TRADE UNION REACTION TO TECHNOLOGICAL CHANGE: THE INTRODUCTION OF THE CHAIN SYSTEM OF SLAUGHTERING IN THE MEAT EXPORT INDUSTRY*

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The labour process paradigm is used to analyse a major case study of technological innovation in the meat export industry. This was the reorganisation of mutton slaughtering in the 1930s onto a dis-assembly line basis known as the 'chain' system. The response of the meatworkers union to this innovation is the main focus.

Keywords: trade unions, technological change, industrial relations, labour process

The debate about the social consequences of technological innovation in this country has had a curious quality about it. Conventional wisdom has it that reaction to technological change is of recent origin and we can best understand this process by concentrating on contemporary events. Furthermore while there is widespread acknowledgement of the notion of the social consequences of technological change as a major issue of our time, much of the debate has been at the level of predicting where jobs are likely to be and not to be in the future.

In this paper the focus is upon organisational responses to the introduction of new technology, in particular trade union responses. During the last decade, there has been a growing awareness within the labour movement of the need to establish the issue of technological change and labour reorganisation on the agenda of the labour movement; and this paper aims to contribute to that awareness. It also reflects a belief, with C. Wright Mills,[1] that the essential element in a sociological imagination is the connection of personal troubles faced

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by people in the context of structural transformations (such as technological change) occurring in society.

A parallel development to that of the prediction-merchants has been a highly abstract discussion in academic journals, largely inaccessible to those actually attempting to manage or respond to technological innovation. Little attempt has been made to translate one level of analysis into another, applying the more abstract theoretical discussion while at the same time underpinning conceptually the actual instances of transformation resulting from technological change. The need, as a number of writers[2] have indicated, is to generate theoretically informed analyses of case studies of technological innovation in specific historical contexts. This paper aims to analyse one such case study: the reorganisation of the system of mutton slaughtering in the 1930s.

THEORETICAL FRAMEWORK

The publication of Braverman's *Labour and Monopoly Capital*[3] in 1974 marked a significant turning point in the study of work organisation. Braverman's work established the labour process paradigm for studying work. Writing in the tradition of studies of the capitalist labour process begun by Marx, he rejected the argument that the nature of work was shaped by the neutral forces of technological 'efficiency' or the logic of industrialism. Rather he argued that work organisation is essentially a *political* phenomenon shaped by the imperatives of profit making. The key issue in understanding work is the managerial problem of *control;* how the capacity to work which is purchased by an employer in the form of labour power (knowledge, skill or physical strength) is translated, organised and directed into labour so as to provide both wages and profit.

The importance of Braverman is the critical debates his work stimulated, based around the perceived inadequacies of his analysis. These debates are serious but broadly sympathetic criticisms of the limitations of Braverman's analysis and have become known as the labour process paradigm. They include the nature of skill and the extent to which deskilling is an *inevitable* part of the capitalist labour process;[4] the extent to which scientific management (Taylorism) constitutes *the* logic of capitalism[5] and the labour process;[6] and the extent and organisation of *resistance* as the reverse side of the coin to managerial control.[7]

In this paper, it is proposed to utilise the labour process paradigm to analyse the particular instance of technological innovation chosen. The starting point is that because Braverman deliberately excluded it, the role of resistance and contestation in his work are underplayed. From this point of view, developed by Stark[8] and others,

reorganisations of the labour process are presented by Braverman mainly as the outcome of the conscious design on the part of employers as part of the imperative of control, rather than as a product of resistance and struggle between contending groups. Instead it is necessary as this paper does, to analyse not only the search for more effective forms of control over the work process in the form of technological innovation, but also the resistance offered by workers. Here the focus is upon collective resistance through trade unions.[9]

The case study analyses the fundamental reorganisation of the labour process of export mutton slaughtering through the introduction of the dis-assembly line into Victorian and subsequently Australian export meatworks in the 1930s. From slaughtering by the 'solo' method, the labour process was reorganised into what became known as the 'chain' method. This technological innovation generated considerable trade union resistance in Victoria in the form of a strike, and resulted in arguably one of the most severe defeats ever inflicted on a trade union in Australia; one that brought the Australasian Meat Industry Employees Union (henceforth AMIEU) to the brink of destruction in Victoria. The evidence is gathered from meat export company as well as union records, supplemented by oral histories.

