful for her assistance in their work, and Elsie is described as being one of the doffers' 'friends'. Whereas the doffers clearly feel resentment towards the boss (i.e. more senior management). Thus, it would seem that doffing mistresses were still seen as one of the workers, rather than inhabiting the distant social and class position that was frequently the lot of male overseers. This indicates a relative lack of authority for doffing mistresses, and quite possibly low earnings.

Although there is limited evidence for women working as overseers in the flax trade, in the absence of an ideology hostile to female authority we would expect to see much stronger evidence for women working as overseers in English flax mills. Not only was the mean age of flax

⁵⁹ Lyrics, as sung by Anne Briggs, taken from: http://www.informatik.uni-hamburg.de/~zierke/anne.briggs/songs/the_doffingmistress.html

overseers significantly lower than in cotton (37.38 years rather than 44.95 years), but average tenure at present firm was dramatically lower (6.16 years rather than 21.61 years). Women's subordinate labour market position is indicated by Best's assumption that any women employed as overseers would receive considerably less for performing this role than the heavily-reduced offer he himself had been made, and had rejected in favour of earning 16s a week as a mere 'helping hand' in the dye-house of John Horsfall's factory.⁶⁰

Figure 5.5 shows a large adult gender wage gap in the 1833 data. There was no increase in female wages beyond the age of 24, indicating that there was little experience/skill premium available to women here. This levelling off of female wages occurs at a younger age here than in any other region-industry for which the 1834 Report provides data.⁶¹ Ivy Pinchbeck claims that factory flax spinning was 'highly skilled work', but the lack of skill required for women performing this job is shown clearly by the observations of William Brown, a Dundee flax factory owner who visited Leeds in 1821:

The wages of spinners in Leeds seldom or never vary from 6s per spinner per week for two sides of 64 spindles. No mill gives more or less for good or bad hands - no piece work - no engagements but on two weeks notice - no money advanced - wages paid weekly - masters universally retained one week's wages in hand - masters put little value on old trained spinners as green hands are easily trained to slow driving.⁶²

Since women employed in drawing earned around the same as spinners it can be assumed that this was also unskilled work. Whereas, reeling and weaving can be assumed to have required more skill and learning since wages for the women employed on these tasks were higher.

As Figure 5.6 shows, females accounted for a very high proportion of the late-teenage and early-20s workforce, but this then declined very sharply. Only 13.04% of workers age 31-50 were

⁶⁰ B.P.P. 1833, XX, p.408.

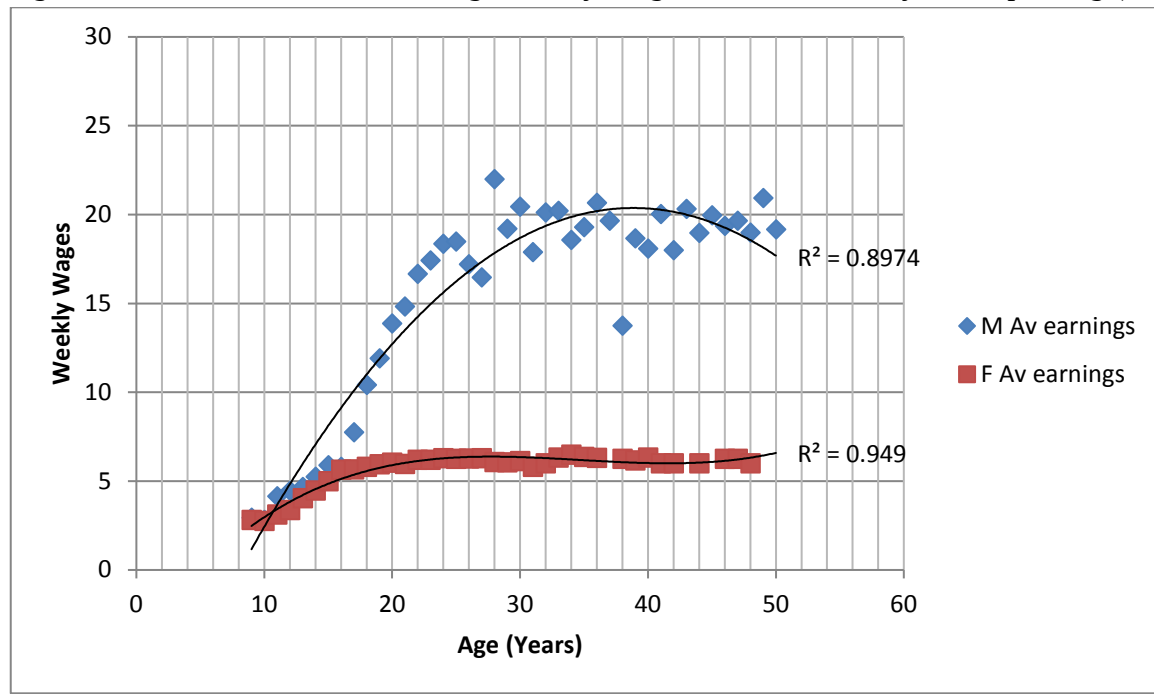
⁶¹ See, Tables 3.3, 4.2, 4.5, 4.8, 4.11, 5.1-5.3, 5.7.

⁶² Brown, *Early Days in a Dundee Mill*, p.102; Pinchbeck, *Women Workers and the Industrial Revolution*, p.187.

female. The failure of women's wages to increase with age/experience provides part of the explanation for why females withdrew from the factory flax workforce in such numbers. However, Table 5.9 suggests that the high wages available to men in Leeds also contributed to women accounting for such a low proportion of workers in their 30s and 40s. Lancashire cotton had the highest F:M wage ratio for ages 31-50 of any of the region-industries in the 1834 report, but women accounted for only 29.84% of the workers in this age bracket. Studies of individual cotton and worsted towns have shown that when family earnings were high enough married women, especially mothers, would withdraw from factory labour.⁶³ The same thing seems to have been occurring in the West Riding; not only is there a very low figure for the Leeds flax industry, the figure for the wool textile industry in this region is significantly lower than that for woollens in the West of England counties, despite the figure for the West Riding possibly being inflated by the inclusion of worsted workers. The wages of men in the West Riding benefited from it being one of the centres of the new industrial England, whereas men's wages in the textile communities of the West of England were suffering from mechanisation of the trade and an absolute decline in the level of output in the region. The new industrial centres also provided very good wages for children, further enhancing family income where men's wages were highest. This further supports the notion that the level of family income was a crucial determinant of whether women worked. However, this is not to deny the importance of type of industry for the composition of the workforce, there is a very clear relationship in Table 5.9 between industry and females as a percentage of the workforce aged 31-50.

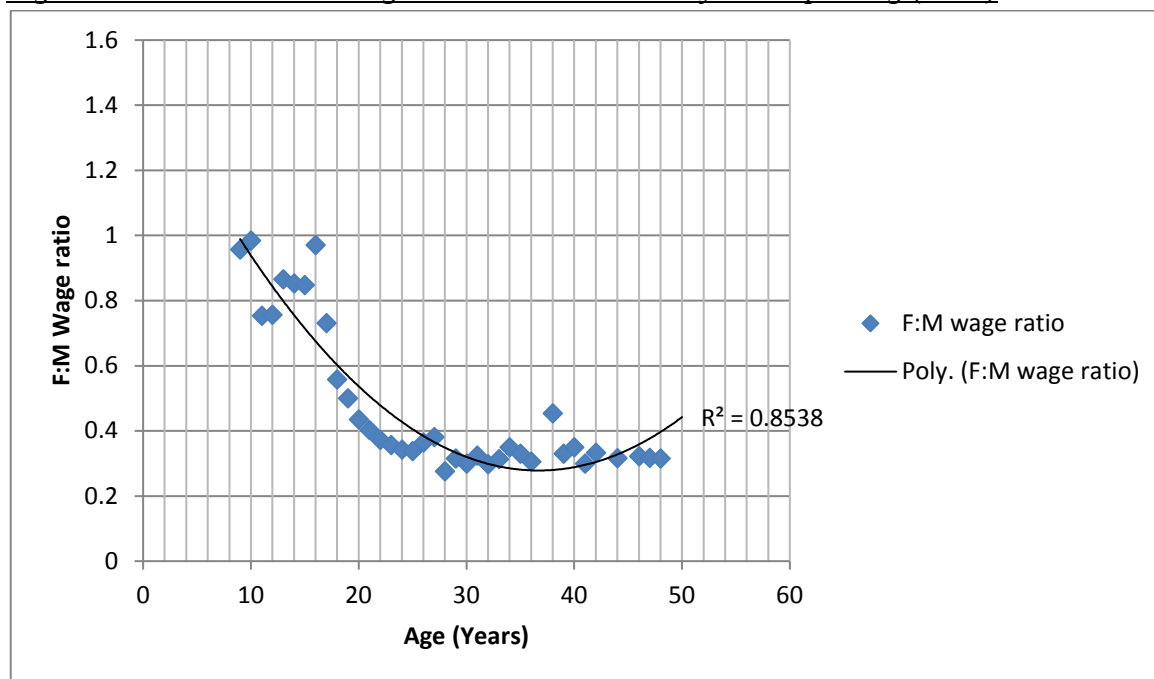
⁶³ See above, Chapters 3-4.

Figure 5.4: Male and Female Average Weekly Wages in Leeds Factory Flax Spinning (1833)



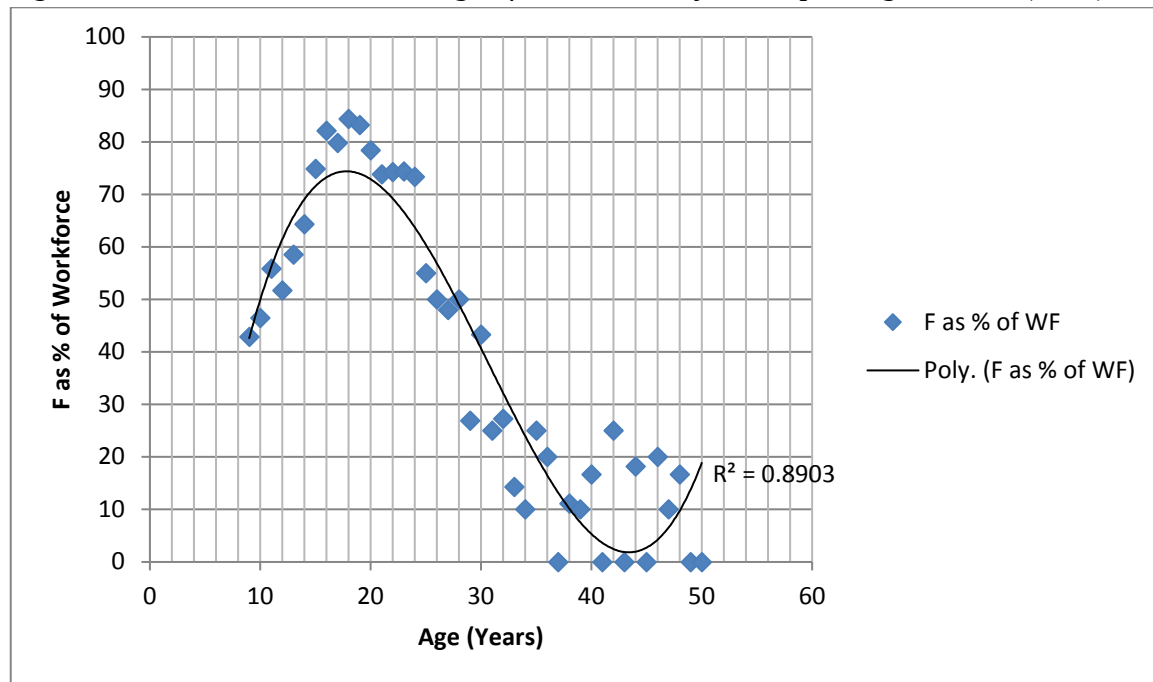
Source: See Appendix A9.

Figure 5.5: Female:Male Wage Ratio in Leeds Factory Flax Spinning (1833)



Source: See Appendix A9.

Figure 5.6: Females As a Percentage of Leeds Factory Flax Spinning Workers (1833)



Source: See Appendix A9.

Table 5.9: Females Age 31-50 as a Percentage of the Workforce Age 31-50 (1833)

Industry	Region	% of WF Aged 31-50 that is F
Silk	Somerset	78.72%
Silk	East Anglia	57.89%
Silk	Derby	55.42%
Woollens	Gloucestershire	39.87%
Woollens	Wiltshire	39.04%
Woollens	Somerset	34.22%
Cotton	Lancashire	29.84%
Wool Textiles	West Riding	26.54%
Lace	Tiverton	19.30%
Lace	Derby	14.29%
Flax	Leeds	13.04%

Source: See Appendices A1-A11.

Lace

John Heathcoat had started out as a lace manufacturer in Loughborough. However, the factory he ran with Messrs. Lacy and Bowden was attacked on 28th June 1816, with all fifty-five of the frames which utilised his recently patented bobbin-net machine technology destroyed, causing between £8000 and £10,000 worth of damage. The level of intimidation the attackers wished to create is indicated not just by the destruction of all the frames and the burning of the lace upon them, but also one of the workmen in the factory being shot at with a pistol (which led to the conviction of James Towle for attempted murder).⁶⁴ As a result of continued industrial unrest in the East Midlands after the main wave of Luddism (1811-12), Heathcoat had feared such an attack might take place and had already purchased a mill in Tiverton, which had previously been used for cotton and wool textile manufacture, for a low price. He had begun lace production in Tiverton prior to the attack, but relocated his whole business, including some of the most skilled workers from Loughborough, there immediately afterwards.⁶⁵ His mill at Tiverton was run along paternalistic lines: he enjoyed very good relations with his workers, and was the first master in the West of England to open a factory school (on 1st January 1843).⁶⁶

The contract records left from Heathcoat's Tiverton lace mill suggest a much greater variability in the wages and occupations of adult men than of women, as well as male wages being much higher. Of the 233 females in the surviving record who signed contracts between 1816-28, 231 are described as 'lace menders', one (Mary Pitt) as a 'lace maker', and one (Elizabeth Townsend) was unspecified.⁶⁷ It seems very likely that Elizabeth Townsend was also a

⁶⁴ William Felkin, *History of the Machine-Wrought Hosiery and Lace Manufactures* (Newton Abbot, 1967), p.206.

⁶⁵ W. Gore Allen, *John Heathcoat and His Heritage* (London, 1958), pp.71-72; D. E. Varley, *John Heathcoat, 1783-1861: Founder of the Machine-Made Lace Industry* (Newton Abbott, 1969), pp.21-25.

⁶⁶ Allen, *John Heathcoat and His Heritage*, pp.101, 126; Varley, *John Heathcoat*, pp.28-29.

