

DENMARK: THE TEXTILE INDUSTRY AND THE FORMATION OF MODERN INDUSTRIAL RELATIONS

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Seen from a global point of view, Denmark has always been a minor player in the field of textile production. However, from the perspective of industrial relations, the Danish case has relevance in an international comparison. The textile industry provides a good example of how industrial relations based on strong unions and nationwide collective bargaining were formed in Denmark. These industrial relations, created from below, later became the foundation of the modern welfare state.¹ This article will give a short presentation of the history of textile production in Denmark as its first part, while the second part will focus specifically on the issue of industrial relations.

TEXTILE PRODUCTION FROM PRE-INDUSTRY TO THE PRESENT

Geographically Denmark consists of the peninsula of Jutland and approximately 100 inhabited islands, including Zealand with the capital of Copenhagen. In the late eighteenth century, the population was a little smaller than one million. Presently it is 5.4 million. The country is fertile, and for centuries agriculture was the main source of income, supplemented by trade, fishing and shipping. From ancient times, wool and flax were spun and woven into fabrics in peasants' homes. This domestic manufacturing of textiles was undoubtedly of great importance in [142]

¹ For a discussion of the concept of modernity, especially in relation to labour movement and industrial relations, see Lars K. Christensen, *Det moderne arbejde - kulturelle og institutionelle forandringer af arbejdet i den danske tekstilindustri 1895-1940* (Ph.D., University of Copenhagen, 1998), pp. 283 ff.



Denmark (present border)

[142] pre-industrial Denmark. A coarse woollen fabric² was used for everyday clothing, while the more precious linen could be used for undergarments or bedclothes.

The last half of the eighteenth century was a period of peace and general prosperity in Denmark. Agricultural reforms gradually improved the daily life of the farmers. In the same period, there was a change in the demand for textiles. Fabrics with a linen warp and woollen weft,³ often with bright coloured stripes or patterns, became popular. Common people used these fabrics for finer clothing and for interior decoration.⁴ In the rural areas, textiles were also produced by artisans: weavers, employed by an estate, or working in their own shop in a village. Normally, artisans were only allowed to set up shops in towns. However, weavers formed one of the few exceptions, and in some areas, there could be 2-3 weavers in one village. The workshop of a village weaver was usually small, comprising only the weaver himself and maybe an apprentice. Spinning, winding etc. was often carried out by the weaver's wife or children.

² Known as *vadmel* in Danish

³ Known as *hvergarn* in Danish

⁴ E. Andersen and E. Budde-Lund, *Folkelig vævning i Danmark* (Copenhagen, 1941), pp. 7ff.

While peasants in some areas would cease to weave their own textiles and instead started to bring their homespun yarn to the village weaver, peasants in other parts of the country saw an opportunity to supplement their income by selling their domestic products. In certain areas, the domestic manufacturing of textiles grew considerably, especially between 1750 and 1850. Overall, it seems safe to conclude that in the eighteenth and early nineteenth centuries, domestic production and rural artisans provided the vast majority of textile products.

MANUFACTORIES

The manufacturing of textiles became a centrepiece in the mercantilist endeavours of the Danish monarchy. Agriculture provided wool and flax, and cotton was imported from the colonies.⁵ The missing factors were the technology, know-how and capital, needed for large-scale manufacture. However, the absolutist state had a relatively effective system of tax collection at its disposal. With this as a foundation, capital was accumulated and transferred to state subsidies for privately owned manufactures. The monarchy also commanded a well-developed administrative system, which was used to secure the necessary supply of raw materials and skilled labour for industrial production, and to further the sale of products.⁶ [143]

Since medieval times, the trades had been organized in guilds. The guilds were a mechanism for internal control within the trades, in order to avoid competition and to control prices. They were also instruments of state intervention, since guild regulations had to be officially approved. Membership was compulsory for most artisans. In Copenhagen and other major cities, guilds existed for cloth-makers, weavers, silk-weavers and hosiery-makers.⁷ New *factory-guilds* were organized, mimicking this well-known form of organization. These guilds provided the owners of the manufactures with quite extensive power over their workers, as they prescribed fixed maximum wages and gave employers the possibility to refuse labourers the right to leave the factory.⁸ A subsidised *General warehouse*⁹ was established, for the purpose of securing imported raw materials

⁵ Even though Denmark was a minor colonial power, cotton was produced in the Danish West Indies.

⁶ Richard Willerslev, 'Den danske tekstilindustri udviklingsforløb 1730-1960', in Helge Bjørn and E. Zinklar Zinglarsen (eds), *De danske tekstilerhverv* (Copenhagen, 1965), p. 112f.

⁷ In Danish: *Dugmagere*, *tøjmagere*, *silkevævere* and *strømpevævere*. The words *dugmager* and *tøjmager* can be confusing, since *Dug* and *Tøj* are both derivations from the German word *Tuch*, which originally had the broad meaning of tool, equipment or clothing. In German, the combination *Tuchmacher* has the specific meaning of clothmaker, which has been transferred to Danish as *Dugmager*, designating a person who is producing fulled fabrics from wool. The word *Tøj* is also a derivation from *Tuch*, which originally had the same broad meaning (e.g. equipment), but has acquired the more specific meaning of clothing. Thus, *Tøjmager* means a weaver who is producing light, non-fulled fabrics from wool, flax or (later) cotton.

⁸ Axel Nielsen, *Industriens historie i Danmark*, vol. II (Copenhagen, 1943-44), pp. 83-84; Willerslev, 'Den danske tekstilindustri udviklingsforløb', pp. 113-114.

⁹ Danish: *Generalvaremagasinet*.

at favourable prices, providing a guaranteed outlet for products and supplying the textile merchants with credit. Furthermore, the import of foreign textiles was banned – even though the ban seems not to have been completely effective.

A vast amount of direct and indirect state subsidies were paid and a number of master artisans were attracted from abroad, especially from Germany, who founded so-called textile manufactures, mainly in Copenhagen. Most of these manufactures were quite small though, and a significant number were organized according to the putting-out system, where a number of domestic workers or small artisan shops worked under the supervision of a master artisan, or sometimes a merchant. One of the exceptions to this rule was the Royal Privileged Cotton Manufacture – publicly known as the Manchester Factory – established just outside Copenhagen in 1779. This manufacture marked an important first step in the mechanization of textile production: it was equipped with both water frames and mules for spinning as well as carding machines. There was no waterpower though; instead all machines were either hand- or horse-driven. The size of the complex, as well as the introduction of spinning machines, made this the first Danish establishment, deserving the designation *factory*.¹⁰

Due to the Tools Act, which prevented export of certain machines from England, technology could not be imported, but had to be copied locally. The Swedish-born [144] manager of the Manchester Factory, Ch.A. Nordberg, later left the Manchester Factory to establish a machine shop, which supplied several textile mills with water frames and other machinery. In an irony of history, the Manchester Factory was destroyed in 1807, when Copenhagen was bombarded by English troops, because of Denmark's involvement in the Napoleonic wars. Because it rapidly decreased the value of Danish currency, the war was an immediate advantage for the textile manufacturers. For a short period, the export of textile goods was possible. This attracted investment capital, and the production of cloth quadrupled between 1801 and 1814. In the smaller cotton-sector, growth was even relatively higher. The growth of production, however, was not the result of mechanization; it was rather based on well-known technological and organizational forms.

Despite these immediate advantages, the wartime had a catastrophic impact on the country as a whole. In 1813 the state was in effect bankrupt, and the following year saw the separation of Norway from the monarchy. State subsidies for textile production were radically lowered, import restrictions were abolished and the economy entered a long period of deflation. The result was the worst economic crisis ever for Danish textile producers. The pre-war cotton production was almost wiped out by the renewed competition from England. However, the demand for cotton fabrics was continually growing, and it soon became possible to make a business out of weaving cotton from yarn imported from England. New weaving-shops were established in several provincial towns – partly by Copenhagen manufacturers, who wanted to take advantage of the cheaper labour costs outside the capital.

¹⁰ Nielsen, *Industriens historie i Danmark*, II, pp. 174 ff.; Dan Ch. Christensen, *Det moderne projekt: Teknik & kultur i Danmark-Norge 1750-(1814)-1850* (Copenhagen, 1996), pp. 269 ff.