BACKGROUND

To understand this case study, it is important to consider first of all the development of the meat industry prior to the 1930s. Following development of the technology of refrigerated transport culminating in the first successful delivery of a shipload of frozen meat to the London market in 1880,[10] an export section of the meat industry developed alongside the local, abattoir-based meat trade. Large freezing works were built to process the sheep and lambs for export though there were smaller exporters as well. In 1890 the Victorian Amalgamated Butchers Union was formed, the first union in the meat industry.[11] In 1912 this became the Victorian Branch of the AMIEU with the development of a national body and its registration in the Commonwealth Court of Conciliation and Arbitration.[12] The union, from the beginning was not a craft but an industry union with both labourers and slaughtermen belonging. There was great internal division however between these two meat industry occupations. The slaughtermen were tradesmen, who had served a three year apprenticeship. The 'knights of the steel' as they were known, constituted an aristocracy of labour, and were a highly mobile group following the seasonal 'killing season' around New Zealand and Australia,[13] as sheep and lambs attained their peak condition ('were in bloom'). Labourers on the other hand tended to be locals and were looked down upon by the slaughtermen.

The export killing season in Victoria was quite short, beginning the week after the Melbourne Show (end of September) and continuing until mid-December. Meat workers were able to earn high wages over that short period, partially to compensate for working only eight-ten months of the year. The work involved hard physical labour, brutalising, dangerous and unhealthy.

Through the 1920s, the union attained a position of strength, mainly through exploiting the industrial weakness of the graziers and exporters in the form of the perishable nature of the commodity being processed. Sheep and lambs came into 'bloom' for a relatively short period in the spring and rapidly lost condition as the hotter weather developed, grass seeds became embedded in the pelt, etc. The start of each season generally saw a period of labour unrest as meat workers sought to improve their conditions and pay. Any delay in the commencement of killing saw graziers' financial returns diminishing.[14] A strike at the beginning of the 1931 season was estimated to have cost fat-lamb breeders in Victoria alone over one million pounds.[15]

The labour process which developed was known as solo slaughtering. Each slaughterman worked individually, completing the killing and dressing of one carcass after another. They were paid piece rates according to their 'tally' for each day. Labourers on the other hand did the associated work of marshalling sheep, cleaning up, and so on.

Through the 1920s, the union gradually achieved considerable control over the work performed. A 'closed shop' was acheived in which only members of the union could be employed. A union daily tally was also gradually introduced. In Victoria for instance, the union decreed that no-one was to kill more than a total of 100 sheep and lambs in a day ('a fair days work'), although 'gun' slaughtermen (the most skilled) were capable of processing up to 150 in a day.[16] In some States, most notably Queensland, the extent of union control over the pace of work went even further. The union delegate was known as 'the clock' and worked in the centre of the board (line of killing stations). The 'clock' set the pace of work and "no man is allowed to exceed the clock by half a sheep".[17] Indeed in Queensland it was the union that contracted to supply labour; a meat worker seeking employment applied not to the company but to the union.

The onset of the Great Depression however, with the strong emphasis on deflationary policies, constituted a direct challenge to the industrial position and living standards the union had gradually attained.[18] The growth of a large body of unemployed[19] constituted a reserve army of labour and tensions surfaced within the union. The local trade was most affected by the decreased demand and argued that preference should be given to local unionists over their peripatetic

counterparts when staffing the export freezing works. In common with other areas of the workforce, meatworkers also received a ten per cent cut in their wages in March 1931.[20]

While the Depression created a crisis for the meatworkers' union and demonstrated their inability to prevent a considerable decline in established industrial standards, the meat export trade as a whole was in a buoyant position after the uncertainty and lack of prosperity in the 1920s and early 1930s, a period in which many smaller exporters went out of business. The 1930s mark a period of long-term stability and optimism on the part of employers as the volume of meat exported steadily increased. This was boosted further by the Ottawa agreement in 1932.

> Negotiations at the Imperial Economic Conference at Ottawa concentrated on tariff concessions by the United Kingdom for meat and dairy produce. The Ottawa agreement gave a "very generous measure of preference" to the Australian meat industry and provided for the continued expansion of exports. In the troubled world of the 1930's these concessions gave to the meat industry a potential security sadly lacking in other sectors.[21]

The boost provided by this agreement lead to concentration and centralisation of capital with large investment by multi-national companies in the meat export industry. The purchase of the entire Angliss operation by the English company Vesteys in 1934 ended the last significant Australian ownership of meat export facilities and left the meat export industry entirely owned by three multi-national firms: the English firms of Borthwicks and Vesteys, and the American company, Swifts.

The decision to fundamentally reorganise the labour process by greater mechanisation of the killing process must be seen in this context of expansion by the meat exporting companies. It is also clear that the meat exporters were prepared to exploit 'the crisis mentality' of the Depression to attack the industrial position of the union,[22] and the installation of the 'chain' system must be seen in this general context.