⁶⁷ *Heathcoat Records*, 4302B/A9-11.

lace mender.⁶⁸ 69 of the females began their contracts aged 21 or above.⁶⁹ For both males and females up until the age of 21 wages were stipulated to rise on their birthdays.⁷⁰ All of the female lace menders aged 21 and above had a wage rate of 4s6d per week.⁷¹ Of the 301 male workers in the record who began employment 1816-19 aged 21 or above, 241 received the 'standard' adult male wage of 8s per week. Aside from Nathaniel Adams, who was on a two year contract, all of the males on the standard wage had contracts lasting three years.⁷² The female lace menders whose contracts began 1816-18 were bound to their employer for two years, for 1819-28 the contracts were stipulated as being for between one and three years.⁷³ 43 males in the record who began employment 1816-19 aged 21 or above received a weekly wage of above 8s, 33 of whom were paid 20s per week or more, rising to 50s for the highest-paid. The males who began work aged 21 or above and received non-'standard' wages had contracts ranging from one year and eight months to five years.⁷⁴ The record of male contracts beginning in the years 1825-28 tells a similar story, with the majority of the males aged 21 or above earning 8s per week, but with twenty earning 20s per week or more, up to 42s for the highest-paid. Length of contract for these workers varied between one and seven years. It should also be noted that there was one adult male (Robert Strong) who was paid only 7s per week, on a contract that was for five years. Unfortunately the specific occupation to be performed by the employee is never given in the

⁶⁸ Elizabeth Townsend's is the only entry in a book of contracts which is otherwise all-male, where the occupation of the workers is not specified in the contract, and her contract began nearly 1 one month earlier than any of the females recorded in the separate book for their contracts. Her contract also stipulated that she would receive 4s6d per week, the same as what was received by all of the adult lace menders. Her contract was also for two years, the same length as all the lace menders. For the 'male' contract book in which Elizabeth Townsend appears, see, *Heathcoat Records*, 4302B/A10; for the 'female' contract book (which also includes one male child named John Hatherley) for comparison, see, *Heathcoat Records*, 4302B/A9.

⁶⁹ *Heathcoat Records*, 4302B /A9-10.

⁷⁰ *Heathcoat Records*, 4302B/A9, A11.

⁷¹ *Heathcoat Records*, 4302B/A9.

⁷² *Heathcoat Records*, 4302B/A10.

⁷³ *Heathcoat Records*, 4302B/A9, A11.

⁷⁴ *Heathcoat Records*, 4302B/A10.

contracts of males aged 21 and above, but the greater range of contract length, and particularly wages, indicates that they were employed in a much wider range of occupations.

The only males for which the contract states a specific occupation are those aged under 21 who worked as ‘lace makers’.⁷⁵ It is not possible to know from the record whether the males aged less than 21 whose occupation was not specified were working as lace makers, or, as seems more probable, were employed in some other capacity. Up to and including the age of 17 the wage rate of the male lace makers was determined by a combination of their age and amount of time they had spent working at the firm. From age 18 and above it was determined by age only; 18 year olds received 6s per week, 19 year olds 7s, and 20 year olds and above 8s.⁷⁶ Because of a lack of detail in the contracts for lace menders it is not possible to tell whether the wages of lace menders aged under 21 were dependent on age and experience at the mill, or age only.⁷⁷ The fact that time-rates were paid to all workers in the contract records, and for most (if not all) men and all women (possibly excluding Mary Pitt, see below) this rate was determined by age up until the age of 21, suggests that the productivity of individual workers may have been hard to observe. Alternatively, it may be that changes in the wages of young people reflected social expectations regarding appropriate wages by age.

Mary Pitt’s contract is the only one in the company records I have examined for a female who earned above 4s6d, her wages having been 5s per week. It could be that she was some kind of supervisor or trainer of the work of young male lace makers. However, it should be pointed out that her weekly wage was below that paid to all of the 18-year-old male lace makers, so if she was

⁷⁵ *Heathcoat Records*, 4302B/A11. N.b. their occupation is referred to as ‘lace manufacturer’ on the contracts signed up to and including further March 1819, after which it is designated as ‘lace maker’. It is clear that this is referring to the same job and I have used ‘lace maker’ in the main body of the text to refer to all of them to avoid confusion/complication.

⁷⁶ *Heathcoat Records*, 4302B/A11. N.b. the contracts for the first first two males to start work (in early 1819) stipulated that they would receive 6s6d at age 18, 7s6d at 19, and 8s6d at 20, suggesting that Heathcoat initially slightly overestimated the wages he needed to pay to attract workers to this trade.

⁷⁷ *Heathcoat Records*, 4302B/A9.

in such a role she was not highly rewarded for any authority or instructional role she may have had. Also, the low levels of senior females and high levels of senior males (in 1833 females aged above 25 accounted for only 7.70% of the workforce, and females above 30 only 4.24%, whereas for males these figures are 23.88% and 17.72%)⁷⁸ at the firm would have made employment of females in positions of authority unlikely here. It is more likely that she had learned the trade of 'lace maker' elsewhere, and Heathcoat was willing to allow her to continue working in this capacity at his firm despite having an otherwise rigid division of labour by gender (all of the lace menders were female, whereas all of the lace makers excluding Mary Pitt were male).

The returns of the Heathcoat mill to the 1833 factory enquiry show 333 females to have been working there in May of 1833 (n.b. this figure includes workers aged above 50), whereas only 233 contracts for females survive in the firm records for the whole of the period 1816-28.⁷⁹ There are also women earning significantly more in the 1833 data than is stipulated in any of the contracts for 1816-28. It seems unlikely that there was a dramatic change in the employment pattern between 1829 and 1833, and it is clear that the contract data does not give a complete picture of employment at the firm. This is further demonstrated by the knowledge that in 1836 workers at the mill were employed in the following processes: yarn doubling, silk spinning, making the lace, bleaching, dyeing, preparing the lace for market, and frame construction.⁸⁰ The contract data does not provide sufficient information to determine how individuals were employed aside from those listed as lace 'makers' or 'menders'. However, the 1833 data is broadly supportive of much of the main evidence in the contract data. Figure 5.7 shows that not only were adult male wages much

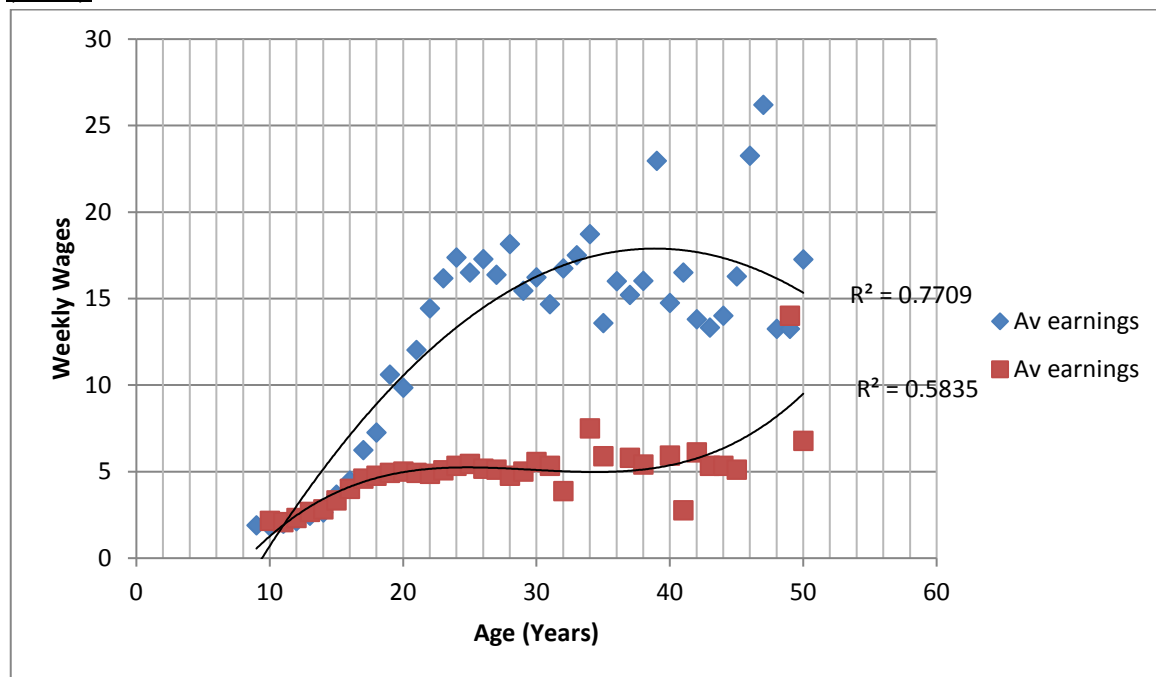
⁷⁸ Extracted from Appendix A11. The 1834 Report states that the data given for lace production in Tiverton was derived from a single factory and it can be assumed that this was from the Heathcoat mill. There is no evidence for any other substantial lace manufacturers in the Tiverton area, and the 1834 Report states that there were 817 workers at the Tiverton mill surveyed in 1833 (this figure includes workers aged above 50). See, B.P.P. 1834, XIX, pp.278, 289.

⁷⁹ *Heathcoat Records*, 4302B/A9-11. B.P.P. 1834, XIX, p.289.

⁸⁰ Felkin, *History of the Machine-Wrought Hosiery and Lace Manufactures*, p.263.

higher than adult females, they were also more variable. There is almost no change in women's average wages between the ages 20-29 (the lowest is 4.75s and the highest 5.44s), whereas male average wages increase rapidly between 20-24 after which they vary between 15.4s and 18.15s for males age 25-29. The erratic nature of male average wages age 25-29 relative to those of females cannot be attributed only to a low number of observations, there was a higher number of observations for men than for women at all ages 25-29.

Figure 5.7: Male and Female Average Weekly Wages in Tiverton Factory Lace Production (1833)



Source: See Appendix A11.

The 14s a week received by the 49-year-old woman (unsurprisingly there is only one observation for females aged 49 in Figure 5.7) is interesting. It may be that she was a pattern setter or designer: R. D. Grainger, in the 1843 Children's Employment Commission, states that 'These are females of great importance in the trade, highly prized by the masters', and 'taking good wages in

general'.⁸¹ It could be that she was an overseer, but as outlined above, the structure of employment at Heathcoat's mill makes such employment unlikely. Further, the barrier to females becoming overseers was one of ideological resistance rather than technical skill or strength, if this was not a problem there should have been a wide pool of potential female overseers. Therefore, given potential competition for the job it does not seem probable that a female overseer would receive dramatically higher wages than was typical for women in their age bracket. This interpretation is supported by the evidence from Courtauld's, where the wages received by female assistant overseers were unremarkable. Rather, it is more likely that this woman was being rewarded for possessing some kind of scarce technical or artistic ability (such as can be expected to have been required of pattern setters or designers). Where women possessed such rare ability we know that they could be well rewarded; Mrs Wilcox, a skilled pottery painter employed in Wedgwood's London workrooms in the 1770s, used her artistic ability to earn 3s6d per day (her husband, a less skilled pottery painter, earned only 2s6d).⁸² The technical skill possessed by the bear-warper observed by Reach in Macclesfield in 1849 ensured that they earned a minimum of 12s per week.⁸³

A business ledger, covering the period 1826-38, reveals two women working as putting-out agents to domestic workers for Heathcoat. Sarah Brailey of Exeter put out dressing and Penny Rawlinson of Exwick put out twist. Unfortunately we do not know how much these women earned, but Sarah Brailey in particular was responsible for selling work to Heathcoat amounting to considerable sums (around £200 per year) and it seems likely that they could earn some of the

⁸¹ B.P.P. 1843 XIV, p.623.

⁸² Neil McKendrick, 'Home Demand and Economic Growth: a New View of the Role of Women and Children in the Industrial Revolution' in Neil McKendrick (ed.), *Historical Perspectives: Studies in English Thoughts and Society* (London, 1974), p.186.

⁸³ See above. p.173.

highest wages available to women in domestic textile trades.⁸⁴ It was common for women to act as distributing agents to domestic ‘runners’ (‘runners’ were domestic workers who embroidered the lace) in the Midlands lace trade.⁸⁵ The runners were principally women (both married and single), but many children were employed in this occupation as well.⁸⁶ Women also acted as distributing agents for worsted spinning and reeling in the eighteenth century, and were liable to fines if any embezzlement was found to have occurred.⁸⁷ It is no coincidence that women were so prominent as agents, which there is little evidence for in other textile industries, in branches of the trade in which few, if any, men were employed. A degree of authority on the part of the agent would have been embedded in the relationship with the workers they put out production to, explaining why female agents were so rare/non-existent in cotton, wool and silk, and were not present in worsted handloom weaving. This is further evidence for how male hostility to female authority limited women’s access to the best paying jobs during the Industrial Revolution.

Women were found performing some kind of overseeing role in mending, drawing, pearling and joining (which formed part of the non-mechanised lace production process); in the East Midlands in the 1840s these operations were typically carried out in small workshops employing six to twelve children under the supervision of a woman.⁸⁸ Again, the fact that the workers being supervised were children meant that it was easier for women to have a supervisory role. Also, there were only a small number of these children to be supervised, and it was in a more informal setting than was found in factory production. The wages of these women cannot be expected to be anywhere near the level we see for male overseers in textile factories, given that they were only

⁸⁴ *Heathcoat Records*, 4302B/A2.

⁸⁵ B.P.P 1843, XIV, p.608. However, men were also employed as agents. See, B.P.P 1843, XIV, p.604.

⁸⁶ B.P.P 1843, XIV, p.536. Pamela Sharpe and Stanley D. Chapman, ‘Women’s Employment and Industrial Organisation: Commercial Lace Embroidery in Early Nineteenth-Century Ireland and England’, *Women’s History Review*, 5 (1996), pp.329-30.

⁸⁷ Heaton, *The Yorkshire Woollen and Worsted Industries*, p.430.

⁸⁸ B.P.P 1843, XIV, p.536.

supervising a small number of very low paid workers (the child workers received an average of somewhat less than 3s per week).⁸⁹

Trade Unions and Worker Protest

In the silk and flax industries trade unions and worker protest only seems to have been common amongst the silk weavers. Rioting by weavers occurred in Spitalfields in 1769 in response to price-cutting and unemployment.⁹⁰ The Book of Prices laid down piece-rates agreed by masters and men for silk weaving in Spitalfields throughout the eighteenth and into the nineteenth century, indicating a capability on the part of the workers to combine to regulate payment for their labour over a long time period. The Spitalfields Act of 1773 not only arranged for the fixing of wages, but also limited weavers to two apprentices each. Although regular apprenticeship was not fully enforced, in 1818 there were still many male and female Spitalfields weavers who had served the full seven years apprenticeship, as well as some who had served five years.⁹¹ This shows that the workers here were able to cooperate to defend their interests against unbounded capitalism, at least until the apprenticeship regulations were repealed in 1824.

The ability to consistently restrict entry to the trade and regulate piece-rates enjoyed by the weavers of Spitalfields in the eighteenth and early nineteenth centuries was not shared by weavers elsewhere. However, protest and other attempts at regulation were more common amongst weavers than other occupations in the silk trade in all of the major silk producing centres. In Macclesfield they managed to limit the number of apprentices a weaver could take between 1807-

⁸⁹ A respondent to the 1843 children's employment commission from Nottingham said that an average of 3s per week would be for children above the usual age in these occupations. Another respondent put the average wages for children in the trade in Nottingham generally at 1s6d-2s. See, B.P.P 1843, XIV, pp.536, 604.

⁹⁰ George, *London Life in the Eighteenth Century*, p.181.

⁹¹ Pinchbeck, *Women Workers and the Industrial Revolution*, pp.161-62.