The number of workers in cloth production dropped by more than two-thirds between 1814 and 1830. Nevertheless, production only dropped by one-third during this period.¹¹ This increased productivity reflected the fact that those cloth producers who survived the crisis primarily did so by relocating from Copenhagen to areas where waterpower was available. The most prominent example was I.C. Modeweg, who had established himself as a cloth manufacturer in the centre of Copenhagen in 1809. In 1831, he relocated his enterprise to Brede, in the countryside north of Copenhagen. This new cloth mill was to become one of the leading textile factories in the nineteenth and early twentieth centuries.¹²

Thus, in the 1830s the majority of cloth production had become concentrated in three to four large mills, all based on waterpower.¹³ The larger cloth mills had all mechanized the carding, spinning and finishing processes. Weaving, however, continued to be carried out by hand. [145]

INDUSTRIALIZATION

In 1848, the absolutist monarchy was abolished and a liberal government was instituted, which carried out reforms in favour of free trade, and from 1862 the guilds lost their right to control the market. Since a growing part of the population lived in towns, both the supply of labour and the demand for textile goods increased. Following a civil war in 1864, the duchies of Schleswig and Holstein were lost by the Danish crown, and became part of Germany. Consequently, the cloth-mills in the Danish part of the monarchy were relieved of major internal competition from the well-developed cloth-industry in Holstein.

Based on a general increase in the demand for agricultural products, nationally as well as on the world market, this was a period of growth and modernization in the countryside. Consequently, the domestic production of textiles became relatively less attractive to farmers and smallholders, than agriculture. Moreover, the export of agricultural products brought capital into the country, which in turn could be invested in industrial development. Between 1840 and 1865, modern industry gained foot in Denmark.¹⁴ In 1843 two mills were equipped with power looms and steam power respectively, and in

¹¹ Willerslev, 'Den danske tekstilindustri udviklingsforløb', p. 121.

¹² I.C. Modeweg's cloth mill in Brede was finally closed down in 1956. Shortly after that, the complex was acquired by the Danish National Museum. It has been the subject of a number of studies – most recently in Jeppe Tønsberg, *Den danske klædeindustri i international belysning: virksomheden I.C. Modeweg & Søn A/S (Brede Klædefabrik) 1810-1956 og dens baggrund* (Copenhagen, 2003), but also in, Lykke L. Pedersen e.a., *Industriens vugge: Brede – et fabrikssamfund ved Mølleåen 1800-1965*. (Copenhagen, 1993) and several others.

¹³ Nielsen, *Industriens historie i Danmark*, II, pp. 78–79.

¹⁴ Ole Hyltoft, 'Den teknologiske udvikling i Danmark', in Flemming Mikkelsen (ed.), *Produktion & arbejdskraft i Danmark gennem 200 år* (Copenhagen, 1990), pp. 35-56. According to Hyltoft, industrialization in Denmark generally took off in a first phase of in-depth change 1840-65, became stabilized in 1865-96 and entered a new phase of in-depth technological development in 1896-1933. See also Ole Hyltoft, *Københavns industrialisering 1840-1914* (Herning, 1984), especially pp. 23–45.

1846 Modewegs cloth mill in Brede was the first to adopt both new technologies together.¹⁵ The replacement of handlooms by power looms did not proceed rapidly, though. The cloth mills typically used carded yarn, which was relatively fragile. The only way to prevent the weft from breaking frequently was by reducing the speed of the loom – which hampered the productivity gain of power looms.¹⁶ Nevertheless, as power looms improved, they gradually became dominant.

Spinning technology was also modernized, and in the mid-1860s self-actors were introduced, at least at the cloth-mill in Brede.¹⁷ The number of cloth-mills grew, reaching a peak around 1875. Many smaller mills did not have the resources to take part in the technological advancements of this period, and were put out of business. However, the number of workers kept increasing – a sign of the concentration of production in larger units.¹⁸ The technology employed in the industrialization of cloth production seems to have been of mixed origin. Locally made machines – often copied from foreign models – were still in use. From around 1870, German [146] machines became dominant in the wool industry.¹⁹ In addition, many of the masters and overseers in the Danish cloth-mills were of German origin, or at least educated in Germany.

The demand for cotton fabrics kept on growing. Mechanical looms were introduced in cotton weaving in 1843, the same year as in the cloth mills. In 1854 an enterprise was established in Copenhagen, which, under the name of I.H. Ruben, would become the largest Danish manufacturer of cotton textiles during the nineteenth century.²⁰ English technology was more strongly represented in the cotton-industry than in the cloth-mills. But there was also a German influence, not only via the supply of machinery, but also via the education of masters and overseers.

A few steam-powered factories were also established in provincial towns. It seems as if power looms spread more quickly in the cotton industry than in the cloth mills. Nevertheless, industrialization as such progressed more slowly in this sector. In 1872 there were still slightly more workers employed in non-mechanized cotton and linen weaving in Copenhagen, than in steam powered cotton factories – but the production of the latter was more than two times that of the former.²¹ The final deathblow to non-

¹⁵ Tønsberg, *Den danske klædeindustri*, p. 50–51.

¹⁶ Ole Hyldtoft, *Teknologiske forandringer i dansk industri 1870-96* (Viborg, 1996), p. 159. Hyldtoft also assumes that there were cultural barriers against the power looms among the skilled weavers.

¹⁷ *Ibid*, pp. 158, 163.

¹⁸ Willerslev, 'Den danske tekstilindustri udviklingsforløb', p. 127.

¹⁹ Hyldtoft, *Teknologiske forandringer i dansk industri*, pp. 167 ff. Tønsberg, *Den danske klædeindustri*, pp. 63–64.

²⁰ Nielsen, *Industriens historie i Danmark*, III.2, p. 100; Hyldtoft, *Københavns industrialisering*, p. 81, 191.

²¹ Hyldtoft, *Københavns industrialisering*, p. 188.

mechanized cotton weaving in Copenhagen was a hand-weavers' strike in 1884, since some of the major operators simply reacted by closing down their hand-weaving shops.²²

INDUSTRIAL PRIME TIME

From the mid-1890s, the process of industrialization entered a new phase. New types and methods of production characterized the growing industry.²³ In the late nineteenth and early twentieth century, the cloth-mills continued the process of mechanization. Some of the smaller mills were shut down, while the larger ones grew even bigger. Some of the largest mills were converted into limited companies, reflecting the need for investment capital. Between 1897 and 1914, the use of machine-power more than tripled, while the number of workers rose only 16 per cent, causing an increased productivity.²⁴

The same tendencies were visible in the cotton industry. Attempts were made to raise productivity by having one weaver operating several looms simultaneously. [147] The multiple loom system was introduced gradually from around 1900, and its progress in the cotton industry is illustrated by Table 6.1.

Another significant development was the re-establishment of spinning within the cotton industry. In 1892, a spinning plant was established in Vejle on the east coast of Jutland, using ring spinning machines for the first time in Denmark. Another spinning plant was established in the same town a few years later, and together with some major cotton-weaving plants, this established the city's reputation as the Danish 'Manchester'.²⁵ A few other plants were established in the following years, among them a large one in Valby, Copenhagen. While cloth-mills integrated spinning, weaving and fulling in a single plant, cotton production would remain divided in separate spinning- and weaving-mills.

²² J.J. Møller, *Dansk Tekstilarbejderforbunds historie. Tekstilindustriens udvikling i Danmark gennem Aarhundreder samt Dansk Tekstilarbejderforbunds Historie fra Forbundets stiftelse til 1918*, (Copenhagen, 1924), pp. 106-107; Willerslev, 'Den danske tekstilindustriens udviklingsforløb', p. 125.

²³ Hyldtoft, 'Den teknologiske udvikling i Danmark', p. 42ff.

²⁴ Hans Chr. Johansen, *Industriens vækst og vilkår 1870-1973* (Ordense, 1988), p. 110.

²⁵ Hyldtoft, *Teknologiske forandringer i dansk industri 1870-96*, p. 186. *Bomuldsbyen. Tekstilarbejder i Vejle gennem 100 år* (Vejle, 1989). John J. Hansen, *Vejle - et tekstileventyr. Vejles tekstilindustri gennem 200 år og Tekstilarbejdernes Fagforening i Vejle gennem 100 år* (Vejle, 1996)

Table 6.1: Cotton weavers operating one or several looms, 1906, 1913 and 1937 (%)

Year	1 loom	2 looms	3-4 looms	6 looms or more
1906	20	67	12	1
1913	13	51	35	2
1937	0	24	60	16

Source: *Statistiske Meddelelser*: produktionsstatistikken 4.30.II, pp. 15, 26, 4.50.I, pp. 19, 21; Textilfabrikantforeningen: Gennemsnitsfortjenesten i September 1937. *Dansk Tekstilarbejderforbunds arkiv*, Arbejderbevægelsens Bibliotek og Arkiv, folio nr. 217.