THE NEW TECHNOLOGY

The 'chain' system of slaughtering which was introduced consisted of a mechanical conveyor belt which carried the sheep from work station to work station at approximately four metres per minute. At each work station, a worker performed one part of the task of processing on a 'one man, one cut' basis (though later 'multi-cut' work stations were often used). Rather than one slaughterman processing the animal entirely, each worker specialised in one operation, with the carcass

passing from one man to the next until the process of killing and dressing was complete.

The chain system originated in the meat packing industry of Chicago in the early part of the 20th Century. Exactly when is not known, but it was in operation in 1904 when Upton Sinclair did the research for his literary *expose* of the meat packing industry.[23] It features in Braverman's work to illustrate the Babbage principle, whereby workers are paid different amounts according to the skill required in their particular job.[24] The chain system was gradually introduced in meat exporting countries such as Argentina through the early 20th Century. Its introduction in New Zealand in 1932 left Australia as the only major meat exporting nation where it had not been installed. The introduction into New Zealand led to a major strike by meatworkers. In what should have been an important lesson for Australian meatworkers, the strike was comprehensively defeated.[25] A party of visiting Australian graziers returned much impressed with the new system and called for its immediate introduction. They declared "that without exception nothing they had seen had made such a profoundly favourable impression upon them as the new chain system of slaughtering which has been implemented with such outstanding success that it has completely defeated the slaughtermen's strike in New Zealand". New Zealand stockowners, they argued, had "placed in their hands a weapon which they feel confident has enabled them at last to put an end to the tyranny of the strikers".[26] By reducing the reliance upon the skill of the meatworkers, the stockowners saw the opportunity not previously experienced since "it enables work to be carried on by men who are not necessarily skilled in the work".[27]

One other feature of the new technology is worth mentioning here. The union referred to it as the 'chain' system, drawing upon the analogy of the chain gang penal system. The employers by contrast, at least initially, preferred to call it the 'team' system, stressing the elements of co-operation and interdependence amongst meatworkers.[28] The new system was also claimed to allow the men to become 'specialists' in the particular single cut they performed.[29]

THE DISPUTE

The 'successful' introduction of the new technology in New Zealand combined with pressure from meat producers' organisations, made the conversion of Australian meatworks to the chain system inevitable. Borthwick's records, for instance, show the company had been contemplating and preparing for its introduction into Australia for some time before it actually did so.[30] The actual precipitant however, and probably the reason for Victoria being the first State to

be converted, was a crisis within the already Depression-weakened union over the question of uniform tallies throughout the country. As part of a move towards federalisation, in the hope of creating more employment and of ending piece rates, the federal executive attempted in 1927 to impose a uniform national daily tally of 80 sheep and lambs. They succeeded in all States by 1931 except Victoria, which had traditionally had a daily tally of 100.[31] A major federal-state union confrontation developed through the 1932 season and resulted in federal intervention in early 1933 and threats by the Victorian Branch to secede from the national body.[32]

The meat exporting companies in Victoria, faced with a 20 per cent drop in productivity consequent upon the decrease in daily tallies from 100 to 80 sheep and lambs, made detailed plans to implement the new technology in time for the start of the 1933 killing season. Company records show that they were fairly aware of the implications and had made detailed plans to cope with the likely strike, including importing labour from New Zealand to operate the chain.[33] Preoccupation with its internal dispute prevented the union developing a coherent response to the new technology while preparations for installation of the machinery proceeded.

Events moved rapidly in September and October 1933. The new system of slaughtering was planned to operate from the beginning of the 1933 season. A trial of the new system was held with mixed success. Faced with the inevitability of its introduction, the union made a last minute offer to maintain industrial peace if the solo system was retained but the employers were not interested, indicating they would use non-union labour if necessary to operate the works when they commenced operation on 3rd October 1933.[34] The terms offered the men a substantial reduction in pay, approximately 40 per cent, through the application of the Babbage principle.[35]

There is disagreement about whether what transpired was a lockout or a strike, but the major Victorian meatworks in Melbourne, Geelong, Ballarat, Bendigo, Portland, Donald and Echuca commenced operation with non-union labour in the first week of October. This left 1,000 meatworkers, approximately 850 of whom were slaughtermen, outside the gates.[36]

The non-union labour recruited to man the works came mainly from the rural areas of Victoria; farmers, their sons and unemployed rural men who had some experience of killing stock. The Victoria and Riverina Meat Advisory Council was formed with representatives from a variety of rural organisations, to co-ordinate the volunteers recruitment and travel to the works. The Victorian Graziers' Association claimed that 1,000 members had volunteered and were available to keep the freezing works operating.[37] Following a meeting of graziers at Yarrawonga for instance, 25 farmers and their sons left

by train for Melbourne.[38] Under heavy police protection, operations commenced. The non-union labour was accommodated on the site of the meatworks at considerable expense to the company. At Borthwick's Brooklyn works in Melbourne

> Some 300 men worked, ate and slept on the premises. A kitchen was rigged up in the old garage and cooks engaged. There was a small police garrison equipped with searchlights. (In the event no serious violence occurred.) The foremen carried bandages, there was sick parade every morning and the casualty station did good business in the beginning. The first day's kill was 33; the first week with one chain working 4,500; in the fifth week with three chains working they reached 45,000.[39]

The union picketed the works in an attempt to prevent the 'scabs' entering, and there were some incidents of stoning buses and violence towards non-union labour but the union was unable to prevent the commencement of operations.