15, before the manufacturers succeeded in breaking this system up.⁹² The earliest price list in Coventry was probably established in 1796 or 1797, and despite the price lists continually being broken by undercutting they were still being negotiated in the 1830s.⁹³ Strike action by male weavers here meant that women were barred from working the Dutch engine loom from around 1770-1812.⁹⁴ When the Brocklehursts attempted to introduce powerlooms to Macclesfield in the late 1820s they were greeted by a window-smashing crowd of demonstrators.⁹⁵ Early attempts to introduce the powerloom to Coventry were also violently resisted; a powerloom factory that opened in 1831 was burnt to the ground and the manager was paraded around Coventry on a donkey by the protesters.⁹⁶

It is notable that the examples of protests and organisation that exist for silk weavers are from places with a high population density, and where a large proportion of the inhabitants were engaged in silk manufacture. It was much harder for dispersed rural workers to combine, and particularly to maintain the kind of consistent pressure required for negotiated piece-rate lists, rather than the kind of short-lived protests that were common amongst cotton and woollen handloom weavers. It is also important that silk handloom weaving employed a lot of men; women are seen by historians across the board to have been less successful at forming workers' unions in this period.⁹⁷ Of the silk, flax and lace trades in both factory and domestic production in the period 1750-1850 only in domestic handloom weaving in urban centres such as London, Coventry and Macclesfield was there a workforce employing high proportions of men in a

⁹² Pinchbeck, *Women Workers and the Industrial Revolution*, p.162.

⁹³ James A. Jaffe, *Striking a Bargain: Work and Industrial Relations in England, 1815-1865* (Manchester, 2000), pp.123-24.

⁹⁴ See below, p.200.

⁹⁵ Malmgreen, *Silk Town*, p.18.

⁹⁶ Jones, 'Technology, Transaction Costs, and the Transition to Factory Production in the British Silk Industry', p.85.

⁹⁷ See above, p.32.

densely populated area heavily dependent on the employment afforded by textiles, and therefore providing conditions likely to promote protest and organisation by workers.

When women employed in the silk and lace industry did protest this tended to be relatively spontaneous and short-lived. In 1737 the women of Macclesfield ‘rose in a mob’ and burned some of the looms that were being introduced and threatened their employment. When their leaders were arrested, the protesters released them from prison.⁹⁸ However, there is no evidence for this combination having a lasting effect. In 1811 the lace-runners in Loughborough concerned the local magistrate by showing, ‘... a spirit of combination to dictate to their employers and to raise the price of their wages.’⁹⁹ In 1840 in Nottingham the women lace-runners went on strike to try and cut out the distributing agents, but were unsuccessful.¹⁰⁰ In the English silk and lace industries during the Industrial Revolution we do not see all-female or female-dominated protests or attempts at organisation leading to effective long-term unionization, or to lasting regulation of the conditions of their employment.

In their global survey of textile workers Janet Hunter and Helen Macnaughton highlight that although women were generally less likely to be unionised and take industrial action than men, women have been involved in labour activism and strikes in a number of instances.¹⁰¹ As I have outlined in the above paragraph, and in earlier chapters, this was certainly the case in the English textile industries during the Industrial Revolution. Louise Raw has shown that the low pay and social status of female matchworkers in late nineteenth-century London was insufficient to

⁹⁸ Wadsworth and Mann, *The Cotton Trade and Industrial Lancashire*, p.304.

⁹⁹ Drake, *Women in Trade Unions*, p.3; Thomis and Grimmett, *Women in Protest*, pp.72-73.

¹⁰⁰ Thomis and Grimmett, *Women in Protest*, p.73.

¹⁰¹ Janet Hunter and Helen Macnaughton, ‘Gender and the Global Textile Industry’ in Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nderveen Meerkerk (eds.), *The Ashgate Companion to the History of Textile Workers*, pp.719-22.

prevent them from successfully combining and striking over their pay and working conditions.¹⁰² Nevertheless, women were significantly less likely to unionise and protest than men. And, when they did unionise or protest they were typically less successful.

The explanations typically given by historians for women's lower level of unionisation are listed in Chapter 1.¹⁰³ As well as these factors, it is also important to appreciate that women can be expected to have been aware that, on average, they would spend less time in the labour force than men. Therefore, they would have had less incentive to face the risks of protest or unionisation to their short-run earnings and employment, since they could not expect as large a return as men in the long-run. Their lower earnings, as well as making it harder to provide contributions to a collective fund necessary for strike action to be successful, would also have acted as a disincentive since an equal percentage change in earnings would lead to a smaller absolute difference than for men. The paucity of senior female workers is also likely to have affected their ability to unionise. The low paid and mostly young women spinners in the Leeds flax industry are a good example of this, failing to unionise despite national production being extremely concentrated in just one densely populated urban area. Women's failure to unionise perpetuated their lower earnings, in turn further affecting their ability to unionise.

The importance of self-interest for the lack of female unionisation is supported by Eleanor Gordon's study of the Dundee jute industry, 1870-1906; here, female employment was extremely widespread, including that of married women, and it was not unusual for wives to work whilst their husbands were responsible for domestic duties. And, it is here that women had an unusually high propensity to protest, often successfully. However, it should be noted that even here Gordon finds that male protest tended to be more organised, indicating that men had an advantage other

¹⁰² Louise Raw, *Striking a Light: the Bryant and May Matchwomen and their Place in History*, 2nd ed. (London, 2011), especially Chs.5-6.

¹⁰³ See above, p.32.

than economic self-interest for unionisation.¹⁰⁴ The importance of female long-run self-interest being important for their propensity to unionise and protest is supported by their extensive involvement in protests against spinning and carding machinery in Blackburn in 1779, and in the West of England 1776-90.¹⁰⁵

Collective action by silk weavers, and the regulation that resulted from it, sometimes acted to the detriment of female employment opportunities, as it did in certain branches of cotton and woollen production. Despite the large number of women employed in ribbon-weaving in Coventry, and almost all of them having served a five-year apprenticeship (boys only served for seven years in order to qualify for the parliamentary franchise for the city, rather than the two extra years being important for skill acquisition), women were not allowed to work the more productive Dutch engine loom when it was introduced around 1770. An attempt to employ a journeywoman on one of them led to a strike, and women were restricted to the less productive single looms. The importance of worker protest rather than an absolute skill barrier excluding women here can be seen in how the exclusion broke down in the early nineteenth century: in the period 1812-15, when many of the male weavers had enlisted and the demand for labour was such that wages were increasing dramatically, the Coventry employers broke through the apprenticeship regulations, embarking on the system of half-pay apprenticeship for women to work on the engine looms. Women then remained in the occupation, with single handlooms being relegated to the rural districts.¹⁰⁶ The 1769 Book of Prices for Spitalfields stipulated that women

¹⁰⁴ Eleanor Gordon, 'Women, Work and Collective Action: Dundee Jute Workers 1870-1906', *Journal of Social History*, 21 (1987), pp.28, 29, 31, 35.

¹⁰⁵ See above, pp.91, 144-47.

¹⁰⁶ Pinchbeck, *Women Workers and the Industrial Revolution*, pp.170, 170n. 'Half-pay apprentices' were employed extensively in Coventry. They were also used in Nuneaton, Redding and elsewhere. Under this system manufacturers hired undertakers and journeymen weavers to employ apprentices at half the journeymen's rate. These apprentices often had little skill and were not subject to normal apprentice indentures (they could be laid off at will). This system typically had nine or 10 semiskilled operatives under the supervision of one skilled male. The journeymen or undertaker kept the difference between the rate the manufacturer paid and the 'half-pay' given to the 'apprentices'.

weavers were to be excluded from the better paid branches except during wartime. However, by the end of the eighteenth century attempts to restrict women weavers seem to have been given up.¹⁰⁷

It seems that effective collective action and the resultant regulation, which was heavily contingent on there being a large number of males in the workforce, could, in certain circumstances, increase women's earning capability. Pinchbeck argues that it is probably due to the fact that the majority of female weavers had served a regular apprenticeship, as well as the special conditions maintained by the Spitalfields Acts, that women silk weavers here were on a more equal footing with men than in silk or other textiles in the West and North. Women in Spitalfields were found working in the skilled branches. Their right to take and train apprentices was recognised and they frequently did so.¹⁰⁸ In 1838 a census of Spitalfields weavers showed 526 women to be weaving silk velvets which required 'peculiar skill', and one woman was employed in jacquard velvets, the most artistic and highly skilled branch of all. 78 women worked on other jacquard and figured goods, and 2790 on plain silks. Whilst men were more concentrated in the skilled branches (1871 worked on velvets requiring 'peculiar skill', 15,392 worked on jacquard and other figured goods, and 2820 worked on plain silks) the presence of so many women in skilled handloom weaving was unusual in silk, or indeed other textiles.¹⁰⁹ Even though wages of silk weavers had declined by 1838, one respondent to the investigation said that his daughter was able to earn above 18s per week as a silk weaver, which was in fact more than her

See, Jones, 'Technology, Transaction Costs, and the Transition to Factory Production in the British Silk Industry', p.79.

¹⁰⁷ George, *London Life in the Eighteenth Century*, pp.181-82.

¹⁰⁸ Pinchbeck, *Women Workers and the Industrial Revolution*, pp.161-62.

¹⁰⁹ Census data cited in Pinchbeck, *Women Workers and the Industrial Revolution*, p.169.

husband was able to earn in the same occupation.¹¹⁰ Again, this shows that where women possessed rare technical or artistic skill they could be well rewarded for it.

Women elsewhere had less access to highly skilled work. This was partly due to the highly skilled branches being concentrated in Spitalfields.¹¹¹ However, in the absence of widespread regular apprenticeship it seems to have been harder for women to acquire the human capital required to perform highly skilled work: in Macclesfield in the 1810s women seem only to have woven bandannas, a trade so badly paid that men only did it if there was no other work available.¹¹² Women's relative failure to acquire human capital where formal apprenticeship was not common suggests that the decision making of the working-class family regarding investment in the skill acquisition of their children according to gender was particularly important for women having such lower levels of human capital relative to men in this period.¹¹³ The apparently different effect of the enforcement of apprenticeship regulations on female occupational choice and earning capability in the silk and wool textile industries reflects the complexity of the determinants of women's work during the Industrial Revolution.

Types of Payment and the Relationship between Workers and Employers

At the Courtauld factory men typically received time-rates, whereas the majority of women received piece-rates. Lown infers that these different types of payment were used as a status distinction between men and women.¹¹⁴ However, this seems to be a false inference, with whether piece- or time-rates were paid to workers being a complex issue, and not necessarily linked to

¹¹⁰ Cited in Pinchbeck, *Women Workers and the Industrial Revolution*, p.169.

¹¹¹ Jones, 'Technology, Transaction Costs, and the Transition to Factory Production in the British Silk Industry', pp.81, 92-93.

¹¹² B.P.P. 1818, IX, p.121.

¹¹³ Although, of course, this decision making was influenced by expected lifetime earnings for their sons and daughters rather than being solely, or probably even predominantly, a matter of gender discrimination.

¹¹⁴ Lown, *Women and Industrialisation*, p.106. Honeyman concurs with this inference, see, Honeyman, *Women, Gender and Industrialisation in England*, p.54.

status and/or gender. Michael Huberman finds that the high status male mule-spinners actually fought to preserve piece-rates from what they saw as the threat of the imposition of time-rates.¹¹⁵ Piece-rates were naturally paid to domestic textile workers since there was no way for the employer to monitor their hours or effort. Piece-rates were also common in factory textile production. But in the silk, flax and lace industries time-rates were often paid to females. Brown described all the spinners in the Leeds flax mills as receiving time-rates.¹¹⁶ James Craven, an overlooker at Benyon's flax mill told the 1833 factory enquiry that:

All our hands work by the week [i.e. paid time-rates] except the flax-dressers and the reelers; those work by hand [i.e. paid piece-rates]. That is general throughout the trade. The spinners are never paid by the piece in Leeds.¹¹⁷

Reach, writing in 1849, found that reelers were the only Leeds flax factory workers who were paid by the piece.¹¹⁸ Records of wages paid at Bentley silk mills in the West Riding survive for workers performing winding and parting for the years 1848-52; all of the workers were female and all of them received time-rates determined by the age of the worker (within the two occupations the time-rate increased at each birthday between 13-20, beyond which it was unchanged).¹¹⁹ The workers' contracts for males and females in the records from the Heathcoat mill also show them all to be receiving time-rates, with the rate being predominantly determined by age.¹²⁰ The payment of time-rates seems to have been common at rural paternalist cotton mills. At Arkwright's Bakewell mill all of the workers except pickers (who predominantly, if not

¹¹⁵ Huberman, *Escape from the Market*, p.38.

¹¹⁶ Brown, *Early Days in a Dundee Mill*, p.102.

¹¹⁷ B.P.P. 1833, XX, p.464.

¹¹⁸ Reach, *Fabrics, Filth and Fairy Tents*, p.63. Brown also mentions reelers receiving piece-rates. See, Brown, *Early Days in a Dundee Mill*, p.103.

¹¹⁹ *Bentley Silk Mills Records*, Wages Book 1848-52.

¹²⁰ See above, pp.189-92. Unfortunately, it is not possible to know if the workers here whose contracts do not survive in the company records (and possibly never had long-term contracts, unlike the workers for whom records do survive) received time-rates or not.

exclusively, worked away from the mill) were paid time-rates in 1786 and 1794, and by 1810 pickers were also receiving time-rates (by which time picking had presumably moved inside the factory).¹²¹ At Quarry Bank Mill everyone except outworkers received time-rates in 1790, and all factory workers still received time-rates in 1834, by which time all production processes were being carried out within the mill.¹²²

The payment of time-rates occurred when it was difficult to assess worker output, thus overseers in the textile industries were always paid time-rates whereas this was much less common for factory spinners and weavers. The Courtauld mill at Halstead offers a good demonstration of this, with workers whose output was easily observable receiving piece-rates, whereas those whose output was not easily observed received time-rates.¹²³ However, observability of output within the factory environment was not the sole determinant of the type of wages paid. The work performed by the females at Bentley silk mills should have been easily observable, indeed the winders employed by Courtauld received piece-rates, but the females employed in the same occupation at Bentley silk mills were still paid time-rates. There does not seem to be any reason why the output of many of the females working in the flax-spinning mills of Leeds would have been difficult to measure. The payment of time-rates for all workers at the Arkwright and Greg mills was something unheard of in urban cotton mills.

The payment of time-rates when output was easily observable would, in certain cases, seem to reflect a greater level of trust in the workers by the employer and a greater sense of shared common purpose. The conditions for this relationship to emerge would be much more likely at the

¹²¹ *Arkwright Papers*.

¹²² *Greg Papers*.