Entering the twentieth century, the Danish textile industry was well-developed, but it was also a fragile industry, since it experienced heavy competition from imported goods on its own home market. Textile factories were generally larger than the average Danish factory. This was especially true in spinning, where the four to six plants typically had 200-350 workers each in the period 1906-1935, compared to the average in industrial plants of 30-40 workers.²⁶ Measured by the number of [148] workers employed, textile production was one of the important branches of Danish industry at the beginning of the twentieth century.²⁷

²⁶ Figures for the industry in general: Svend Aa. Hansen, *Økonomisk vækst i Danmark*. 2 vols. (Copenhagen, 1976), I, p. 287 and II, p. 64. Figures for the textile industry: calculated from Danmarks Statistik, *Statisk Tabelværk* – see Christensen, *Det moderne arbejde*, appendix 1 for details.

²⁷ Cloth-mills and cotton-weaving and -spinning occupied 6,723 in 1914. This can be compared to 9,843 in machine building, 7,949 in the tobacco-industry and 6,230 in shipyards.

Table 6.2: Number of textile workers, 1872-1993

	Number of textile workers	Percentage of industrial workforce
1872	3,542	10
1897	5,784	6
1914	6,723	5
1935	8,225	4
1951	14,129	5
1965	8,172	3
1972	4,620	1
1993	3,498	1

Source: Johansen, *Industriens vækst og vilkår 1870-1973*, various tables (1872-1972); Danmarks Statistik, *Statistikbanken* (2003), table RAS8 (<http://www.statistikbanken.dk>) (1993). Only blue-collar workers in cloth-, cotton- and linen-production are included.

Denmark did not take part in World War I, but during the last years of the war, the cotton industry was hampered by the lack of raw materials. The cloth-mills could substitute imported wool for domestic wool, as well as shoddy. Thus they were not severely affected by the war itself. However, the general post-war crisis in 1920-21 dealt a severe blow to both branches. Many of the larger textile plants, which were established during the nineteenth century, experienced difficulties in the interwar period, and some were closed down. It was a turbulent period with several instances of economic recession and high unemployment. In turn, this of course affected the consumption of textile goods. Moreover, the textile industry felt the competition from major textile-producing countries – primarily England and Germany. Prior to World War I, the Danish industry contained approximately 50 per cent of the home market. In the 1920s competition grew even stronger, and the market share of national textile production fell below 33 per cent. During the recession in the 1930s, a Social Democratic government introduced a [149] more protectionist trade-policy, resulting in the market share of national production rising again to around 50 per cent.²⁸

Apart from the general political and economical developments of the period, part of the problems can be ascribed to the industry's inability to adapt to changing consumer

²⁸ Johansen, *Industriens vækst*, pp. 111, 161-162.

demands. While there was a change in demand from heavy to lighter woollen fabrics, the industry was in fact producing relatively more heavy fabrics until the mid-1920s. The woollen industry finally adjusted after 1925, when its production shifted markedly toward light fabrics.²⁹ The cotton industry, however, still lagged behind. As late as in 1935, printed cotton fabrics – which were high in demand – were not produced at all. In fact, even the employers' association admitted in 1939 that the industry was failing to keep up with the ongoing changes in fashion.³⁰

WORKING FASTER

There are only limited documentary sources on the productivity of the Danish textile industry prior to World War I. But the sources we have indicate an average growth of approximately 1.2 per cent *per annum* from 1897 to 1905 and 2.4 per cent *per annum* from 1905 to 1913.³¹ These figures are pretty much in line with the increase in productivity for the industrial sector as a whole during this period. From 1916 onwards we have annual figures,³² which indicate a fluctuation in yearly production, especially during World War I and the first part of the 1920s. This is not surprising, since this period was generally characterized by rapid changes in the economy, falling supplies of raw materials during the war years and a wave of strikes and lockouts in the 1920s. Despite these short-term fluctuations, there was a clear long-term tendency towards productivity growth from 1916 until around 1930, with an average yearly increase of more than 3 per cent. From 1930 onwards, the growth stopped, and productivity was more or less constant until World War II. This tendency is quite consistent with industrial development [150] in general, even though overall decline of industrial growth seems to have started a few years earlier.

The statistics are not very detailed, but it seems that most of the rise in productivity between 1897 and 1913 was achieved in cotton spinning, while productivity in cotton weaving and cloth making remained almost constant. During the interwar period, the situation was reversed: apart from some heavy fluctuations in the early 1920s,³³ spinning did not experience productivity growth, while cotton-weaving and cloth-making

²⁹ Danmarks Statistik, *Statistiske Meddelelser* IV.75.7, pp. 51–52, 64, IV.103.6, p. 48.

³⁰ Johansen, *Industriens vækst*, pp. 162–63. Otto Jensen, *Dansk Tekstilarbejderforbund gennem et halvt Aarhundrede 1885-1935* (Copenhagen, 1935), p. 265; Danmarks Statistik, *Statistiske Meddelelser*, IV.103.6, p. 51.

³¹ Calculated from figures in Danmarks Statistik, *Statistisk Tabelværk* (1897), V.A.1, table 12 and *Statistiske Meddelelser* (1905), 4.30.2 and (1913), 4.50.1. Productivity is calculated as the ratio between the number of workers employed and the output of the production, measured either in quantity or in fixed prices. Both these and the following numbers are based on source material which is not always complete and involving factors, of which some has to be estimated. Thus, the numbers given should be considered as approximations. For a further discussion of the source material and methods of calculation, see Christensen, *Det moderne arbejde*, pp. 84–89 and Appendix 2, p. 330.

³² Based on Danmarks Statistik, *Statistiske Meddelelser* for each year.

³³ These fluctuations might be the result of flaws in the statistics.

experienced a very steep rise in productivity following the end of World War I, reaching a peak around 1935 with a productivity approximately 2.5 times that of the last 'normal' years prior to the outbreak of World War I.

The rise in productivity coincided with a further significant increase in the multiple loom-system employed, particularly in the cotton-industry, as can be seen in Table 6.1. The multiple loom-system did not spread as rapidly in the cloth-mills, probably because the woollen weft was more fragile than that of cotton. The development of the system was facilitated by the introduction of automatic looms just after 1900. Some of the early attempts at introducing this new technology were made with looms from the Swiss company, Rütli, while the English Northrop-type also seems to have been in widespread use.³⁴ Because of its more complicated nature, an automatic loom would run at a slower pace than an ordinary loom. An English experiment, referred to in a widely used Danish textbook for textile engineers, showed that all things being equal, automatic looms in a four-loom system produced between 7 and 16 per cent less per week.³⁵

A clear advantage of the automatic loom was that the weaver did not have to change the shuttles or cops, and so he or she could attend more looms at the same time. Depending on the wages paid for attending more looms, the loss in efficiency for each loom could be more than compensated by the decrease in the cost of labour. However, automatic looms were in no way a prerequisite for the multiple loom-system. In fact, the initial expansion of this system did not require much change in technology. We have no precise numbers for the spread of automatic looms, but different sources suggest that it was a gradual process, and that at least many of the three- and four-loom-systems were based on ordinary power-looms.

The industry may also have applied other technical advancements, such as machinery for cutting and preparing the warp. But all in all it was not technical advancements as such, but rather new ways of organizing the labour process, which caused the rise of productivity in the interwar period. Textile workers simply had to tend more machines and/or work faster. One female weaver recollects: [151]

*The textile industry underwent widespread rationalization. Automatic-looms were introduced, so that instead of tending two or four looms, we now had to tend to eight, and work in double shifts from 6am to 3pm and 3pm to 12pm. That was in 1929 and I worked this way for 12 years. My nerves were strained and I had difficulties falling asleep.*³⁶

³⁴ Nationalmuseets Industri-, Haandværker og Arbejdererindringer (The National Museums collection of industrialists, artisans and workers memoirs) [Hereafter NIHA] no. 1197, p. 9–10, no. 1872, p. 13 and 26 and no. 2571, p. 5; H.J. Hannover, *Tekstilindustri*, 3 vols. (Copenhagen 1924–38), III, pp. 904ff.

³⁵ 'Automatic versus Ordinary Looms. Official Report concerning a Test of Automatic Looms, etc., made in 1931 by the Lancashire Cotton Corporation Ltd.', *International Cotton Bulletin*, April (1932).

³⁶ NIHA, no. 1379, pp. 27–28.

Between 1933 and 1935, a few companies even took this a step further, when they introduced the so-called Bedaux-system. This was a system of rationalization, inspired by Taylor's Scientific Management and based on time studies, but adapted to the particular requirements of the textile industry. However, the Bedaux system never came into widespread use.

THE POST-WAR CLIMAX

During World War II, Denmark was occupied by Germany. Compared to most other nazi-occupied countries, the direct impact of the war was relatively insignificant. One of the impacts was a shortage of raw materials, which also affected the textile industry. However, the war also prevented much of the competition from abroad, and a few plants were actually expanded during these years. The lack of competition continued in the immediate post-war period, and around 1950 the industry reached a historic peak in the number of factories and the size of the workforce.³⁷ It was at this point, in 1950, that a newly elected liberal government abolished the protectionist trade policies, which had favoured the national industry. The renewed competition from abroad was a hard blow to some parts of the textile industry. The traditional production of fabrics for clothing declined. Following worker and employer protests, the duty on imported textiles was raised in 1956. However, this only provided temporary relief, and several mills were forced to close during the 1950s and 1960s. Large companies, such as Mogensen & Dessau in Odense, which had built the largest single cotton weaving shed in Northern Europe in 1949, and I.C. Modeweg & Søn A/S, the oldest cloth mill still in existence, closed down in the early 1950s.

The industry reacted with intensified attempts to rationalize production. From 1948 to 1954 productivity rose almost 5 per cent *per annum*.³⁸ The number of persons employed in cotton weaving and cloth production, as well as the total number of factories, diminished by 50 per cent during the 1950s, even though total production only fell by approximately 15 per cent.³⁹ The increase in productivity and decline in employment were characterizing features for the production of yarn and fabrics for clothing until the beginning of the 1970s at least. This situation was sustained by new technologies, such as more efficient ring-spinning machines and the new rotor [152] spinning machines, introduced in the mid-1960s. At the same time, new types of shuttleless looms, capable of weaving at even higher speeds, were introduced.⁴⁰

Another new technology, which was taken up by the Danish textile industry was that of carpet production using mechanized tufting. From a modest beginning, this production increased during the 1960s, spurred on by the general increase in housing standards of that decade. This was also one of the few examples of the Danish textile industry being

³⁷ Johansen, *Industriens vækst*, pp. 223–225.

³⁸ Jacob Christensen and Tonny Jensen, *Textil og skotøj i 100 år* (Copenhagen, 1985), p. 42.

³⁹ Johansen, *Industriens vækst*, p. 225. The numbers are for the period 1950-58.

⁴⁰ John Thøgersen, *Omstilling i tekstil- og beklædningsindustrien* (Aalborg, 1986) pp. 118ff.

able to export to the world market. In contrast to other sectors of the textile industry, employment within the carpet industry rose steadily until the beginning of the 1970s – but not enough to compensate for the overall decline of employment.

POST-INDUSTRY?

While the 1960s had been a period of gradual decline, the early 1970s were a period of explicit crisis for the Danish textile industry. One reason was the general economic recession. The sale of long-term consumer goods was especially affected by the recession, which meant that employment levels were decreasing, even within the carpet industry.⁴¹ Another contributing factor was the transition to free trade within the European market, which was a consequence of Denmark joining the EEC in 1972. In addition, new countries were becoming active textile producers and exporters, able to compete on the world market, based on their comparatively lower wages.⁴² Finally, changes in public consumption towards synthetic fabrics caused problems for the traditional cotton- and wool-based industry, of a more long-term nature.

The companies that best survived the crisis seem to be those that specialized their product-range, in terms of design, flexibility and superior quality. Egetæpper, a successful carpet factory, was among the first in Europe to invest in computer-controlled dyeing technology, which made it possible to apply colours to the fibres of an already finished carpet, thus enabling rapid changes in design.⁴³ The last survivor of the major cloth mills, Kjærs Mølle in Ålborg, gave up producing textiles for clothing in favour of high quality furniture fabrics, under the trade name of Gabriel. Another characteristic feature has been a number of mergers, takeovers and other changes in ownership. [153]

LABOUR, ORGANIZATION AND INDUSTRIAL RELATIONS

The guilds were the predominant instrument of social organization of labour in the pre-industrial trades. They took care of the social needs of their members – masters as well as journeymen – and provided a framework for the cultural praxis of the artisans. To be regarded a skilled and worthy journeyman, one had to complete an apprenticeship, followed by a period of travelling from workshop to workshop, picking up new experiences. Danish artisans would often travel in central Europe, which is one of the reasons why many expressions used within the trades are German in origin. One of them is *zünft*; the concept used to designate the rituals that travelling artisans had to know and practice, in order to be accepted by fellow artisans. After travelling for some years, a journeyman would normally settle down, and become master of his own workshop.

In the late eighteenth century, the gradual development of a capitalist economy began to undermine the guilds. The guilds proved unable to handle the new types of disputes and

⁴¹ *Ibid.*, pp. 130–131.

⁴² Johansen, *Industriens vækst*, p. 291.

⁴³ Thøgersen, *Omstilling i tekstil- og beklædningsindustrien*, p. 134.

contradictions, which arose as journeymen became wage-labourers and masters became employers. Furthermore, from the point of view of the proponents of liberalism, the guilds were harnessing free trade and constituted an obstacle to economic development. The liberal government, constituted in 1848, removed the guilds' rights to control trade, and made membership voluntary in 1862.

Journeymen turned wage-labourers and unskilled-workers made redundant by the structural changes in agriculture, formed a growing proletariat in the larger cities – especially Copenhagen.⁴⁴ In the 1860s, the 'worker-issue' was discussed in a variety of forums. Attempts were made to revitalize the guilds, while others tried to form workers' associations on a liberal platform. However, in the end, the most viable new form of social organization of labour would be the socialist trade unions and the modern labour movement. The first Danish labour movement was formed in 1871. It was called The International Workers' Association – the International in short – and was part of the First International. It included a special weavers section. The International was quite successful in organizing, mainly the Copenhagen, working-class during the first half of the 1870s. Soon the organization was banned and its leaders jailed. Furthermore, a period of recession led to rising unemployment. The labour movement declined, and had to be reconstituted during the 1880s. The reconstitution took place based on a decision taken in 1878, to split the labour movement into two parts: a Social Democratic political party and a trade-union movement. A division of labour was established, which would characterize the Danish labour movement for generations to come. [154]

THE QUEST FOR RECOGNITION

Following the ban of the International, a new Weavers' Union was formed in Copenhagen in 1873.⁴⁵ From the beginning, only artisans working as hand-weavers were accepted as members. Women, who tended mechanized looms in the cotton-factories, were generally regarded as inferior, since they were not skilled and did not practice the *zünfft*. In 1874 an attempt to organize female weavers in a separate organization failed. The first strike organized by the Union in 1873 was a success. However, the decline of hand weaving made life hard for the Union in the following years, and in 1884 the statutes of the Union were changed, making it formally possible for both male and female industrial weavers to become members.⁴⁶

In the following years, new unions in the two provincial towns of Horsens and Odense joined the Copenhagen union, and in November 1885 the Danish Weavers' Federation was officially proclaimed. Membership increased very slowly during the first 10 years of its existence, but grew suddenly in the second half of the 1890s. The most important factor

⁴⁴ Knud Knudsen, 'Arbejdets historie i Danmark. Nogle hovedlinjer i det kapitalistiske arbejdes opståen og udvikling i Danmark frem til 2. verdenskrig', in Mikkelsen, *Produktion & arbejdskraft i Danmark*, pp. 99ff.

⁴⁵ Under the danish name *Vævernes Velfærdsforening* (The Weavers Welfare Association), which was changed the following year to *Vævernes Fagforening* (The Weavers Trade Union).

⁴⁶ Møller, *Dansk Tekstilarbejderforbunds historie*, pp. 107, 112.

behind this was probably the changes in industrial relations within the textile industry, which again were a result of the work carried out by the union itself.

In the first years of the union's existence, strikes were decided on a more or less *ad hoc* basis, sometimes with very little preparation. The strength of the workers in such a conflict would depend on the unions' ability to collect funds among those members who were not on strike – not to mention the often difficult task of keeping strike-breakers out. This way of fighting for improvements in working conditions was costly, both for the Federation and the participants. Furthermore, the results were fragile: the employers could lower the wages again, as soon as they found an opportunity.⁴⁷

Out of these experiences, a twofold strategy evolved. On the one hand was the quest for negotiated wage-schedules. The Federation demanded that wages should be determined through negotiations between the employer and the Union and stipulated in writing. On the other hand was the quest to strengthen internal discipline amongst the workers, in order to ensure that strikes would be better prepared and organized. In 1892 the first small steps were taken to build up a strike fund. In the mid-1890s, the first wage-schedules were negotiated.