¹²³ Workers receiving piece-rates: 'warpers', 'twisters', 'plug winders', 'powerloom weavers', 'mill hands', 'drawers', 'winders'. Workers receiving time-rates: 'principal overseers', 'second class overseers', 'clerks', 'mechanics', 'engine drivers', 'men employed attending mill machinery', 'men employed attending power loom machinery', 'miscellaneous, gauze examiners', 'female assistant overseers', 'wasters'. See, *Courtauld Papers*, DF/3/3/27.

mills which faced little competition for labour locally (especially isolated rural mills), where workers could not easily switch between employers as they could in urban industrial centres. Offering time-rates, which provided greater security of income, may also have been a way of attracting reluctant workers away from domestic industry or agriculture to the factories. However, this was not the case in Leeds flax spinning, which had a fluid labour market: Brown found that workers' contracts at all firms were only ever for two weeks. He attributed the payment of time-rates here to the lack of skill required for the occupation, meaning that employers found little difference in the productivity of their workers (presumably they were successfully able to monitor effort).¹²⁴ Piece-rates for domestic workers were always more liable to variation than piece-rates for factory workers, but factory workers on time-rates had the most secure income of all. The importance of fashion for demand in silk and lace meant that piece-rates were particularly variable here. Domestic hand silk winders in Dorset saw piece rates fall from 2s3d to 1s per pound in the space of three years (1829-32).¹²⁵

Although monopsonistic power was possessed by various employers in the factory silk and lace industry, there is no convincing evidence to suggest they used this to discriminate against women through the gendered payment of piece-rates. Heathcoat was in a powerful position in his local labour market. The woollen and worsted manufacture had provided abundant employment in Tiverton in the sixteenth, seventeenth and early eighteenth centuries, but from 1750 onwards employment in these trades had declined, with the downturn having accelerated during the period of the Napoleonic Wars.¹²⁶ Thus, there was a large pool of unemployed textile workers on which

¹²⁴ Brown, *Early Days in a Dundee Mill*, p.102. As Sydney J. Chapman outlines, the payment of time-rates works best when workers are of a similar quality, as was the case here. See, Sydney J. Chapman, *Work and Wages*, Vol.2 (London, 1908), p.184.

¹²⁵ B.P.P. 1831-32, XIX, p.279.

¹²⁶ There had been a great trade in woollen manufacture in Tiverton up until 1612, when it was estimated that 8000 men, women and children were employed in the industry there. In that year a fire destroyed most of the town, causing production to disperse to other towns in Devon, particularly to Exeter. However, by the time of Defoe's visit in 1722

Heathcoat could draw when he shifted production to Tiverton. The power Heathcoat had over his workers can be seen in the contracts they signed, which stipulated that they could only leave his employment before the end of the contract (which were for between one and seven years, with two or three years being the most common) with his permission. Whereas he could dismiss them with one month's (or in the case of a few privileged male workers two or three months') notice.¹²⁷ Long contracts were common at isolated rural paternalistic mills where replacing workers was much harder than in urban centres. The Gregs required their workers to sign them, and would typically levy a fine on the rare occasions that they did allow workers to leave before the expiration of the agreed time. Long-term contracts were also a regular feature at Jedidiah Strutt's mills at Belper and Cromford.¹²⁸ Courtauld had a near monopoly of local industrial employment due to the decline of the old woollen cloth manufacture in Essex and the failure of any other industry to adequately replace it:

By the mid decades of the nineteenth century Samuel Courtauld & Co was an island empire of industrial employment, established in three small neighbouring market towns and set in a sea of agriculture; and, moreover, that agriculture paid some of the lowest wages in the whole country.¹²⁹

The Courtaulds established themselves as paternalistic employers on a far grander scale than any other millowners in Essex, echoing the approach of northern paternalistic employers such as the Greggs, the Ashworths, Ashton and Gott. They provided housing for some of the workers, a

the wool textile trade in Tiverton had revived, particularly thanks to the growth of the serge industry. Thus, by this time, as was the case in other towns and villages in the area, the people were, '... all fully employed, and very few, if any, out of work, except such as need not be unemployed, but were so from mere sloth and idleness, of which, some will be found every where [sic].' Defoe, *A Tour through the Whole Island of Great Britain*, pp.219, 249-50; Thomas Moore, *The History of Devonshire: from the Earliest Period to the Present, Vol.1* (London, 1829), p.552; Varley, *John Heathcoat*, p.20.

¹²⁷ *Heathcoat Records*, 4302B/A9-12.

¹²⁸ Fitton and Wadsworth, *The Strutts and the Arkwrights*, p.105; Michael Huberman, 'The Economic Origins of Paternalism: Lancashire Cotton Spinning in the First Half of the Nineteenth Century', *Social History*, 12 (1987), p.183.

¹²⁹ Coleman, *Courtaulds*, p.244. See also, Sharpe, *Adapting to Capitalism*, p.28.

factory evening school, and influenced the development of a cottage hospital and a workers' institute. In 1849 they set up a factory home, 'for the benefit of our unmarried work women of good character'. They also made sure that those who rented housing from the company would lodge girls that came from rural areas to work in the mills.¹³⁰

John Hall could take advantage of the same lack of competition for industrial employment as the Courtaulds did at his firm in Coggeshall. He had owned the dwellings of many of the domestic weavers that worked for him until he sold them off when he built his steam-powered mill in 1838.¹³¹ It seems highly probable that, as Courtauld did, he owned the looms his domestic weavers worked on.¹³² In domestic handloom weaving this was typically not the case, with employers hiring out looms to workers being impractical where workers were able to switch between employers with ease.¹³³ In the early 1830s John Hall became the overseer of the poor in Coggeshall, and therefore was effectively able to control and subsidise his workforce.¹³⁴

There was a strong gender division of labour at Courtauld's Halstead mill, the only jobs which employed both males and females were winding (which employed girls aged under 18 and boys under 16), and spindle cleaning (which employed boys under 15 or elderly males and females who were considered too infirm to do anything else). Although he did not have monopoly power, Courtauld seems to have had monopsonistic power in his local labour market, so, if he had desired, could have acted in a discriminatory fashion. However, the allocation of jobs by gender at his firm seems to be explained by local labour market conditions rather than discrimination on his part. The very high proportion of women and children employed at the firm reflects the paucity of alternative employment opportunities for these workers in the locality, there was no need to

¹³⁰ Sharpe, *Adapting to Capitalism*, pp.50-51.

¹³¹ John Booker, *Essex and the Industrial Revolution* (Chelmsford, 1974), p.55.

¹³² For Courtauld owning the looms his domestic weavers worked on, see, Coleman, *Courtaulds*, p.104.

¹³³ B.P.P. 1802-03, VII, p.815; Pinchbeck, *Women Workers and the Industrial Revolution*, p.158.

¹³⁴ Sharpe, *Adapting to Capitalism*, p.48.

employ men in the majority of occupations since women and children could perform them much more cheaply. The jobs that adult men worked in involved having authority over fellow workers ('principal overseers', 'secondary overseers') or a high degree of skill ('clerks', 'mechanics', 'engine drivers', 'men employed attending mill machinery', 'men employed attending power loom machinery').¹³⁵ Some of the occupations requiring a high degree of skill may have also involved authority over other workers. Worker resistance to female authority and women's lack of human capital would have meant they had very little or no access to these jobs even in the absence of gender discrimination by the employer. Although there is *possible* evidence for the Ashworths and Ashton choosing a sub-optimal organisation of labour force to satisfy their notions of what was appropriate behaviour according to the gender of the workers (and even if this was the case it primarily applied to married women only), this seems to have been highly unusual.¹³⁶ Even where employers had sufficient monopsonistic power to enable them to act in a non-profit maximising fashion the profit motive seems to have usually, if not always, overridden any ideology they may have held regarding appropriate behaviour according to gender of the lower classes.

Conclusion

Whilst the composition of the factory workforce was determined to a considerable extent by industry, the silk, flax and lace industries (as well as cotton and wool textiles) show the importance of local labour market conditions for women's levels of employment and earning ability. Women's likeliness to perform factory work was not only determined by the jobs on offer

¹³⁵ For occupations employing adult men, see, *Courtauld Papers*, D/F3/3/27. The only other occupational title for adult men was 'miscellaneous', and the merely partial (and sometimes illegible) description of the work histories of the workers under this heading in the original record means that it is not possible to determine whether the jobs these workers performed required authority over other workers or a high degree of skill.

¹³⁶ For the Ashworths' and Ashton's employment strategies, see above, pp.97-99.

to them in the textile factories and rival local forms of employment for women, but also by the employment opportunities in the locality for men and children. Although the silk and flax industries are the only branches of textiles for which I have found any evidence of female overseers (and for flax this evidence is not fully conclusive for England during the Industrial Revolution), even here they could not attain the same status, level of authority, or wages as male overseers. There is little evidence to suggest that women worked as overseers in the lace factories. There is nothing here to contradict the findings of my earlier chapters that an ideology hostile to female authority was a powerful contributor to occupational segregation and low earnings for women. However, the low wages paid to women also seem to reflect that much of the factory work in silk, flax and lace required less skill than was the case for women's factory work in cotton and wool textiles.

Ideological constraints may have had some direct role in limiting women's ability to unionise or protest in to relation to their work conditions through their lack of experience in the public sphere. However, self-interest and lack of funds seem to have been more important for women's inferior ability to defend their interests against capitalist forces. This in itself was partially the result of the influence of gender ideology on the labour market. There is little evidence to suggest that type of payment (i.e. piece-rates or time-rates) was determined by gender ideology, the processes determining whether piece-rates or time-rates were paid to factory workers when output was easily observable seem to have been complicated. Indeed, the importance of gender ideology for limiting women's choice of occupation and earning capability operated primarily within the working-class family and in determining worker preferences, rather than influencing how employers treated their workforce.

Ch.6: Conclusion

The factory built by Thomas Lombe in Derby for the throwing of silk heralded a new age of textile production, which was to have profound consequences not only for English economic growth, but also for the lives of workers throughout the country. Lombe's factory gathered together around 300 workers, most of whom operated machines driven by an external power force, in contrast to the hand-powered machinery which was the staple of domestic production. The spread of silk throwing mills away from Spitalfields, England's traditional centre for silk production in the mid-eighteenth century was an early indication of how geographies of production would change over the course of the Industrial Revolution. Certain traditional centres of production (e.g. Norfolk for worsted, and the West of England for woollens) entered decline, whereas others (such as the West Riding and Lancashire) saw their trade grow on an exponential scale. Although the 1847 factory census reveals that there were textile factories of some sort in all of the English counties by this time, the change in geography was not only a matter of location but also of concentration.¹ The dramatic changes in the form and location of employment met with resistance amongst many workers, and helped to create a change in ideology regarding women's work that was to last well beyond the period under study here.

Burnette has argued that in competitive labour markets gender ideology could only serve as a way to understand and explain an economically determined gender allocation and payment of labour. Under her interpretation gender ideology did not determine how these labour markets operated. This argument is broadly successful in explaining the labour market for male and female agricultural servants.² However, the fact that there was some substitutability between male and female labour in this occupation does not necessarily mean that gender ideology had no influence

¹ B.P.P 1847, XLVI, p.615.

² Burnette, Chapter 4.

on this labour market whatsoever. Moreover, these occupations typically did not involve the employee having authority over other workers. It has been beyond the scope of this thesis to conduct much original research on workers employed in sectors other than textiles, but resistance to female supervision can also be seen in the organisation of agricultural work gangs. A strong preference was shown for employing male gangmasters even when, as was frequently the case, all the workers being supervised were women and/or children.³ As the Children's Employment Commission reported in 1867:

It appears that efforts have in some instances been made to substitute women for men as managers of gangs; but it has been found that women very rarely possess sufficient vigour and *authority* to enforce the requisite attention and activity in all the members of the gang while at work. [emphasis added]⁴

In all of the sources that I have consulted where the gender of gangmasters is indicated, this is the only case where it is not assumed or explicitly stated that the gangmasters were all men.⁵ Gangmasters had authority over a number of workers and frequently resorted to physical punishment of women and child workers.⁶ It seems probable that the perception that women lacked sufficient 'vigour' to elicit maximum productivity from their subordinate workers refers to their unwillingness to mete out physical punishment.

³ For men only accounting for a small proportion of gang workers, see , Pinchbeck, *Women Workers and the Industrial Revolution*, p.88; Nicola Verdon, 'The Employment of Women and Children in Agriculture: a Reassessment of Agricultural Gangs in Nineteenth-Century Norfolk', *Agricultural History Review*, 49 (2001), pp.48, 50.

⁴ B.P.P. 1867, XVI, p.83.

⁵ See, B.P.P. 1867, XVI, for example pp.77-78, 81, 92-93, 99-102, 145, 157-59, 161; Margaret Llewelyn Davies (ed.), *Life As We Have Known It, by Co-Operative Working Women*, 2nd ed., (London, 1977), pp.109, 111; Pinchbeck, *Women Workers and the Industrial Revolution*, pp.87-90; Verdon, 'The Employment of Women and Children in Agriculture', pp.44-45.

⁶ Humphries, *Childhood and Child Labour in the British Industrial Revolution*, p.221; Pinchbeck, *Women Workers and the Industrial Revolution*, p.88; Verdon, 'The Employment of Women and Children in Agriculture', pp.44-45.

The strength of the ideologically based advantage men had for authority over workers (combined with the social acceptability of males using violence against subordinate workers), even where no adult male workers needed to be supervised, can also be seen in one of the provisions of the Gangs Act of 1867. This stipulated that when a public gang consisted solely of female workers, it had to be overseen by a woman licensed to act as a gangmaster. Women gang members in mid-nineteenth-century Norfolk typically earned only 8-9d per day, whereas, 'The gangmaster profited from the system by being elevated to the position of overseer and received remuneration relative to this role.' According to the Diocesan Inspector of Schools for Norwich, in the 1860s this could total as much as 15-20s per week for overseeing a gang of fifteen to twenty people. The gangmasters could also make profits by selling provisions to gang members.⁷ Given the lower wages women could have been paid to perform this work, if the labour market was unaffected by ideology this would have already been an all-female occupation, and legislation requiring that all-female gangs be supervised by a female would have been unnecessary.

A pervasive ideology resistant to female authority, and which placed strong proscriptions on women committing violent acts, meant that women were all but excluded from working as gangmasters, just as they were from working as overseers in textile factories, and their opportunities as mule-spinners and slubbers were curtailed. The strength of evidence I have presented for ideology being an important reason, rather than being a mere explanation, for the rarity with which women were employed in factory textile work requiring authority over other workers, as well as the same process occurring in agricultural gangs, gives confidence that this was occurring throughout the economy during the Industrial Revolution. The fact that some agricultural employers were willing to experiment (unsuccessfully) with employing female

⁷ Verdon, 'The Employment of Women and Children in Agriculture', pp.44-45.

gangmasters further supports my claim that it was worker ideology that was limiting women's employment and earning opportunities rather than any inhibition on the part of employers.

The transition to factory production in textiles resulted in a more formalised work hierarchy, ensuring that even in the absence of distributional coalitions interfering with the operation of the labour market, women's access to the best paying jobs declined. Female authority over adult males in the factory was deemed unacceptable and preference was expressed for male authority even where all the workers being supervised were women and/or children. Factory overseers were responsible for directing the labour of many more workers than was the case for domestic workers, and women were largely excluded from this new type of work. Jobs such as mule-spinning required authority over a small number of subordinate workers, and frequently the physical disciplining of these workers. The ideological constraints on the behaviour of women at this time reduced their productivity in such occupations, and thus their attractiveness to employers. Women mule-spinners were less likely to supervise their assistants. When they were in direct control of subordinate workers, their tendency to use positive rather than negative incentives, and the different way in which the 'Doffing Mistress' was perceived to the male boss, demonstrates that where women's work did involve a supervisory function notions of gender identity meant that they typically performed this differently from men.

It seems probable that female authority over a small number of subordinate workers (as would be the case in factory mule-spinning, or domestic handloom weaving) would have been less opposed within the domestic unit with familial or quasi-familial subordinate workers, rather than in a factory where many of the subordinate workers were relative strangers, and the organisation of the labour force and the behaviour of the workers was clearly visible to many more people. Indeed, Ester Boserup finds that around the world, as production moves out of the

household and in to the modern urban economy the association of supervisory functions with the work of men increases. This happens to such a degree that this association becomes regarded as ‘natural’, in contrast to domestic production at the village level where this gender-biased assumption is far less common.⁸ However, a lack of evidence means that it is not possible to be certain that this process occurred in English textiles.