In 1895 the name was changed from the Weavers to the Textile Workers' Federation, to signal that its principal aim was to organize all workers within the textile industry, regardless of their level of skill. The increased membership in the second part of the 1890s coincided with an increased strike activity, coordinated by the central leadership of the Federation. In this way, the Federation succeeded in 'covering' several provincial towns, by striking – or threatening to strike – against [155] one employer at a time. In 1898 the Federation decided to take on the employers in Copenhagen in the same fashion. But the Copenhagen employers reacted in an unforeseen manner: they joined the provincial employers in a national Textile Manufacturers' Federation.⁴⁸ The strategy of the employers was to obtain centralized control over wage-negotiations. Responding to the demand by the union for a common wage-schedule for Copenhagen, the Manufacturers' Federation demanded negotiations for a nationwide agreement. After some hesitation – based on an unwillingness to contribute to the strengthening of the employers' federation – the Textile Workers' Federation accepted. The outcome was the first national agreement for the textile industry.

The national agreement stipulated the general conditions of employment, such as conditions for paying piece-rates, etc. Furthermore, the agreement stipulated that only 'lawful' strikes and lockouts were acceptable.⁴⁹ The concept of 'lawful' was not defined, but the course of events seems to indicate that both parties took it quite seriously. The national agreement was to be in effect for three years, after which it was to be re-negotiated. It was still to be supplemented by local wage-schedules – henceforward

⁴⁷ Christensen, *Det moderne arbejde*, pp. 207ff.

⁴⁸ In Danish: *Dansk Tekstilfabrikantforening*.

⁴⁹ Quoted from Jensen, *Dansk Tekstilarbejderforbund*, p. 177.

referred to as local agreements. Such agreements were concluded with a number of companies. For the textile industry, 1898 marked the breakthrough to industrial relations based on the collective bargaining of wages and working conditions.

In the same year The National Confederation of Trade Unions (CTU) was formed. The trade union federations that comprised the CTU represented approximately one quarter of all workers, including those in rural areas. However, among male workers in larger towns the rate of organization was as high as three quarters or more. These numbers made the Danish working class one of the best organized in the world.⁵⁰ Agreements and collective bargaining also evolved in other branches of industry. Eventually, most employers accepted the unions as a permanent phenomenon, best dealt with through negotiated agreements. The National Danish Employers' Confederation was formed in 1898, the same year as the CTU. While the different federations that made up the CTU maintained much autonomy, the strategy of the employers' confederation was one of centralization. They consequently strove to make the national confederations of the two parties the main bodies of bargaining. This strategy, which the employers would pursue for most of the twentieth century, was supposed to discourage local strikes and diminish pressure for higher wages. Ultimately, the employers would threaten to declare a national lockout.⁵¹

The following year, the Employers' Confederation felt ready to test this strategy, and launched a nation-wide lockout. The Textile Manufacturers' Federation [156] apparently felt bound by the agreement with the Textile Workers' Federation, and refrained from taking part in the lockout in 1899. Thus the textile workers were not directly involved in this conflict. The conflict however assumed principal importance for the whole industrial labour market. The employers claimed that the time had come, when it was necessary for them to prove that they were 'the master in their own house'. The answer from the labour-movement was that this was an obsolete point of view: as under modern, industrial-conditions of production, the factory could not be equated with the employer's house. Thus, the terms of employment had to be considered a contractual relation between two parties, none of which could have an exclusive right to decide.⁵²

After more than three months of fierce conflict, which affected 40,000 workers and their families, a settlement was finally agreed upon. The main points of this so-called September Compromise was that the employers recognized the workers' right to organize and negotiate collectively, while the trade-union movement in turn recognized the employers exclusive right to manage and distribute work at the workplace. Furthermore, certain formal procedures had to be followed before a strike or lockout could be declared.

⁵⁰ Knud Knudsen e.a., *Kampen for en bedre tilværelse. Arbejdernes historie i Danmark fra 1800-tallet til 1990* (Copenhagen, 1991), pp. 72–74.

⁵¹ F. Ibsen and H. Jørgensen, *Fagbevægelse og stat*, 2. vols. (Copenhagen, 1979), I, p. 121. J. Due e.a., *Den danske model. En historisk sociologisk analyse af det kollektive aftalesystem* (Gentofte, 1993), p. 76.

⁵² Knudsen e.a., *Kampen for en bedre tilværelse*, p. 75.

These principles were to be valid for all member organizations of the CTU, including the Textile Workers' Federation. The September Compromise was to become the basis of industrial relations in Denmark throughout the twentieth century.⁵³

CONSOLIDATION

As industrial relations based on centralized, collective bargaining developed, the trade-union federations had to accept the formal responsibility to uphold agreements, and prevent their members from violating them by striking. During the following decades, the Textile Manufacturers' Federation as well as the Danish Employers' Confederation continuously strove to centralize negotiations and the right to close agreements. This development was contrary to the tradition of autonomy within the labour-movement, and a potential source for conflict.

Due to these developments, the relationship between labour and capital became more formalized and rationalized. The class struggle became enshrouded in technical deliberations. The 1901 national agreement between the Textile Workers' Federation and the manufacturers, which replaced the first agreement of 1898, is an example of this. During negotiations the question of piece-rate scales was brought up. Most companies used their own scale, stipulating payment for many different types of fabric separately, while others used the so-called England method of payment, based on picks per inch. Both sides found that there was a need for a more uniform model. Finally it was agreed that all piece-rate scales should be based on the English model – even to such an extent, that all measures should be [157] made in English inches. Since an English inch is 3 per cent shorter than a Danish inch, this would mean a proportional reduction of payment, if the rates were not adjusted accordingly.

Apparently, when local negotiations of piece-rate scales started, based on the general agreement, the effects of these very technical deliberations were not clear to all union activists. This resulted in some branches making agreements, which led to a decrease in wages, due to a lack of understanding of the implications of the new system.⁵⁴ In Odense, which had the largest local branch outside Copenhagen, some members went on strike against the wage-decrease, but since this was considered an invalid action, the Federation refused to support them and they were eventually expelled. Several others followed them, resigning from membership in protest.

Other local union activists took the challenge upon themselves. One example is the workers at Bloch & Andresen's cotton mill in Jutland, who decided to produce their own proposal for a new piece-rate scale, based on picks per inch. One of the union members later recalled: 'It took us a long time, before we reached any result. [...] We held a meeting once a week and had everything put down and written out and send to the

⁵³ The settlement remained in force without changes until 1960. This year, it was replaced by a revised general agreement, build on the same principles.

⁵⁴ Møller, *Dansk Tekstilarbejderforbunds historie*, pp. 183–184. Jensen, *Dansk Tekstilarbejderforbund*, p. 188; Jens Petersen e.a., *Dansk Tekstilarbejder-Forbunds Afdeling i Odense. Et tilbageblik paa fagforeningens virksomhed i 50 aar, 1885-1935* (Odense, 1935), p. 28.

Federation. [...] It took a huge amount of effort before it was completed.⁵⁵ Adapting to the new industrial relations clearly was a challenge, involving everyone from rank and file union members to the Federation leadership.

During the same period there was a mild recession in the textile industry, and for the first time since its foundation the Federation started to lose members. But the crisis was soon overcome: at the congress of the Textile Workers' Federation in 1906 a resolution was passed unanimously, expressing confidence in the Federation leadership. The severe disagreements in the years around 1900 were replaced by an almost demonstrative display of unity. This was due to one single event: the great strike of 1905.

When the national agreement was to be renewed in 1905, the employers made a proposal, aimed at accelerating the introduction of multiple loom-systems. The disputes over multiple loom-systems will be presented below, and the proposal referred to in more detail. What is important here is that it was turned down by the Federation, and the result was a strike, which was to be the biggest conflict ever in the history of the Textile Workers' Federation: almost half of the total number of workdays that year were lost.⁵⁶ The symbolic significance of the 1905 strike to the textile workers was in many ways similar to the significance of the Great Conflict of 1899 to the labour-movement as such.

The strike experience gave a boost to the local organizations. In Vejle, a city with a major cotton-industry, the union had suffered severe problems, and was in [158] effect split in two in 1903-04. But when the strike came, the workers reunited. One of the local activists recalls: ' [...] organizing sort of gained momentum again. The workers learned for themselves the importance of being organized.'⁵⁷ As a direct result of the strike, the membership rose markedly, and there was a lasting effect of 40 per cent more members than in the down period of 1902-03. Approximately a quarter of all textile workers were now organized – and the number grew steadily from that point to the approximate 80 per cent, which was to be the normal level after World War I. 1905 was the breakthrough for the Textile Workers' Federation as a mass organization.

BARGAINING, AGREEMENTS AND ARBITRATION

After the Great Conflict in 1899 a set of industrial relations gradually evolved, which incorporated the trade unions into a modern, capitalist mode of production. The employers and the state accepted the unions and their federations as the legitimate representative body of the workers. Furthermore, the employers accepted that wages and working conditions had to be laid down in agreements between the union federations and the corresponding employer organizations. The use of strikes was not banned, but strongly regulated, and to be used under certain conditions only. The federations were charged with the responsibility of maintaining discipline among their own members, and

⁵⁵ NIHA no. 1872, pp. 11-12.

⁵⁶ Danmarks Statistik, *Statistiske Meddelelser* IV.30.2; Jensen, *Dansk Tekstilarbejderforbund*, pp. 195ff.

⁵⁷ *Dansk Tekstilarbejderforbund, Vejle afdeling 1896-1946* (1946), p. 34.

preventing 'unlawful' strikes. The advantages of this system, seen from the point of view of the labour movement, were the introduction of an instrument that could be used to reinforce the agreed upon rights of labour, without the need to resort to strike. The idea of arbitration was originally promoted by the unions. Already in 1887, the Textile Workers' Federation took a principle stand in favour of arbitration. As could be expected, the employers were more sceptical. To them, the notion of legally binding agreements and arbitration was an infringement of their right to run their own business as they saw fit.⁵⁸ Nevertheless, arbitration gradually became a central element of industrial relations. One of the reasons for this might be that the employers discovered that it could also be a tool for making the unions responsible for maintaining discipline in their own ranks.

Arbitration became generally recognized in the general agreement of the textile industry in 1902. It was to be used when new products were introduced to a factory and a proper piece-rate for this could not be agreed upon between workers and employers. If a local conciliation was unsuccessful, the question could be brought all the way up to a central board of arbitration.⁵⁹ In the following years there were ongoing discussions between the union federation and the employers' federation, resulting in gradual changes of the general agreements. It was especially the precise distinction between those types of disagreements where strikes and lockouts were allowed, and those where they were not, that was the subject of discussion. This [159] principal distinction was adapted to real life through the rulings of the so-called Permanent Court of Arbitration in a series of principal cases. Thus, it was not until 1926 that it was finally made clear that workers in fact had the right to strike, if agreement on the piece-rate wage paid for new types of products could not be reached.⁶⁰

This ruling was one of the victories won by the Textile Workers' Federation in the Permanent Court of Arbitration. The Federation had learned how to manoeuvre in this new land of modern, industrial relations, and how to use the legal system in the interest of labour. However, the employers had more than their fair share of victories too – they did in fact win most of the cases in the same period.⁶¹

COPING WITH CHANGING CONDITIONS OF WORK

One of the central challenges to the Textile Workers' Federation was that of the changing conditions of work. In 1902, the chairman expressed the general attitude of the Federation in this way:

We should [...] go as far as possible, when attempts are made to reach the level of other countries, with the help of new systems and more rational operations, since this is our textile industry's only hope of salvation from destruction. It is our task to safeguard our own

⁵⁸ Ibsen and Jørgensen, *Fagbevægelse og stat*, p. 266.

⁵⁹ *Dansk Textilarbejder-forbunds Fagblad* (1904), nr. 11.

⁶⁰ Dansk Arbejdsgiverforening, *Den faste Voldgiftsrets Kendelser* (1926), case nr. 952.

⁶¹ Judged from yearly issues of *Den fast Voldgiftsrets Kendelser* 1916-26.

*interests, so that new systems are not introduced at the expense of our wages or by prolonging our hours of work. Yet, we, at the same time, should never hinder the evolution, which is necessary to create a new era for our industry.*⁶²

The 'new systems' that the chairman refers to, are probably the multiple loom system, which was discussed quite intensively among the textile workers at this time.

What seemed to be one of the most decisive factors in the advancement of the system were the problems of agreeing on adequate piece-rate scales. Since weavers were almost exclusively paid piece-rate wages, there would be no real benefit for the employer if a weaver was just paid the normal rate per loom. The employers' answer to this was to deduct a certain percentage of the piece-rate paid, when working in a multiple loom system. For example: as a starting point, the wage of a weaver operating four looms would be calculated as the total sum of what was earned at each loom, according to the piece-rate scale. From that total sum, a certain percentage would then be deducted. In 1905 this deduction would typically be 20 per cent, when operating four looms. Furthermore, since a weaver would not be able to operate each of the four looms as effectively as if he was operating only one loom, the total sum paid would not be four times the rate earned at one loom minus 20 per cent, but maybe 2.5-3.5 times the rate of one loom minus 20 per cent. [160]

It is very difficult to calculate precisely how much more a weaver would earn when operating four looms compared to one, since there are so many variables involved, including both technical issues as well as the personal skills of the weaver. Consequently, apart from the level of deduction from the piece-rate, there were also other issues involved in the discussion of the multiple loom-system. One issue was the conditions under which the implementation of the system was acceptable to the workers. There were a number of complaints from weavers, who felt that the looms and yarns they worked with were of a poor standard, demanding too much attention from the weaver to be adequate for multiple loom-systems. Another issue was the fact that not all weavers were equally interested in, or able to, exploit the possibility of raising their wages through operating more looms. All other factors being equal, the multiple loom-system would lead to an increased diversity in wages. In one factory, the weavers in 1915 earned from 12 DKr. to 31 DKr. per week – with an average of 20 DKr.⁶³ There was a fear within the Federation that this would undermine workplace solidarity.

The tool that the Textile Workers' Federation used to cope with these challenges was the enforcement of local and general agreements, obtained through bargaining – sometimes backed by conflict. In 1905, the general agreement was to be renewed. As a precondition for any negotiations, the Employers Federation demanded that the Textile Workers Federation should accept that 3- and 4-loom systems could be introduced 'for all

⁶² *Dansk Textilarbejder-Forbunds Fagblad* (1902), nr. 9.

⁶³ *Textilarbejderen* (1915), nr. 9

appropriate fabrics', with a piece-rate deduction of 16.66 per cent or 20 per cent respectively.

This provoked the great strike of 1905, mentioned above. The result of the strike was that the textile workers had to accept the deductions from the piece-rate, put forward by the employers. Judged from this point alone, the result was a defeat for the Federation. But at the same time, the new agreement stipulated specific preconditions – concerning types of fabrics, yarns and looms – that had to be met, in order to implement a multiple loom-system. Furthermore, it was agreed that the weavers pay should always be raised 10 per cent as a minimum, when changing to a multiple loom-system.⁶⁴

The strike of 1905 gave a moral boost to the Textile Workers' Federation. It was not directed against multiple loom-systems as such, but aimed at securing the right of co-determination with regard to the conditions, under which the system would be implemented. In this respect, it was a success. The principle of stipulating the conditions for what were actually changes in the work-process, in the general agreement, would turn out to be a tool of long lasting importance. In the 1911-agreement, the paragraph concerning multiple loom systems had swollen to more than two pages, determining not only which types of fabrics could be woven on which types of looms with which types of yarns, but also the types of shuttles, cops, etc. to be used, as well as how many shots per minute the looms had to be capable of.⁶⁵ [161]

It should be remembered that one of the basic principles of the September Compromise of 1899 was the employers' right to manage and distribute work in the workplace. What the example of the multiple loom-system indicates, is that labour was in fact able to fight for co-determination in issues, which, if the September Compromise were to be followed by the letter, would have been the exclusive domain of the employers.

INSTITUTIONALISING CLASS-STRUGGLE

As questions regarding working-conditions became part of the general agreements, they were also lifted out of the workplace. The struggle between labour and capital at the factory-level was subsumed under an institutionalised struggle. The daily experiences of the workers could no longer always be transferred into immediate action, but would often have to go through several levels of 'the system' in order to be transferred into some sort of action – if any. The reactions to the Bedeaux-system are an illustration of this. As mentioned above, the Bedeaux-system of rationalization was introduced in a few factories from 1933. When the system was introduced in a factory in the town of Silkeborg in 1934, the workers felt so intimidated by the foreign experts who were assigned to do time studies that they eventually refused to cooperate.⁶⁶ The chairman of the Textile Workers

⁶⁴ Jensen, *Dansk Tekstilarbejderforbund*, pp. 196–200.

⁶⁵ *Ibid.*, pp. 211–212.

⁶⁶ Keld D. Larsen, *Silkeborg. En udpræget industri- og arbejderby* (Silkeborg, 1994) p. 57; Jørgen Peter Christensen, 'Rationalisering og arbejderne. Dansk industri i mellemkrigstiden', in Mikkelsen, *Produktion & arbejdskraft i Danmark*, p. 141.