Prior to the Factory Acts of the 1840s women worked approximately the same hours as men in factory production. The high level of fixed capital investment required for machinery reliant on external power (i.e. water and steam) meant that work hours were standardised regardless of gender. This contrasts with domestic production and hand-powered production in factories or workshops, where working time could be more flexible, and women tended to work shorter hours than men. Despite the gender equality of hours worked in the vast majority of factories, women’s wages were generally only between one-third and one-half of men’s wages, especially from the socially significant age of 21 onwards. This is the same ratio that is commonly found in agriculture and domestic production, where women typically worked significantly shorter hours than men, as well as there being other factors which overstate the gender wage gap here (see above, p.9). More specifically, it seems to be higher than the gender wage gap in domestic textile production. Absolute wages for women in factory textile production were typically high compared to what they could earn elsewhere in the economy, but factory work entailed many significant disutilities, especially for women. Further, the advance of factory production removed access to employment in textiles from many women.

Much of the gender wage gap in factory production can be explained by occupational segregation. Tables 3.1-3.3, 4.1, 5.5 and 5.7 all show a clear link between the gender of the workers (as well as whether they were adults or children) that were typically employed in an

⁸ Ester Boserup, *Woman’s Role in Economic Development* (London, 1970), p.140.

occupation and the wages they received. Biological differences between men and women were an important cause of occupational segregation. Male strength advantage continued to be important for certain jobs even after the application of external power, and this is shown clearly by male wages typically declining from a younger age, and more steeply, in the data from the 1834 Report. This was a period of high fertility, so women's unique ability to give birth and breastfeed gave a particularly strong economic disincentive for both themselves and their parents to invest in human capital acquisition, since they could be expected to spend significantly less time in the workforce than men. The high earnings available to the highly skilled women silk weavers in Spitalfields (see above, pp.201-02) are an example of the fact that where women did possess high levels of human capital they could be well rewarded for it. Therefore, lower levels of investment in the human capital of females would have harmed their earning capability to some extent. However, human capital was far from the only determinant of earnings in this period.

Women's lower average attainable wages per unit of time spent working were a further disincentive to investment in human capital. Women had a comparative advantage for both parenting and domestic responsibilities,⁹ and the demands of factory production meant that these responsibilities became much harder to combine with wage-earning than under domestic textile production. However, it seems to have been the case that discriminatory attitudes affected individuals' and families' decisions regarding investment in human capital of females. Moreover, occupational segregation was partially the result of discriminatory attitudes held by workers. The jobs performed by men and women did not solely reflect their biologically-determined comparative advantage. The ideologically based portion of occupational segregation not only denied women access to many of the best paying jobs, but also reduced wages in the occupations

⁹ Burnette, *Gender, Work and Wages in Industrial Revolution Britain*, pp.173-75.

where they were employed in large numbers due to the resultant overcrowding in these occupations.

An ideological climate which was hostile to female authority severely curtailed their access to overseeing occupations. Resistance to female authority, even where no adult males needed to be supervised, is indicated in the widespread rarity of females being employed in any form of supervisory occupation, despite the lower price of their labour. A clear example of this is a highly-paid man being employed to oversee the all-female workforce of the ‘burling chambers’ at Gott’s factory. The very high level of occupational segregation by gender at this firm also suggests that notions of gender identity could influence the work men and women performed, even where the ability to supervise other workers was unimportant. This supports Humphries’ claims regarding working-class concerns to control the sexual behaviour of their children once domestic production and family work-units had been displaced by larger, more capitalised, organisations of production.¹⁰ It would be prudent not to generalise widely from this example; Gott was the largest textile employer in the West Riding, was considered a ‘model’ employer, and trade unions had significant influence at his firm, meaning that how workers were treated here is unlikely to be representative in all respects of a ‘typical’ factory. However, evidence from other mills supports the notion that sexual segregation at work was increasing, albeit not always reaching the same degree that we see at Gott’s factory.

It was almost entirely through the attitudes and actions of workers that textile labour markets were distorted by gender ideology in the Industrial Revolution period. The behaviour of individual workers, who were concerned with preserving their gendered identity, was highly significant. Collective action by workers, in the form of trade unions, proto-trade unions, and other forms of worker protest, became increasingly important for limiting women’s access to

¹⁰ Humphries, “...The Most Free From Objection...”, especially pp.931, 947.

well-paid occupations over the course of the Industrial Revolution. There had always been collective action by workers in certain trades and regions, but the increased level of fixed-capital required for factory production, and the urbanisation of production that arose with the application of steam-power, meant that workers' organisations grew in influence. Attempts by workers' organisations to exclude women from certain occupations or branches of trade had occurred under domestic production, but it is noticeable that support for women's work declined as it moved outside of the home and into the factory. Male workers acting collectively to exclude women, as well as other socially or culturally identifiable groups, followed their economic self-interest. Their actions perpetuated and entrenched occupational segregation to the detriment of women's occupational choice and earning capability. The importance of economic self-interest for union behaviour was also an important cause of women's lower tendency to unionise. However, this is not the whole story: both male and female workers' attitudes to women's work, and their willingness to act collectively regarding women's work (whether defending or opposing it), was also shaped by gender ideology.

Opposition to women's factory work was at least partly an economically rational response by both men and women to the strain on the subsistence of the working-class family, and its ability to reproduce itself, caused by mothers being subjected to the long hard hours away from home that was demanded by most forms of factory textile work. Studies of Preston, Stockport and Bradford during the Industrial Revolution show that mothers typically only performed factory work when family economic necessity meant that they had to, and that families frequently found it preferable for children to work rather than the mother. However, ideological hostility to female authority was not a rational response to economic forces and was resistant to economic pressures, so we should not assume that other ideologies were purely economically determined.

Labour supply decisions were primarily taken by families rather than individuals. Evidence is scarce, but where a male head of household was present it can be assumed that he typically had the most influence, but not absolute power, over household decision-making regarding allocation of labour. Like so many other determinants of women's work, regional variation in labour markets was important. The local demand for women's labour in textiles, as well as alternative industries, affected family decision-making, as did demand for the labour of men and children. The wages available to men and children were particularly important for determining how high a proportion of women from their mid-20s onwards (i.e. after marriage and childbirth) worked.

Employers, both on an individual and collective basis, were not important agents of gender discrimination. Where there was a high degree of competition between employers, as was the case in urban areas, economic forces dictated that they had to choose the most efficient organisation of the labour force. Even where employers faced little or no competition in the local labour market, there is a lack of evidence to suggest that they were willing to accept a diminution of profit to satisfy any notions of the appropriateness of work by gender. The state did not place any restrictions on women's work in textiles until the Factory Acts of 1844 and 1847, and government intervention was not a significant cause of gender discrimination for labouring women in the textile industries before 1850.

Direct discrimination was very rare, and the only example I have found for this in the period 1760-1850 is in certain branches of woollen weaving in the declining West of England trade of the 1830s. However, it should not be assumed that women's wages were equal to the marginal product of their labour even within the restricted range of occupations that they worked in. Monocausal explanations are insufficient to capture the complexity of the forces shaping women's earnings in the Industrial Revolution period. Although how the state and employers

viewed women's work had little effect on their occupations and earnings at this time, the attitudes of workers were an important factor for how they acted both individually and collectively. Economic factors were important for influencing this ideology, but were by no means the sole determinant, and ideology influenced decision-making by economic actors. This was the case even where there was a high degree of competition between employers and no interference from distributional coalitions. Source limitations make total precision regarding individual and aggregate level decision making impossible, but the influence of social and cultural expectations on the operation of the labour market can also be seen in the relatively common payment of time-rates to factory workers even where output was easily observable.

Many factors operated to determine the wages of women, as well as men and children, and textile work during the Industrial Revolution. The evidence I have presented in this thesis indicates that the availability of alternative employment, gender ideology, occupational segregation, biological differences, human capital, trade unions and worker protest, family decision making, and workplace relationships all impacted on women's employment opportunities and earnings. Whereas, employers and the state were unimportant influences on women's earnings and employment opportunities in textiles at this time. Source limitations mean that total precision regarding the determinants of women's earnings and employment opportunities is likely to always remain beyond the reach of historians studying this period. And, of course, the significant influences listed above interacted with one another in complex ways. However, it seems that biological differences, gender ideology and trade union behaviour were the most important reasons for the differences in earnings and employment opportunities between men and women in the textile labour markets of the Industrial Revolution.

The high proportion of females employed in both domestic and factory textile production could possibly be interpreted to mean that textile employment was less affected by gender ideology and discrimination than other sectors of the English economy in the eighteenth and nineteenth centuries. However, detecting gender discrimination is far more complex than merely assessing the relative number of males and females employed. Ideologically-driven occupational segregation ensured that even where women accounted for a very high proportion of the workforce, as was the case in factory silk production, their occupational choice and earnings were curtailed. Gender discrimination occurred in the manufacture of both new and long established textiles (for example cotton and woolens respectively), in both domestic and factory production, and even where there was no interference from the state or trade unions. F:M relative earnings per unit of time in factory textile employment were below or at the same level as most other sectors of the economy, including domestic textile production. The evidence I have presented in this thesis strongly suggests that discrimination had a larger impact on female earnings in factory textile production than domestic textile production. However, the low F:M earnings ratio in factory textile employment compared to non-textile employment should not necessarily be taken to mean that there was more discrimination in factory textile employment than in non-textile employment. As I have outlined in the above paragraph, the determinants of earnings and occupational choice were complex and a thorough understanding of how these interacted in a given sector is necessary to evaluate the importance of gender ideology and discrimination for employment in this sector.

The mechanisation of textile production, and the shift in location of production to the factory, severely reduced the total number of women employed in textiles, as well as making employment more geographically concentrated. Whilst hand-spinning before the spread of new technology

such as the jenny and the mule was frequently low-skilled and low-paid, Muldrew has convincingly shown that high earnings were available to certain skilled women in this trade. Individual earnings for spinning had trebled over the period 1580-1750, whereas the wages of male labourers had only doubled.¹¹ Domestic spinning was also, crucially, an occupation that was easy for women to combine with domestic and childcare responsibilities and employed vast numbers of women across England. Women's access to the best paid textile occupations was also relatively good in domestic production.

The transfer to factory production, and long standardised hours, meant that textile work became less amenable to the demands of the family economy, and was harder for women to perform throughout their life-cycle. There was a significant non-wage disutility from factory work for most workers, and this was particularly strong for women. Women's access to the best-paid textile jobs declined as factory production came to dominate, and their earning capability relative to men seems also to have declined. Mechanisation led to a high level of technological unemployment for women. The more hierarchical organisation of work entailed by factory production, meant that an ideological climate hostile to female authority had a greater impact on the labour market. Further, the difficulty with which factory work could be combined with mothering and domestic tasks, seems to have increased ideological hostility to women's work, with deleterious effects on women's access to work. Thus, the evidence strongly suggests that the changes that occurred in textile production and employment over the course of the Industrial Revolution not only decreased the availability of textile work to women across Britain, but also decreased the utility to women of the textile work that was available and weakened their position in the labour market relative to that of men.

¹¹ Muldrew, 'The Ancient Distaff' and 'Whirling Spindle'.

**Appendix A: Numbers Employed and Average Wages in Factory Textiles by
Region, Industry, Age and Gender in 1833**

A1: Lancashire Cotton (1833)

Age	Males			Females			F:M wage ratio
	N	% of WF	Avg. Wages	N	% of WF	Avg. Wages	
8	1	50.00	2.00	1	50.00	2.00	1.00
9	41	56.16	2.29	32	43.84	2.25	0.98
10	204	62.58	2.54	122	37.42	2.96	1.16
11	195	49.62	3.15	198	50.38	3.17	1.01
12	245	50.41	3.58	241	49.59	3.65	1.02
13	233	50.00	4.21	233	50.00	3.81	0.91
14	256	52.03	4.71	236	47.97	4.96	1.05
15	240	52.75	5.25	215	47.25	5.67	1.08
16	204	44.35	6.96	256	55.65	6.04	0.87
17	141	36.53	7.38	245	63.47	6.48	0.88
18	164	37.02	11.75	279	62.98	7.54	0.64
19	135	34.97	11.52	251	65.03	8.17	0.71
20	92	30.56	13.44	209	69.44	8.13	0.60
21	180	41.76	13.10	251	58.24	8.02	0.61
22	145	43.03	16.79	192	56.97	8.54	0.51
23	104	42.98	18.67	138	57.02	8.38	0.45
24	83	45.36	18.63	100	54.64	8.40	0.45
25	100	50.25	18.90	99	49.75	8.83	0.47
26	73	50.34	18.42	72	49.66	9.00	0.49
27	79	54.11	20.67	67	45.89	8.75	0.42
28	75	58.14	21.44	54	41.86	8.08	0.38
29	52	53.61	20.08	45	46.39	8.33	0.41
30	76	57.14	21.15	57	42.86	9.08	0.43
31	31	59.62	22.88	21	40.38	9.83	0.43
32	51	68.00	23.17	24	32.00	10.25	0.44
33	46	69.70	23.56	20	30.30	8.75	0.37
34	41	80.39	20.69	10	19.61	7.13	0.34
35	46	64.79	23.25	25	35.21	8.00	0.34
36	45	67.16	23.17	22	32.84	10.25	0.44
37	21	61.76	21.96	13	38.24	10.00	0.46
38	38	64.41	22.92	21	35.59	9.90	0.43
39	26	72.22	19.71	10	27.78	9.69	0.49
40	38	71.70	20.29	15	28.30	8.67	0.43

41	17	60.71	19.46	11	39.29	8.23	0.42
42	34	73.91	22.04	12	26.09	10.75	0.49
43	12	66.67	21.83	6	33.33	9.44	0.43
44	18	81.82	20.79	4	18.18	9.06	0.44
45	17	77.27	17.25	5	22.73	8.96	0.52
46	13	56.52	19.69	10	43.48	10.33	0.52
47	18	85.71	14.08	3	14.29	9.00	0.64
48	21	84.00	18.58	4	16.00	9.75	0.52
49	9	69.23	14.38	4	30.77	7.83	0.54
50	27	93.10	16.33	2	6.90	7.25	0.44
Total	3687			3835			

Source: Extracted from B.P.P. 1834, XIX, p.279. 'Avg. Wages' are expressed in shillings per week.

A2: West Riding Wool Textiles (1833)

Age	Males			Females			F:M wage ratio
	N	% of WF	Avg. Wages	N	% of WF	Avg. Wages	
6	1	50.00	1.50	1	50.00	1.50	1.00
7	2	50.00	1.50	2	50.00	2.25	1.50
8	26	45.61	2.00	31	54.39	2.77	1.39
9	85	57.43	2.27	63	42.57	2.75	1.21
10	100	50.00	2.75	100	50.00	2.79	1.02
11	121	50.84	3.27	117	49.16	3.33	1.02
12	140	55.12	3.67	114	44.88	3.58	0.98
13	162	58.06	4.33	117	41.94	4.92	1.13
14	164	53.42	4.77	143	46.58	4.77	1.00
15	113	45.93	5.73	133	54.07	6.15	1.07
16	124	46.97	7.19	140	53.03	5.44	0.76
17	90	43.27	7.54	118	56.73	5.75	0.76
18	115	51.57	9.71	108	48.43	7.15	0.74
19	81	41.75	12.04	113	58.25	6.88	0.57
20	65	44.83	12.23	80	55.17	7.04	0.58
21	73	47.10	17.02	82	52.90	7.13	0.42
22	61	46.92	19.19	69	53.08	6.46	0.34
23	65	56.52	20.33	50	43.48	7.63	0.38
24	54	58.70	20.21	38	41.30	6.52	0.32
25	49	51.58	21.06	46	48.42	7.29	0.35
26	57	57.00	19.58	43	43.00	7.60	0.39

27	34	56.67	21.94	26	43.33	7.23	0.33
28	52	66.67	25.50	26	33.33	7.25	0.28
29	45	54.88	24.35	37	45.12	7.38	0.30
30	53	55.79	20.79	42	44.21	7.29	0.35
31	53	75.71	20.50	17	24.29	7.83	0.38
32	47	75.81	21.21	15	24.19	7.50	0.35
33	56	84.85	23.08	10	15.15	6.92	0.30
34	46	80.70	24.25	11	19.30	6.58	0.27
35	49	60.49	23.38	32	39.51	7.27	0.31
36	28	54.90	23.25	23	45.10	7.54	0.32
37	33	66.00	23.71	17	34.00	8.25	0.35
38	35	81.40	23.52	8	18.60	7.42	0.32
39	27	55.10	21.08	22	44.90	8.00	0.38
40	42	73.68	22.08	15	26.32	6.67	0.30
41	25	59.52	22.58	17	40.48	6.38	0.28
42	40	80.00	23.67	10	20.00	8.92	0.38
43	37	82.22	21.56	8	17.78	6.52	0.30
44	27	69.23	20.17	12	30.77	6.33	0.31
45	29	85.29	21.04	5	14.71	6.25	0.30
46	27	72.97	22.38	10	27.03	7.29	0.33
47	24	88.89	20.38	3	11.11	7.67	0.38
48	23	79.31	25.25	6	20.69	6.83	0.27
49	20	86.96	21.65	3	13.04	6.00	0.28
50	24	80.00	20.42	6	20.00	7.92	0.39
Total	2624			2089			

Source: Extracted from B.P.P. 1834, XIX, p.281.

A3: Gloucestershire Woollens (1833)

	Males			Females			
Age	N	% of WF	Avg. Wages	N	% of WF	Avg. Wages	F:M wage ratio
6	2	100.00	2	0	0.00		
7	5	83.33	1.104	1	16.67	1.5	1.36
8	11	55.00	1.33	9	45.00	1.708	1.28
9	47	65.28	1.771	25	34.72	1.917	1.08
10	69	63.30	2.188	40	36.70	1.688	0.77
11	57	69.51	2.354	25	30.49	2	0.85
12	67	68.37	2.625	31	31.63	2.583	0.98
13	72	64.29	3.125	40	35.71	2.521	0.81

14	66	68.04	3.5	31	31.96	2.896	0.83
15	71	73.20	3.958	26	26.80	3.021	0.76
16	53	60.23	4.25	35	39.77	3.458	0.81
17	42	52.50	5.583	38	47.50	4.354	0.78
18	40	59.70	7.083	27	40.30	4.583	0.65
19	27	49.09	8.583	28	50.91	4.917	0.57
20	20	34.48	8.417	38	65.52	5.438	0.65
21	23	56.10	10.167	18	43.90	5.729	0.56
22	16	50.00	11.042	16	50.00	5.125	0.46
23	32	58.18	11.458	23	41.82	5.625	0.49
24	22	73.33	13.313	8	26.67	5.813	0.44
25	23	62.16	11.313	14	37.84	5.208	0.46
26	20	48.78	13.729	21	51.22	5.521	0.40
27	20	54.05	13.333	17	45.95	5.604	0.42
28	25	67.57	12.667	12	32.43	4.917	0.39
29	19	52.78	12	17	47.22	6.458	0.54
30	27	69.23	13.104	12	30.77	5.292	0.40
31	14	60.87	15.021	9	39.13	4.938	0.33
32	25	73.53	14.708	9	26.47	5	0.34
33	16	51.61	16.688	15	48.39	4.375	0.26
34	8	47.06	16.563	9	52.94	4.938	0.30
35	20	62.50	13.542	12	37.50	6.042	0.45
36	13	61.90	14.833	8	38.10	5.188	0.35
37	13	56.52	13.833	10	43.48	5.5	0.40
38	17	62.96	13.875	10	37.04	4.833	0.35
39	10	76.92	14.583	3	23.08	6.5	0.45
40	17	47.22	14.625	19	52.78	5.292	0.36
41	14	70.00	15.167	6	30.00	5.75	0.38
42	9	56.25	12.833	7	43.75	6.25	0.49
43	8	50.00	14	8	50.00	4.896	0.35
44	12	57.14	14.25	9	42.86	5.604	0.39
45	16	66.67	12.125	8	33.33	5.396	0.45
46	9	64.29	14.354	5	35.71	5.813	0.40
47	13	65.00	12.625	7	35.00	4.604	0.36
48	5	41.67	13.625	7	58.33	5.917	0.43
49	7	46.67	14.146	8	53.33	5.688	0.40
50	24	70.59	11.063	10	29.41	7.604	0.69
Total	1146			731			

Source: Extracted from B.P.P. 1834, XIX, p.281.

A4: Somerset Woollens (1833)

Age	Males			Females			F:M wage ratio
	N	% of WF	Avg. Wages	N	% of WF	Avg. Wages	
7	1	33.33	2.00	2	66.67	2.00	1.00
8	6	85.71	2.25	1	14.29	2.00	0.89
9	20	74.07	2.02	7	25.93	2.00	0.99
10	29	78.38	2.25	8	21.62	1.94	0.86
11	33	78.57	2.75	9	21.43	2.08	0.76
12	30	76.92	3.00	9	23.08	2.69	0.90
13	20	52.63	3.04	18	47.37	2.75	0.90
14	34	64.15	3.90	19	35.85	3.27	0.84
15	15	68.18	4.56	7	31.82	3.65	0.80
16	21	61.76	4.65	13	38.24	4.46	0.96
17	18	45.00	6.54	22	55.00	4.15	0.63
18	13	34.21	8.54	25	65.79	5.50	0.64
19	12	54.55	8.71	10	45.45	5.73	0.66
20	16	43.24	10.79	21	56.76	5.83	0.54
21	9	45.00	14.38	11	55.00	5.98	0.42
22	7	26.92	14.79	19	73.08	6.23	0.42
23	14	45.16	14.71	17	54.84	6.17	0.42
24	12	57.14	13.88	9	42.86	8.21	0.59
25	20	64.52	16.73	11	35.48	5.94	0.35
26	5	41.67	15.00	7	58.33	6.21	0.41
27	12	63.16	16.88	7	36.84	6.88	0.41
28	9	56.25	16.38	7	43.75	8.50	0.52
29	14	73.68	16.08	5	26.32	7.60	0.47
30	13	59.09	17.13	9	40.91	7.27	0.42
31	9	75.00	17.08	3	25.00	6.38	0.37
32	12	66.67	17.33	6	33.33	10.08	0.58
33	11	61.11	18.13	7	38.89	7.38	0.41
34	11	91.67	18.75	1	8.33	8.00	0.43
35	11	57.89	18.08	8	42.11	8.56	0.47
36	13	81.25	18.83	3	18.75	5.50	0.29
37	3	27.27	20.67	8	72.73	9.06	0.44
38	7	58.33	18.75	5	41.67	6.60	0.35
39	7	63.64	19.33	4	36.36	5.52	0.29
40	12	60.00	21.25	8	40.00	7.08	0.33
41	11	78.57	16.08	3	21.43	7.92	0.49
42	10	71.43	16.75	4	28.57	8.75	0.52

43	9	52.94	16.77	8	47.06	5.52	0.33
44	8	80.00	17.75	2	20.00	7.25	0.41
45	3	42.86	17.00	4	57.14	7.38	0.43
46	11	78.57	18.33	3	21.43	7.60	0.41
47	5	71.43	20.63	2	28.57	8.92	0.43
48	6	54.55	12.67	5	45.45	6.33	0.50
49	7	58.33	14.21	5	41.67	5.67	0.40
50	7	87.50	14.44	1	12.50	6.17	0.43
Total	556			363			

Source: Extracted from B.P.P. 1834, XIX, p.282.

A5: Wiltshire Woollens (1833)

	Males			Females			
Age	N	% of WF	Avg. Wages	N	% of WF	Avg. Wages	F:M wage ratio
6	1	100.00	0.67	0	0.00		
7	1	50.00	1.50	1	50.00	2.00	1.33
8	9	69.23	1.88	4	30.77	2.40	1.28
9	33	73.33	2.17	12	26.67	2.06	0.95
10	71	79.78	2.21	18	20.22	2.46	1.11
11	105	77.21	2.38	31	22.79	2.38	1.00
12	105	76.64	2.44	32	23.36	2.54	1.04
13	103	83.06	3.17	21	16.94	2.83	0.89
14	128	82.58	3.15	27	17.42	2.67	0.85
15	128	84.21	3.33	24	15.79	3.42	1.03
16	102	72.86	4.29	38	27.14	3.60	0.84
17	71	72.45	4.13	27	27.55	4.75	1.15
18	59	68.60	6.58	27	31.40	4.67	0.71
19	31	55.36	7.75	25	44.64	5.25	0.68
20	46	70.77	9.17	19	29.23	5.42	0.59
21	28	57.14	9.44	21	42.86	5.48	0.58
22	34	62.96	10.85	20	37.04	5.71	0.53
23	27	62.79	11.75	16	37.21	5.17	0.44
24	26	57.78	13.19	19	42.22	5.92	0.45
25	27	58.70	12.46	19	41.30	7.83	0.63
26	29	67.44	13.50	14	32.56	5.40	0.40
27	26	74.29	10.75	9	25.71	6.13	0.57
28	29	63.04	13.67	17	36.96	7.29	0.53
29	29	63.04	16.33	17	36.96	6.25	0.38

30	48	62.34	15.08	29	37.66	5.63	0.37
31	16	59.26	16.00	11	40.74	6.58	0.41
32	28	63.64	14.58	16	36.36	6.52	0.45
33	25	55.56	15.71	20	44.44	6.21	0.40
34	30	58.82	15.88	21	41.18	8.42	0.53
35	37	66.07	14.83	19	33.93	7.08	0.48
36	25	54.35	13.67	21	45.65	6.00	0.44
37	15	57.69	14.75	11	42.31	6.02	0.41
38	23	63.89	13.19	13	36.11	6.60	0.50
39	23	57.50	15.67	17	42.50	6.08	0.39
40	37	54.41	10.94	31	45.59	6.15	0.56
41	10	52.63	13.60	9	47.37	6.83	0.50
42	24	70.59	13.77	10	29.41	6.13	0.44
43	21	77.78	14.83	6	22.22	5.83	0.39
44	19	73.08	14.31	7	26.92	5.29	0.37
45	28	70.00	16.00	12	30.00	5.88	0.37
46	14	56.00	17.08	11	44.00	5.60	0.33
47	9	56.25	13.08	7	43.75	5.00	0.38
48	15	68.18	14.58	7	31.82	6.21	0.43
49	18	62.07	15.08	11	37.93	6.50	0.43
50	17	48.57	14.33	18	51.43	5.58	0.39
Total	1730			765			

Source: Extracted from B.P.P. 1834, XIX, p.282.

A6: Derby Silk (1833)

	Males			Females			
Age	N	% of WF	Avg. Wages	N	% of WF	Avg. Wages	F:M wage ratio
7	2	66.67	1.67	1	33.33	1.50	0.90
8	11	44.00	1.54	14	56.00	1.35	0.88
9	28	38.36	1.83	45	61.64	1.69	0.92
10	64	42.67	1.88	86	57.33	3.10	1.66
11	66	43.14	2.48	87	56.86	3.19	1.29
12	85	50.30	2.58	84	49.70	3.17	1.23
13	61	42.66	2.92	82	57.34	3.38	1.16
14	68	40.96	3.29	98	59.04	3.44	1.04
15	32	24.62	8.00	98	75.38	4.50	0.56
16	45	31.91	7.75	96	68.09	5.33	0.69
17	38	28.57	9.00	95	71.43	5.63	0.63

18	32	25.00	10.67	96	75.00	6.17	0.58
19	23	20.54	15.38	89	79.46	6.00	0.39
20	31	29.52	16.75	74	70.48	6.38	0.38
21	28	28.28	15.33	71	71.72	6.52	0.43
22	25	35.21	15.56	46	64.79	6.79	0.44
23	22	30.99	17.88	49	69.01	7.46	0.42
24	14	31.82	19.92	30	68.18	7.00	0.35
25	20	39.22	21.83	31	60.78	7.44	0.34
26	13	33.33	16.08	26	66.67	7.06	0.44
27	10	35.71	16.79	18	64.29	8.25	0.49
28	11	22.00	20.88	39	78.00	6.83	0.33
29	16	59.26	18.88	11	40.74	8.67	0.46
30	15	38.46	21.58	24	61.54	7.13	0.33
31	7	41.18	14.21	10	58.82	5.71	0.40
32	19	54.29	19.17	16	45.71	6.44	0.34
33	17	65.38	32.56	9	34.62	8.00	0.25
34	15	60.00	22.13	10	40.00	8.04	0.36
35	14	70.00	30.88	6	30.00	7.04	0.23
36	5	38.46	21.83	8	61.54	6.13	0.28
37	7	38.89	31.58	11	61.11	6.94	0.22
38	9	47.37	18.00	10	52.63	6.13	0.34
39	3	21.43	36.33	11	78.57	6.06	0.17
40	6	27.27	18.75	16	72.73	5.83	0.31
41	6	54.55	32.60	5	45.45	5.13	0.16
42	10	83.33	33.50	2	16.67	5.75	0.17
43	3	27.27	25.00	8	72.73	5.56	0.22
44	4	21.05	36.50	15	78.95	5.40	0.15
45	1	11.11	22.00	8	88.89	5.02	0.23
46	5	38.46	19.58	8	61.54	6.79	0.35
47	2	28.57	12.00	5	71.43	5.08	0.42
48	3	30.00	17.33	7	70.00	4.71	0.27
49	2	28.57	22.00	5	71.43	4.69	0.21
50	6	40.00	17.33	9	60.00	5.56	0.32
Total	904			1569			

Source: Extracted from B.P.P. 1834, XIX, p.286.