Federation went to Silkeborg, where he urged the workers to follow the orders of the factory management, since refusal to cooperate would be a violation of the general agreement.⁶⁷ The next day one of the workers was fired. This sparked a strike, which soon included all 324 workers at the factory. The strike was ruled illegal by the Permanent Court of Arbitration and the workers incurred a fine. The Textile Workers' Federation instructed its members to go back to work, an order which they rejected by a 97 per cent majority of the votes in a local referendum. Following the referendum, all members on strike were expelled from the Federation.

The Federation leadership branded the strike committee in Silkeborg as communists, and the strike was renounced in the national Social-Democratic press. However, the strike had widespread support in the community – 4,000 persons attended a local support rally. Other local branches of the Textile Workers' Federation also supported the strike. But the strikers eventually ended up having not only the Permanent Court of Arbitration, the Ministry of Justice, the police and the Conservative press, but also the CTU, the Textile Workers Federation and the Social-Democratic press as their adversaries. After nearly two months, the strike ended in complete defeat.

The fierce attacks from the Federation against the workers in Silkeborg for being communists reflected the fact that the strike was questioning the general strategy of [162] the trade union movement: that the strike-weapon had to be submitted to the system of bargaining and general agreement. The system of industrial relations, which had so carefully been built up, had to be defended – even against the decisions and interests of a particular group of members.

At the Federation's congress the following year, the chairman made his position clear: 'What they did over there was an insane child's play. They thought it was possible to cross the principles of the Employers' Confederation, by declaring a strike in a single factory.'⁶⁸ However a congress-delegate from Silkeborg presented another interpretation of what was at stake: 'The point is, that it (the Bedaux system, LKC) creates dissatisfaction, unrest and unemployment, and ruins the workplace'.⁶⁹

For the workers in Silkeborg the conflict was not just about a new system of piece-rate payment, but about such fundamental issues as lack of respect and dignity in the workplace. There is little doubt that the great majority of members agreed in principle with the chairman's defence of the existing industrial relationship. But that did not necessarily preclude them from feeling that the workers in Silkeborg had been let down. Delegates from the two other factories, where the Bedaux-system had been implemented, complained that they had tried in vain for several months to involve the Federation. The following year, negotiations over the system finally took place between the Textile

⁶⁷ Dansk Tekstilarbejderforbund: *Forhandlingsprotokol* (1935), pp. 29, 74.

⁶⁸ *Ibid.*, p. 30.

⁶⁹ *Ibid.*, p. 59.

Workers' Federation and the Textile Employers' Federation, but it soon ended without result.

As early as the beginning of the century, the discussions about the multiple loom-system revealed a strong element of determinism in the Federation's ideas on technological change. However, the strike of 1905 also reflected the knowledge that the technology issue was basically subject to the same antagonistic interests as all other aspects of working conditions. But the 1920s and 1930s saw a change in Social-Democratic ideology. Generally, the party downplayed class-antagonisms, in order to re-position itself as a 'people's party'. In matters of production and wage, some social democrats were inspired by the ideas of F.W. Taylor, Henry Ford and others, who argued that rationalization and technological progress could create such abundant wealth for everyone, that class struggle would be superfluous.⁷⁰ It is likely that this affected the way in which Federation leadership regarded a phenomenon as the Bedaux-system.

More specifically, the Bedaux-systems were mainly considered from a technical point of view, as a system of payment, rather than an instrument in the struggle for power in the workplace. Furthermore, it is clear, that what occupied the Federation leadership most was to try to understand the technical details and implications of [163] the system – which they apparently never did.⁷¹ The result of these considerations was an inability to take action – illustrated by the general secretary, who declared at the 1935 congress: ' [...] if we act very carefully, it might just be silenced to death'.⁷²

GENDER AND WORK

It is a popular belief that as industrialization and mechanization progressed, skilled labour – mainly in the form of male artisans – was generally replaced by unskilled labour – mainly women and children. However, as demonstrated above, women had been active in textile production long before industrialization. They were to a large extent involved in pre-industrial textile production, primarily within domestic spinning or weaving, which also included production for the market. The technology, qualifications and customers of the female domestic producer were probably more or less the same as those of the male,

⁷⁰ Michael F. Wagner, 'Industrialismens verdensbillede – et portræt af den moderne amerikanisme og dens ny teknologi', *Den jyske historiker*, 35-36 (1986): 41-42. Christensen, 'Rationalisering og arbejderne', pp. 130-136 passim. Knud Knudsen, *Arbejdskonflikternes historie i Danmark. Arbejdskampe og arbejderbevægelse 1870-1940* (Copenhagen, 1999), p. 244.

⁷¹ The Textile Workers' Union commissioned the independent Institute of Technology to make a report on the system (Letter from Teknologisk Institut, 18/12 1932. *Dansk Textilarbejderforbunds arkiv*, Arbejderbevægelsens Bibliotek og Arkiv (Hereafter DTA/ABA) folio no. 403). On the basis of this report, the union leadership concluded that implementation of the Bedaux-system would always lead to higher wages. This was later denied by both the engineer who had written the report, and the Bedaux-company (Letter from Chr. Randstrup, Teknologisk Institut, 25/2 1936, and copy of letter from K. Gartner, Bedaux & Co. to the management of Holger Petersen's Fabrik, 1/9 1936. Both in DTA/ABA, folio no. nr. 403).

⁷² Dansk Tekstilarbejderforbund, *Forhandlingsprotokol* (1935), p. 123.

rural artisan. For this reason, it has been claimed that at least in rural areas the distinction between artisans and non-artisans was in reality based on sex rather than skill.⁷³

Furthermore, industrialization did not necessarily exclude men from textile production, as shown in Table 6.3. From the national censuses we can see that some specific jobs seem to have been clearly linked to a specific sex. In the cotton-spinning plants, the positions of overseer, mechanic etc. were almost exclusively held by men, while carders and spinners were predominantly female. In cotton weaving both sexes could occupy the central function of weaver. However, setting up the loom was mainly a male job, while burling was almost exclusively a female job. In contrast to the cotton-industry, spinning in the cloth-mills was generally carried out by men. Since the source material for these observations are the national censuses, the figures are aggregated numbers. This means that even though jobs statistically appear to be occupied by both sexes in the industry as a whole, at workplace level they might well be reserved for one sex only. It is important to note that this could be a different sex at different workplaces.⁷⁴ [164]

Table 6.3: Women as percentage of total workforce in different textile branches and jobs

	1906	1935
Textile industry (knitwear excluded)	56	61
Cotton spinning plants	82	81
Cotton weaving plants	60	60
Weavers	63	55
Cloth mills	42	50
Spinners	30	47
Weavers	44	33

Source: *Statistisk Tabelværk*, V.A.7, table IX (1906) and V.A.21, table VB (1935).

There is no single cause for the distribution of job-functions in relation to sex within the textile industry. As women carried out some of the most mechanized jobs (such as cotton-spinning) as well as some of the least mechanized (such as burling), no simple relationship between mechanization and 'feminization' existed. What happened during industrialization was not simply that women substituted men, but that traditional

⁷³ Marianne Rostgård, *Kønsarbejdsdeling og teknologiudvikling i dansk tekstilindustri* (1991), p. 48.

⁷⁴ This is confirmed by a recent study of the cloth mills: Tønsberg, *Den danske klædeindustri*, p. 120–121.

concepts of male and female labour were partly carried on in new forms, partly uprooted and rearranged.⁷⁵ As industrialization progressed, and the technology and organization of work changed, there was an ongoing process of social construction as to what were considered 'male' and 'female' jobs. The changing social organization of labour, and the establishment of modern industrial relations, based on collective bargaining, formed a crucial framework and instrument for this process.

The industrialization of textile production led to an immensely increased division of labour. Weaving alone became divided into a number of separate processes, such as pattern-drawing, warp-cutting, sizing, beaming, threading, etc. apart from the actual tending of the loom. In a cloth-mill, the complete process of production was divided into at least 15-20 major job-functions. The motivation for this was primarily technical: it was a prerequisite for mechanization and a rational exploitation of the technology. However, the division of labour also [165] had an important side effect: it made it possible to divide the job-functions into 'male' and 'female' with a high degree of detail.⁷⁶

The gender division of labour was a result of decisions, principally reached within the domain of the employers, but gradually also made subject to collective bargaining. Tradition played a role in the decision-making of the employers, especially in the early phase of industrialization. There was also a traditional awareness of the gender attached to certain jobs amongst workers. Male artisans showed a hostile attitude towards taking jobs in the early cotton industry. Since other artisans were tending mechanized-loom in the cloth-mills, this animosity cannot only be explained as a reaction to mechanization as such. It was also directed against the gender identity attached to a specific job.⁷⁷

Nevertheless, even if tradition had its part to play, it could only be as far as it fitted into the general rationality of management practice. In a market economy, two things generally govern the recruitment of labour: its availability and its price in relation to productivity. The price of labour, or, as seen from a worker perspective, the level of wages, was the centrepiece in the struggle over gender and work.