A7: East Anglian Silk (1833)

Age	Males			Females			F:M wage ratio
	N	% of WF	Avg. Wages	N	% of WF	Avg. Wages	
7	0	0.00		4	100.00	1.50	
8	0	0.00		30	100.00	1.50	
9	5	6.10	1.583	77	93.90	1.73	1.09
10	7	5.30	1.917	125	94.70	1.88	0.98
11	8	5.13	1.75	148	94.87	2.08	1.19
12	7	3.68	2.208	183	96.32	2.29	1.04
13	4	2.56	2.5	152	97.44	2.46	0.98
14	6	4.69	3.042	122	95.31	2.94	0.97
15	0	0.00		128	100.00	3.08	
16	2	1.72	4	114	98.28	3.52	0.88
17	0	0.00		117	100.00	4.00	
18	0	0.00		120	100.00	3.85	
19	0	0.00		89	100.00	4.29	
20	0	0.00		40	100.00	4.63	
21	1	1.96	21	50	98.04	4.52	0.22
22	0	0.00		21	100.00	4.83	
23	2	6.67	16.5	28	93.33	5.08	0.31
24	1	5.26	10	18	94.74	4.92	0.49
25	0	0.00		14	100.00	5.58	
26	1	12.50	18	7	87.50	5.58	0.31
27	1	14.29	13.5	6	85.71	4.50	0.33
28	0	0.00		5	100.00	4.83	
29	1	25.00	31.5	3	75.00	4.42	0.14
30	0	0.00		6	100.00	5.21	
31	0			0			
32	1	100.00	24	0	0.00		
33	2	66.67	18	1	33.33	4.38	0.24
34	0			0			
35	0	0.00		2	100.00	4.25	
36	0	0.00		1	100.00	4.25	
37	1	50.00	20	1	50.00	6.00	0.30
38	1	100.00	16	0	0.00		
39	1	100.00	20	0	0.00		
40	0	0.00		1	100.00	9.00	
41	0			0			
42	0			0			

43	0	0.00		1	100.00	6.00	
44	1	50.00	18	1	50.00	12.00	0.67
45	0			0			
46	1	33.33	21	2	66.67	9.50	0.45
47	0			0			
48	0			0			
49	0			0			
50	0	0.00		1	100.00	10.00	
Total	54			1618			

Source: Extracted from B.P.P. 1834, XIX, p.287.

A8: Somerset Silk (1833)

	Males			Females			
Age	N	% of WF	Avg. Wages	N	% of WF	Avg. Wages	F:M wage ratio
6	12	70.59	0.50	5	29.41	0.52	1.04
7	3	37.50	0.75	5	62.50	0.85	1.14
8	7	33.33	0.85	14	66.67	0.96	1.12
9	16	42.11	0.88	22	57.89	1.17	1.33
10	22	46.81	1.17	25	53.19	1.25	1.07
11	19	40.43	1.19	28	59.57	1.52	1.28
12	10	18.18	1.54	45	81.82	1.92	1.24
13	7	21.21	1.77	26	78.79	2.79	1.58
14	11	26.83	2.38	30	73.17	2.56	1.08
15	10	24.39	3.42	31	75.61	3.75	1.10
16	5	13.89	3.17	31	86.11	4.25	1.34
17	2	5.13	7.25	37	94.87	4.17	0.57
18	2	6.90	6.50	27	93.10	3.81	0.59
19	2	5.00	7.50	38	95.00	5.08	0.68
20	2	5.13	9.25	37	94.87	5.08	0.55
21	1	4.35	10.50	22	95.65	5.33	0.51
22	1	3.70	7.00	26	96.30	5.02	0.72
23	2	11.76	6.75	15	88.24	5.25	0.78
24	1	4.17	7.00	23	95.83	4.92	0.70
25	1	5.56	10.00	17	94.44	5.46	0.55
26	1	11.11	11.00	8	88.89	5.21	0.47
27	0	0.00		8	100.00	4.75	
28	1	16.67	6.00	5	83.33	4.88	0.81
29	1	9.09	10.50	10	90.91	6.25	0.60

30	0	0.00		6	100.00	4.35	
31	0	0.00		1	100.00	7.00	
32	1	25.00	11.00	3	75.00	6.00	0.55
33	2	50.00	12.00	2	50.00	5.00	0.42
34	0	0.00		2	100.00	6.50	
35	1	25.00	7.50	3	75.00	5.50	0.73
36	0	0.00		7	100.00	7.00	
37	0	0.00		3	100.00	7.00	
38	1	33.33	11.00	2	66.67	4.50	0.41
39	0	0.00		4	100.00	6.06	
40	0			0			
41	2	100.00	10.25	0			
42	2	50.00	9.00	2	50.00	6.75	0.75
43	0	0.00		1	100.00	3.75	
44	0			0			
45	0	0.00		1	100.00	4.00	
46	0			0			
47	0	0.00		1	100.00	7.00	
48	1	25.00	18.00	3	75.00	3.58	0.20
49	0			0			
50	0	0.00		2	100.00	7.00	
Total	149			578			

Source: Extracted from B.P.P. 1834, XIX, p.287.

A9: Leeds Flax (1833)

	Males			Females			
Age	N	% of WF	Avg. Wages	N	% of WF	Avg. Wages	F:M wage ratio
9	16	57.14	2.94	12	42.86	2.81	0.96
10	38	53.52	2.81	33	46.48	2.77	0.99
11	83	44.15	4.15	105	55.85	3.13	0.75
12	125	48.26	4.46	134	51.74	3.38	0.76
13	90	41.47	4.67	127	58.53	4.04	0.87
14	71	35.68	5.25	128	64.32	4.48	0.85
15	47	25.13	5.90	140	74.87	5.00	0.85
16	30	17.86	5.81	138	82.14	5.65	0.97
17	38	20.21	7.75	150	79.79	5.67	0.73
18	23	15.65	10.42	124	84.35	5.81	0.56
19	21	16.80	11.92	104	83.20	5.96	0.50

20	22	21.57	13.88	80	78.43	6.04	0.44
21	22	26.19	14.83	62	73.81	5.98	0.40
22	17	25.76	16.67	49	74.24	6.21	0.37
23	10	25.64	17.42	29	74.36	6.21	0.36
24	12	26.67	18.35	33	73.33	6.29	0.34
25	9	45.00	18.48	11	55.00	6.25	0.34
26	11	50.00	17.21	11	50.00	6.27	0.36
27	13	52.00	16.48	12	48.00	6.29	0.38
28	14	50.00	22.00	14	50.00	6.08	0.28
29	19	73.08	19.21	7	26.92	6.06	0.32
30	17	56.67	20.46	13	43.33	6.13	0.30
31	9	75.00	17.90	3	25.00	5.81	0.32
32	8	72.73	20.13	3	27.27	6.00	0.30
33	12	85.71	20.21	2	14.29	6.33	0.31
34	9	90.00	18.58	1	10.00	6.50	0.35
35	15	75.00	19.29	5	25.00	6.38	0.33
36	12	80.00	20.67	3	20.00	6.31	0.31
37	14	100.00	19.67	0	0.00		
38	16	88.89	13.75	2	11.11	6.25	0.45
39	9	90.00	18.67	1	10.00	6.17	0.33
40	15	83.33	18.08	3	16.67	6.33	0.35
41	9	100.00	20.04	0	0.00	6.00	0.30
42	12	75.00	18.00	4	25.00	6.00	0.33
43	16	100.00	20.33	0	0.00		
44	9	81.82	18.98	2	18.18	6.00	0.32
45	18	100.00	19.96	0	0.00		
46	8	80.00	19.38	2	20.00	6.25	0.32
47	9	90.00	19.67	1	10.00	6.25	0.32
48	5	83.33	19.00	1	16.67	6.00	0.32
49	6	100.00	20.94	0	0.00		
50	9	100.00	19.17	0	0.00		
Total	968			1549			

Source: Extracted from B.P.P. 1834, XIX, p.284.

A10: Derby Lace (1833)

Age	Males			Females			F:M wage ratio
	N	% of WF	Avg. Wages	N	% of WF	Avg. Wages	
8	0	0.00		1	100.00	1.50	
9	4	66.67	2.06	2	33.33	2.50	1.21
10	5	17.24	2.42	24	82.76	2.52	1.04
11	13	54.17	2.94	11	45.83	2.90	0.99
12	8	30.77	2.42	18	69.23	3.04	1.26
13	12	46.15	4.02	14	53.85	4.29	1.07
14	16	45.71	4.67	19	54.29	5.38	1.15
15	14	43.75	6.17	18	56.25	6.73	1.09
16	14	35.90	6.96	25	64.10	7.40	1.06
17	14	50.00	9.90	14	50.00	7.94	0.80
18	5	26.32	8.27	14	73.68	8.50	1.03
19	3	17.65	9.50	14	82.35	7.46	0.79
20	2	15.38	12.50	11	84.62	7.31	0.59
21	4	26.67	21.75	11	73.33	8.90	0.41
22	4	26.67	17.50	11	73.33	7.83	0.45
23	5	55.56	22.17	4	44.44	8.75	0.39
24	2	25.00	22.00	6	75.00	7.42	0.34
25	3	50.00	23.67	3	50.00	7.83	0.33
26	3	50.00	21.33	3	50.00	7.67	0.36
27	8	88.89	19.75	1	11.11	7.50	0.38
28	6	66.67	18.17	3	33.33	8.00	0.44
29	3	37.50	19.33	5	62.50	7.83	0.41
30	5	71.43	20.81	2	28.57	5.00	0.24
31	1	100.00	30.00	0	0.00		
32	2	100.00	23.00	0	0.00		
33	5	100.00	24.81	0	0.00		
34	2	100.00	16.00	0	0.00		
35	4	80.00	24.25	1	20.00	10.00	0.41
36	3	60.00	21.67	2	40.00	10.00	0.46
37	2	100.00	20.00	0	0.00		
38	5	100.00	23.42	0	0.00		
39	0			0			
40	3	100.00	22.00	0	0.00		
41	0			0			
42	3	100.00	24.00	0	0.00		
43	2	100.00	17.50	0	0.00		

44	1	100.00	27.00	0	0.00		
45	3	75.00	19.67	1	25.00	7.75	0.39
46	0	0.00		1	100.00	8.00	
47	0			0			
48	2	100.00	20.00	0	0.00		
49	2	66.67	17.50	1	33.33	14.00	0.80
50	2	66.67	22.00	1	33.33	12.00	0.55
Total	195			241			

Source: Extracted from B.P.P. 1834, XIX, p.289.

A11: Tiverton Lace (1833)

Age	Males			Females			F:M wage ratio
	N	% of WF	Avg. Wages	N	% of WF	Avg. Wages	
9	5	100.00	1.90	0	0.00		
10	32	82.05	1.83	7	17.95	2.15	1.17
11	27	90.00	1.98	3	10.00	2.08	1.05
12	17	80.95	2.13	4	19.05	2.31	1.09
13	26	57.78	2.44	19	42.22	2.67	1.09
14	23	57.50	2.63	17	42.50	2.81	1.07
15	24	57.14	3.67	18	42.86	3.33	0.91
16	21	60.00	4.48	14	40.00	4.00	0.89
17	10	37.04	6.23	17	62.96	4.58	0.74
18	13	38.24	7.25	21	61.76	4.75	0.66
19	10	23.81	10.60	32	76.19	4.92	0.46
20	13	30.95	9.83	29	69.05	5.00	0.51
21	10	26.32	12.02	28	73.68	4.92	0.41
22	10	26.32	14.44	28	73.68	4.88	0.34
23	3	13.04	16.17	20	86.96	5.06	0.31
24	7	46.67	17.38	8	53.33	5.33	0.31
25	11	64.71	16.50	6	35.29	5.44	0.33
26	10	62.50	17.27	6	37.50	5.17	0.30
27	9	56.25	16.38	7	43.75	5.10	0.31
28	8	61.54	18.15	5	38.46	4.75	0.26
29	9	90.00	15.44	1	10.00	5.00	0.32
30	12	60.00	16.23	8	40.00	5.54	0.34
31	3	75.00	14.67	1	25.00	5.33	0.36
32	12	85.71	16.75	2	14.29	3.88	0.23
33	15	100.00	17.50	0	0.00		

34	9	90.00	18.73	1	10.00	7.50	0.40
35	15	83.33	13.58	3	16.67	5.88	0.43
36	4	100.00	16.00	0	0.00		
37	4	66.67	15.21	2	33.33	5.79	0.38
38	12	70.59	16.02	5	29.41	5.40	0.34
39	7	100.00	22.96	0	0.00		
40	6	66.67	14.75	3	33.33	5.92	0.40
41	5	83.33	16.50	1	16.67	2.75	0.17
42	10	76.92	13.79	3	23.08	6.10	0.44
43	4	66.67	13.31	2	33.33	5.33	0.40
44	6	66.67	14.00	3	33.33	5.33	0.38
45	8	72.73	16.27	3	27.27	5.10	0.31
46	2	100.00	23.25	0	0.00		
47	5	100.00	26.19	0	0.00		
48	2	100.00	13.25	0	0.00		
49	2	66.67	13.25	1	33.33	14.00	1.06
50	7	70.00	17.25	3	30.00	6.77	0.39
Total	448			331			

Source: Extracted from B.P.P. 1834, XIX, p.289.

Appendix B: Wages in Lancashire Factory Cotton Production by Region and Occupation in 1833

B1: Wages by Occupation in Bolton Factory Cotton Production (1833)

Occupation	Sub-Sector	Age and gender	N	Avg. Wages	Lancs. Avg. Wages	Ratio to Lancs Avg.
Carders or Overseers	Carding	M	56	21.41	23.51	0.91
Jack-frame tenters	Carding	W principally	108	5.21	8.00	0.65
Bobbin-frame tenters	Carding	W principally	189	5.66	7.46	0.76
Drawing tenters	Carding	W principally	302	5.90	7.48	0.79
Overlookers	Mule-Spinning	M	23	25.29	29.25	0.86
Spinners	Mule-Spinning	M & W (principally M)	675	28.48	25.66	1.11
Piecers	Mule-Spinning	M, W, B, G (principally CH)	1688	4.68	5.39	0.87
Scavengers	Mule-Spinning	B & G	25	2.78	2.89	0.96
Overlookers	Throstle-Spinning	M	10	18.12	22.38	0.81
Spinners	Throstle-Spinning	M, W, B, G	88	7.52	7.75	0.97
Overlookers	Powerloom Weaving	M	9	23.55	26.30	0.90
Warpers	Powerloom Weaving	M & W	14	12.74	12.26	1.04
Weavers	Powerloom Weaving	M, W, B, G	236	9.27	10.82	0.86
Dressers	Powerloom Weaving	M	24	23.84	27.81	0.86

Source: Extracted from B.P.P. 1834, XIX, pp.427, 434. 'Avg. Wages' are expressed in shillings per week.

B2: Wages by Occupation in Brinnington, Hyde etc. Factory Cotton Production (1833)

Occupation	Sub-Sector	Age and gender	N	Avg. Wages	Lancs. Avg. Wages	Ratio to Lancs Avg.
Carders or Overseers	Carding	M	46	20.48	23.51	0.87
Jack-frame tenters	Carding	W principally	90	8.41	8.00	1.05
Bobbin-frame tenters	Carding	W principally	168	8.50	7.46	1.14
Drawing tenters	Carding	W principally	235	6.37	7.48	0.85
Overlookers	Mule-Spinning	M	23	30.30	29.25	1.04
Spinners	Mule-Spinning	M & W (principally M)	380	23.73	25.66	0.92
Piecers	Mule-Spinning	M, W, B, G (principally CH)	572	4.61	5.39	0.85
Scavengers	Mule-Spinning	B & G	80	3.55	2.89	1.23
Overlookers	Throstle-Spinning	M	5	18.89	22.38	0.84
Spinners	Throstle-Spinning	M, W, B, G	87	8.57	7.75	1.11
Overlookers	Powerloom Weaving	M	107	25.68	26.30	0.98
Warpers	Powerloom Weaving	M & W	64	12.54	12.26	1.02
Weavers	Powerloom Weaving	M, W, B, G (chiefly FE)	2835	11.04	10.82	1.02
Dressers	Powerloom Weaving	M	250	28.74	27.81	1.03

Source: Extracted from B.P.P. 1834, XIX, pp.427, 431.

B3: Wages by Occupation in Duckinfield and Staley Bridge Factory Cotton Production (1833)

Occupation	Sub-Sector	Age and gender	N	Avg. Wages	Lancs. Avg. Wages	Ratio to Lancs Avg.
Carders or Overseers	Carding	M	31	20.80	23.51	0.88
Jack-frame tenters	Carding	W principally	37	8.50	8.00	1.06
Bobbin-frame tenters	Carding	W principally	113	7.96	7.46	1.07
Drawing tenters	Carding	W principally	192	7.71	7.48	1.03
Overlookers	Mule-Spinning	M	18	25.94	29.25	0.89
Spinners	Mule-Spinning	M & W (principally M)	402	20.66	25.66	0.81
Piecers	Mule-Spinning	M, W, B, G (principally CH)	687	5.53	5.39	1.02
Scavengers	Mule-Spinning	B & G	21	3.59	2.89	1.24
Overlookers	Throstle-Spinning	M	1	19.79	22.38	0.88
Spinners	Throstle-Spinning	W & G	10	8.53	7.75	1.10
Overlookers	Powerloom Weaving	M	40	22.65	26.30	0.86
Warpers	Powerloom Weaving	M & W	23	10.15	12.26	0.83
Weavers	Powerloom Weaving	M, W, B, G (chiefly FE)	958	11.29	10.82	1.04
Dressers	Powerloom Weaving	M	97	24.23	27.81	0.87

Source: Extracted from B.P.P. 1834, XIX, pp.427, 430.

B4: Wages by Occupation in Manchester Factory Cotton Production (1833)

Occupation	Sub-Sector	Age and gender	N	Avg. Wages	Lancs. Avg. Wages	Ratio to Lancs Avg.
Carders or Overseers	Carding	M	121	26.21	23.51	1.11
Jack-frame tenters	Carding	W principally	192	8.61	8.00	1.08
Bobbin-frame tenters	Carding	W principally	182	8.66	7.46	1.16
Drawing tenters	Carding	W principally	638	8.48	7.48	1.13
Overlookers	Mule-Spinning	M	57	32.71	29.25	1.12
Spinners	Mule-Spinning	M & W (principally M)	1435	27.14	25.66	1.06
Piecers	Mule-Spinning	M, W, B, G (principally CH)	2697	5.86	5.39	1.09
Scavengers	Mule-Spinning	B & G	884	2.76	2.89	0.96
Overlookers	Throstle-Spinning	M	39	23.43	22.38	1.05
Spinners	Throstle-Spinning	W & G	596	7.65	7.75	0.99
Overlookers	Powerloom Weaving	M	95	24.49	26.30	0.93
Warpers	Powerloom Weaving	M & W	86	11.86	12.26	0.97
Weavers	Powerloom Weaving	M, W, B, G (chiefly FE)	2021	10.83	10.82	1.00
Dressers	Powerloom Weaving	M	133	26.98	27.81	0.97

Source: Extracted from B.P.P. 1834, XIX, p.427, 428.

B5: Wages by Occupation in Oldham Factory Cotton Production (1833)

Occupation	Sub-Sector	Age and gender	N	Avg. Wages	Lancs. Avg. Wages	Ratio to Lancs Avg.
Carders or Overseers	Carding	M	34	25.35	23.51	1.08
Jack-frame tenters	Carding	W principally	72	7.58	8.00	0.95
Bobbin-frame tenters	Carding	W principally	113	6.36	7.46	0.85
Drawing tenters	Carding	W principally	165	7.94	7.48	1.06
Overlookers	Mule-Spinning	M	5	23.11	29.25	0.79
Spinners	Mule-Spinning	M & W (principally M)	226	26.06	25.66	1.02
Piecers	Mule-Spinning	M, W, B, G (principally CH)	326	6.17	5.39	1.14
Scavengers	Mule-Spinning	B & G	28	2.58	2.89	0.89
Overlookers	Throstle-Spinning	M	6	22.56	22.38	1.01
Spinners	Throstle-Spinning	W & G	60	6.61	7.75	0.85
Overlookers	Powerloom Weaving	M	10	24.65	26.30	0.94
Warpers	Powerloom Weaving	M & W	28	12.54	12.26	1.02
Weavers	Powerloom Weaving	M, W, B, G	583	10.71	10.82	0.99
Dressers	Powerloom Weaving	M	47	29.46	27.81	1.06

Source: Extracted from B.P.P. 1834, XIX, pp.427, 433.

B6: Wages by Occupation in Stockport and Heaton Norris Factory Cotton Production (1833)

Occupation	Sub-Sector	Age and gender	N	Avg. Wages	Lancs. Avg. Wages	Ratio to Lancs Avg.
Carders or Overseers	Carding	M	55	23.64	23.51	1.01
Jack-frame tenters	Carding	W principally	155	9.30	8.00	1.16
Bobbin-frame tenters	Carding	W principally	103	7.98	7.46	1.07
Drawing tenters	Carding	W principally	253	7.70	7.48	1.03
Overlookers	Mule-Spinning	M	10	26.22	29.25	0.90
Spinners	Mule-Spinning	M & W (principally M)	398	24.29	25.66	0.95
Piecers	Mule-Spinning	M, W, B, G (principally CH)	571	5.87	5.39	1.09
Scavengers	Mule-Spinning	B & G	93	3.32	2.89	1.15
Overlookers	Throstle-Spinning	M	17	23.70	22.38	1.06
Spinners	Throstle-Spinning	W & G	221	8.34	7.75	1.08
Overlookers	Powerloom Weaving	M	113	29.57	26.30	1.12
Warpers	Powerloom Weaving	M & W	96	12.32	12.26	1.01
Weavers	Powerloom Weaving	M, W, B, G (chiefly FE)	2888	10.69	10.82	0.99
Dressers	Powerloom Weaving	M	234	29.11	27.81	1.05

Source: Extracted from B.P.P. 1834, XIX, p.427, 429.

B7: Wages by Occupation in Tintwistle, Glossop etc. Factory Cotton Production (1833)

Occupation	Sub-Sector	Age and gender	N	Avg. Wages	Lancs. Avg. Wages	Ratio to Lancs Avg.
Carders or Overseers	Carding	M	25	21.51	23.51	0.92
Jack-frame tenters	Carding	W principally	18	7.93	8.00	0.99
Bobbin-frame tenters	Carding	W principally	41	7.73	7.46	1.04
Drawing tenters	Carding	W principally	117	7.32	7.48	0.98
Overlookers	Mule-Spinning	M	5	30.41	29.25	1.04
Spinners	Mule-Spinning	M & W (principally M)	209	22.90	25.66	0.89
Piecers	Mule-Spinning	M, W, B, G (principally CH)	481	4.91	5.39	0.91
Scavengers	Mule-Spinning	B & G	51	3.46	2.89	1.20
Overlookers	Throstle-Spinning	M	3	24.69	22.38	1.10
Spinners	Throstle-Spinning	MA & FE A & CH	32	8.69	7.75	1.12
Overlookers	Powerloom Weaving	M	10	31.12	26.30	1.18
Warpers	Powerloom Weaving	M & W	12	17.96	12.26	1.47
Weavers	Powerloom Weaving	M, W, B, G	255	11.47	10.82	1.06
Dressers	Powerloom Weaving	M	25	28.80	27.81	1.04

Source: Extracted from B.P.P. 1834, XIX, pp.427, 432. Key: 'A' = adults.

B8: Wages by Occupation in Warrington Factory Cotton Production (1833)

Occupation	Sub-Sector	Age and gender	N	Avg. Wages	Lancs. Avg. Wages	Ratio to Lancs Avg.
Carders or Overseers	Carding	M	6	17.49	23.51	0.74
Jack-frame tenters	Carding	W principally	8	5.79	8.00	0.72
Bobbin-frame tenters	Carding	W principally	28	6.15	7.46	0.82
Drawing tenters	Carding	W principally	13	6.08	7.48	0.81
Overlookers	Mule-Spinning	M	2	28.80	29.25	0.98
Spinners	Mule-Spinning	M & W (principally M)	48	23.98	25.66	0.93
Piecers	Mule-Spinning	M, W, B, G	95	4.99	5.39	0.92
Scavengers	Mule-Spinning	B & G	41	2.49	2.89	0.86
Overlookers	Throstle-Spinning	M	0		22.38	
Spinners	Throstle-Spinning	W & G	18	4.67	7.75	0.60
Overlookers	Powerloom Weaving	M	8	22.56	26.30	0.86
Warpers	Powerloom Weaving	M & W	4	10.92	12.26	0.89
Weavers	Powerloom Weaving	M, W, B, G	142	11.80	10.82	1.09
Dressers	Powerloom Weaving	M	10	30.75	27.81	1.11

Source: Extracted from B.P.P. 1834, XIX, pp.427, 435.

Appendix C: Wages in Manchester, Macclesfield and Congleton Factory Silk Production by Region and Occupation in 1833

C1: Wages by Occupation in Congleton Factory Silk Production (1833)

Occupation	Sub-Sector	Age and Gender	N	Avg. Wages	Avg. Hours	Ratio to MMC Avg. Wages	Ratio to MMC Avg. Hours
Overlookers	Throwing	M	45	13.27	266.1	0.84	0.98
Danthers	Throwing	W	53	6.66	263.6	0.92	0.97
Winders	Throwing	Principally G	638	3.55	262.2	1.08	0.97
Throwers	Throwing	M & B	170	7.95	264.3	0.99	0.97
Overlookers	Weaving	M	2	19.44	284	1.00	1.06
Winders	Weaving	W & G	31	5.02	284	0.75	1.02
Warpers	Weaving	M	3	13.93	284	1.05	1.05
Weavers	Weaving	Principally M	146	11.77	277.4	1.16	1.02

Source: Extracted from B.P.P. 1834, XIX, pp. 448, 450. 'Avg. Wages' are expressed in shillings per week. 'Avg. Hours' is the average number of hours worked in a four week period.

C2: Wages by Occupation in Macclesfield Factory Silk Production (1833)

Occupation	Sub-Sector	Age and Gender	N	Avg. Wages	Avg. Hours	Ratio to MMC Avg. Wages	Ratio to MMC Avg. Hours
Overlookers	Throwing	M	41	17.98	275.5	1.14	1.01
Danthers	Throwing	W & G	48	7.78	276	1.07	1.02
Winders	Throwing	Principally G	711	3.11	276	0.94	1.02
Throwers	Throwing	Half M & Half B	186	7.92	276.7	0.99	1.02
Overlookers	Weaving	M	10	19.41	261.8	0.99	0.98
Winders	Weaving	W & G	182	6.91	276.9	1.03	0.99
Warpers	Weaving	Principally W	69	9.80	264.7	0.74	0.98
Weavers	Weaving	M, W, B & G	144	9.16	264.6	0.90	0.98

Source: Extracted from B.P.P. 1834, XIX, pp.448, 450.

C3: Wages by Occupation in Manchester Factory Silk Production (1833)

Occupation	Sub-Sector	Age and Gender	N	Avg. Wages	Avg. Hours	Ratio to MMC Avg. Wages	Ratio to MMC Avg. Hours
Overlookers	Throwing	M	19	17.05	278.7	1.08	1.02
Danthers	Throwing	W & G	25	7.50	277.3	1.03	1.02
Winders	Throwing	Principally G	561	3.27	275.8	0.99	1.02
Throwers	Throwing	M & B	92	8.38	273.5	1.04	1.01
Overlookers	Weaving	M	3	19.95	276.6	1.02	1.03
Winders	Weaving	W & G	116	6.82	281.2	1.02	1.01
Warpers	Weaving	M	33	20.15	278.4	1.52	1.03
Weavers	Weaving	M	32	7.30	271	0.72	1.00

Source: Extracted from B.P.P. 1834, XIX, pp.448, 449.

Appendix D: Records from Individual Mills

D1: Robert Clough, Powerloom Weavers (1838-62)

	Males				Females			
Year	N	Avg. Wages	High Wage	Low Wage	N	Avg. Wages	High Wage	Low Wage
1838	0				163	18.93	40	6.5
1840	0				244	16.88	23.5	2.75
1842	8	15.19	17.75	10.5	416	16.72	29	2.75
1844	75	17.60	25.25	4	319	18.68	28.75	6.5
1846	68	17.15	24.75	8.75	291	19.64	28.75	5.5
1850	56	19.08	26.25	6.5	315	20.58	29.75	7
1854	34	13.98	19.583	6	300	15.15	24.5	3.25
1858	12	12.27	20	6.75	84	15.11	20.25	7
1862	14	18.63	22.5	14.5	128	21.41	31.5	3.25
Aggregate	267	17.08	26.25	4	2260	18.09	40	2.75

Source: Business Records of Robert Clough Ltd, Volumes 24-27. Wages are expressed in shillings, and are bi-weekly. 'High' and 'low' wage refers to the highest and lowest wages paid to a particular gender in my sample for each given year.

D2: John Foster & Son, Powerloom Weavers (1844-48)

	Males				Females			
Year	N	Avg. Wages	High Wage	Low Wage	N	Avg. Wages	High Wage	Low Wage
1844	75	8.87	13	3	786	8.47	17.25	1
1845	97	7.30	12.5	2.75	814	7.10	28.25	2.5
1846	241	8.62	16	2.25	948	8.44	15.75	1.25
1847	201	9.66	15.25	3	967	9.93	19.5	3
1848	170	7.21	12.75	2.5	1098	7.83	15.5	1.5
Aggregate	784	8.44	16	2.25	4613	8.36	28.25	1

Source: Business Records of John Foster & Son, Volume 99. Wages are expressed in shillings, and are weekly.

D3: John Foster & Son, Spinners (1829-33)

	Males				Females			
Year	N	Avg. Rate	High Rate	Low Rate	N	Avg. Rate	High Rate	Low Rate
1829	36	4.00	5	2.5	92	4.91	7	2.5
1830	36	4.21	5	3	92	4.59	6.5	2
1831	52	3.82	5.5	1	92	4.93	7.5	2.5
1832	48	3.90	5.5	2	88	4.88	8.5	2.5
1833	52	4.00	5.5	2.5	88	4.78	8.5	1.5
Aggregate	224	4.32	5.5	1	452	4.82	8.5	1.5

Source: *Business Records of John Foster & Son*, Volume 98. 'Rate' refers to the weekly Wages in shillings a worker would receive if they worked the standard number of hours in a week.

D4: William Ackroyd, Spinners (1846-61)

	Males				Females			
Year	N	Avg. Rate	High Rate	Low Rate	N	Avg. Rate	High Rate	Low Rate
1846	154	5.03	26	1.5	196	3.69	7	1.5
1850	206	5.11	32	1.5	266	4.01	6.75	1.5
1854	172	5.65	30	1.5	226	4.20	7	1.5
1858	163	3.08	16	1.5	263	4.66	7.75	1.5
1861	225	7.62	38	1.5	253	4.80	7	1.5
Aggregate	920	5.45	38	1.5	1204	4.30	7.75	1.5

Source: *Business Records of Business Records of William Ackroyd Ltd*, Volumes 27-28. 'Rate' refers to the weekly Wages in shillings a worker would receive if they worked the standard number of hours in a week. N.b. the high wages paid to a few males here, overwhelmingly suggests that overseers were included in this wage book, whereas they were not included in the spinning room wage book at John Foster & Son.

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