In the period when the basic principles of industrial relations in the textile industry were formed, the husband was generally considered the family breadwinner, both among workers and employers. Consequently, a woman could legitimately be paid a lower wage than a man could.⁷⁸ However, the lower wages of women could also be a disadvantage, seen from a male workers point of view, since they gave the employers an incentive to

⁷⁵ The most comprehensive studies of this, regarding Danish textile industry, was carried out by Marianne Rostgård in her (unpublished) Ph.D.-thesis (1991), as well as in several articles, such as 'Konstruktion af kønsarbejdsdeling i dansk tekstilindustri', in Hans Buhl and Henry Nielsen (eds) *Made in Denmark?. Nye Studier i dansk teknologihistorie*, (Århus, 1994) and 'Fagbevægelsen og de kvindelige industriarbejdere' *Arbejderhistorie*, 4 (1997): 36-53

⁷⁶ Rostgård, 'Konstruktion af kønsarbejdsdeling', p. 233.

⁷⁷ For an example, see NIHA, nr. 1535.

⁷⁸ Rostgård, 'Fagbevægelsen og de kvindelige industriarbejdere' provides examples of employers, who argued for a lower wage for women, see p. 47.

substitute female for male labour. It was this aspect that was most frequently stressed, when gender and wages were discussed in the first half of the twentieth century. The discussion seems to have popped up regularly, sometimes provoked by attempts made by the employers to increase wage differences. This was the case from 1916 to 1919, were the Federation leadership accepted employer demands that led to temporary gender-based differences in the piece-rate scales. This was met by angry reactions from some of the federation's female members, and the 1919 Federation congress demanded that the leadership should 'constantly work for the fulfilment of the following principle: equal payment for equal jobs'.⁷⁹

This principle was formally enforced in jobs paid according to a piece-rate, such as weaving. Never the less, even in these jobs women generally earned 30 per cent less than men. The main reason for this was that men simply operated the types of looms, for which the best piece-rate wages were paid. In 1937, figures show that 27 per cent of all male weavers operated automatic looms – for which the highest wages were paid – in contrast to only 4 per cent of all female weavers.⁸⁰ [166]

WOMEN, MEN AND THE UNION

Female textile workers became union members at a slower pace than their male colleagues did. In 1897, approximately 25 per cent of the male workers were union members, but only 10 per cent of the female workers.⁸¹ This difference persisted until around World War I – in the year 1914 the rates were 51 per cent and 32 per cent respectively. After World War I the difference was ironed out, and the rate of organization reached a relatively stable level around 80 per cent for both men and women.

These figures do not necessarily mean that female textile workers were more indifferent to their working conditions. There were a number of conflicts in the early period of the Federation, in which women played a role, most noticeably a rather spectacular strike at Rubens Dampvæveri in Copenhagen in 1886, which involved 225 female workers. However, the figures reflect that men and women, because of their roles in society as such, to some extent had different experiences as industrial workers, and to a certain extent developed different work ethics and strategies. Most notably, women were responsible for family reproduction and childcare.

The labour movement was a long-term project. But children could not be fed with promises of shorter working-hours and daycare centres sometime in the future. At least

⁷⁹ Jensen, *Dansk Tekstilarbejderforbund*, p. 286.

⁸⁰ Textilfabrikantforeningen: Gennemsnitsfortjenesten i September 1937. Archives of *Dansk Tekstilarbejderforbund* folio no. 217.

⁸¹ This and the following number are calculated on the basis of Møller, *Dansk Tekstilarbejderforbunds historie*, Appendix, and Jensen, *Dansk Tekstilarbejderforbund*, p. 482 (membership) and *Statistisk Tabelværk* V.A.1, table 2, V.A.7, table VIII, V.A.12, table III, V.A.18, table III+IV, V.A.21, table IIIA+B (total number of workers). Because of the nature of the source material, these numbers include members in the knitwear industry. For a further discussion of the method of calculation, see Christensen, *Det moderne arbejde*, p. 332.

until the trade union movement was strong enough to enforce agreements, elect shop stewards, etc., it was not necessarily the obvious choice of all women. Short-term solutions, such as preparing food in the workplace, sneaking away during breaks to take care of children, and other such 'undisciplined' actions, could in fact be considered a more rational choice.

Trade unions were based on a certain work ethic, which is expressed in one of the most popular slogans of the Danish trade unions: 'Do your duty – demand your rights!' The ideal worker was one who attended to work in a disciplined and responsible manner, thus making him or her a respectable citizen with a moral right to decent treatment and to participate in the decision-making process. Women, such as those depicted above, displayed a work ethic, which was inconsistent with this ideal. Many male workers probably did so too. Nevertheless, it is noticeable, that male union activists of this period often explained such discrepancies in terms of gender: women act spontaneously and short-sightedly because of their sex, thus creating problems for the union. The above-mentioned strike at Rubens Dampvæveri, did in fact create a lot of trouble. It ended in defeat, and internal grievances resulted in a split within the union. In his memoirs, J.J. Møller, chairman of the Textile [167] Workers Federation until 1918, describes the strike at Rubens Dampvæveri in 1886 as initiated by a 'hot-blooded' woman.⁸² When a spontaneous strike by female spinners in Vejle created problems for the Federation in 1906, Møller used the exact same phrase, describing the female workers as 'hot-blooded young women, who can be swiftly brought into ecstasy'. He took the opportunity to reiterate the need to maintain discipline amongst the rank and file.⁸³

In the long term, it became evident, that the labour movement was, in fact, able to not only secure better wages and working conditions for both male and female workers, but also improve the everyday life of working-class families through housing, daycare facilities, better schools, etc. Between 1914 and 1925, women rallied in the Textile Workers' Federation. Nevertheless, in the decisive years at the end of the nineteenth and beginning of the twentieth century, when wages and piece-rate scales were formalized, agreements made and certain categories of jobs marked out as either male or female, women's interests were clearly underrepresented in the Federation. Consequently, the best-paid jobs were defined as male –and vice-versa⁸⁴.

POST-WAR DECLINE

The decline in employment after 1950 was of course also reflected in a decline in membership of the Textile Workers' Federation. At the end of the 1960s, the membership was only half of what it had been in 1951. Furthermore, during the 1960s there was a great interchange of members – the number of members moving in and out of the Federation between 1961-65 was bigger than the average total number of members,

⁸² Møller, *Dansk Tekstilarbejderforbunds historie*, p. 115.

⁸³ *Dansk Tekstilarbejder-Forbunds Fagblad* (1906), no. 10.

⁸⁴ Rostgård, 'Konstruktion af kønsarbejdsdeling', p. 233.

meaning that statistically the whole membership had been renewed in this period⁸⁵. The reason for this was probably, that work in the textile industry had come to be regarded as low-status – the kind of work one only sticks with until something better crops up, and in times of generally high employment such as the 1960s something better had a tendency to crop up regularly.

This was the backdrop against which the Textile Workers' Federation had to act in the post-war period. In 1950 there was a conflict of principle in a small provincial factory, over the right to organize⁸⁶. However, apart from this incident, the two decades after the war seem to have been a rather calm period for the textile workers. This was also the case for the rest of industry: the level of conflict was low, compared to the interwar period. Still, a couple of major conflicts did take place in connection with the renewal of general agreements, but even here, the Textile Workers Federation seems to have played a rather minor role. In the 1970s, however, the general level of conflict in Danish industry increased. In 1973, the [168] Danish Employers' Confederation refused a proposal for a new general agreement, and the textile workers were locked-out as part of the contest that followed. This was the first time since 1936 that the whole textile industry was in conflict with the employers. Apart from this, the Textile Workers Federation was not involved in any significant conflicts, even in this turbulent period. This probably reflected the rather defensive role the Federation was forced into by the structural changes taking place within the textile industry.

A major issue in the internal debates of the Textile Workers' Federation from the mid-1960s and onwards, was the need to unite with other, similar unions, to form a more effective organization. This goal was achieved in 1977, when the textile workers united with the workers in the clothing industry, to form the Danish Clothing and Textile Workers' Federation. In 1981 the workers of the footwear industry joined them. Finally, in 1998, the textile workers became part of the much larger General Workers Union and the Clothing and Textile Workers' Federation was dissolved after 113 years of existence. [169]

⁸⁵ Christensen and Jensen, *Textil og skotøj i 100 år*, p. 48.

⁸⁶ *Ibid.*, p. 44.

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