The union was now in a difficult situation, with none of its members inside the works and the productivity of the non-union labour increasing daily. Internal divisions within the labour movement together with the Depression conditions prevented attempts by the union to widen the dispute. A brief 48-hour stoppage by members in the local meat trade was countered by employers threatening to use non-union labour in that section of the meat industry as well. Attempts to get kindred unions such as watersiders to declare the non-union labour killed meat 'black' and refuse to handle it, also failed. The Trades Hall Council condemned the exporters and graziers for "deliberately introducing the chain system in an effort to smash the economic power of the workers",[40] but they stopped short of calling related unions out in sympathy. Branches of the AMIEU in other States discussed the issue but the poor relations between the state branches over the tallies issue militated against strike action in support, though financial assistance was provided.[41] Nor was the export section of the Victorian branch unified, a radical rank-and-file organisation called the Militant Minority, with links to the communist Industrial Workers of the World (IWW), attempted to rally support from other States and expressed total opposition to the chain system and any move on the part of the union leadership to abandon its opposition to the chain. The journal of the Militant Minority, the *Red Leader* stressed the effects of the chain on the occupational identity of the meatworkers, the deskilling which the chain entailed, as well as their loss of control over the pace of work.

> We meatworkers are not able to control the chain, it controls us. As soon as we finish our particular job, the next sheep is immediately on us, because the chain never stops.[42]

The union leadership condemned this "blind desire to fight" which threatened the whole existence of the union.[43] Faced with being shut out of the industry altogether, the union leaders sought a conference with the employers at which they were offered as the basis for settlement of the dispute, the following conditions: The retention of the chain system and of the volunteers who were already employed, though no new volunteers would be sought. The rate of pay originally offered would stand.[44] Although initially rejected by the members, the union caved in on 24th October with the men voting for a resumption of work.[45] As Cutler argues, the union leadership "made a pragmatic judgement about the futility of opposing technological change and concentrated on salvaging what they could of previous industrial conditions".[46]

In the aftermath of the settlement, the defeat of the union was driven home. A week after the vote to resume work, only an estimated 131 of the approximately 1,000 members affected by the dispute had found jobs in the meat industry.[47] Others were told they would be employed if they resigned from the union.[48] It is clear that many slaughtermen never again worked in the meat industry, some by choice. The union was dismembered by the defeat. As Davies argues "the union was completely beaten to its knees, and was gradually reduced to a state of industrial impotence and financial impoverishment from which it took years to recover".[49] Evidence of this comes from a deputation of meat exporters in 1937 to the Victorian State Government's Minister of Labour, opposing the establishment of a Wages Board for meatworkers, claiming that very few unionists were employed in the industry.[50] Certainly a long period of industrial peace reigned through what the union considered its bleakest years. Eventually, in 1940, a decision was taken to "whitewash the scabs", that is allow the non-union labour which had been employed in the dispute, to join the union.[51]

This outcome was of course, highly satisfactory to the meat producers. A month after the dispute ended, an editorial in *Pastoral Life* commented "now for the first time in many years, employers have full control over the men on the boards which should make for better and more peaceful operations".[52] With the union on its knees, the employers were able to press home their advantage and erode the conditions of employment secured by the union over the years. Borthwick's Brooklyn works in Melbourne was able to cut costs to the extent of £1,100 in the financial year following the dispute "in being able to arrange that the men should transport themselves to the works, which was not practicable while the union was in power".[53] The exporters remained sensitive to the issue of the 'scab-labour' however. In 1934 a request from a newspaper to take a photograph of the chain in action was refused: "as we were working with volunteer labour at

the time the publication of the men's photos might have been detrimental to them''.[54]

Having considered the dispute surrounding the introduction of the new technology of meat slaughtering, it is now necessary to consider issues raised by the theoretical framework outlined earlier.

DIFFUSION OF THE NEW TECHNOLOGY

The meat companies immediately began planning the conversion of meatworks in other states. As Cutler comments:

> The companies' success in installing the chain system in Victoria, and the ensuing disaster for the union, effectively forestalled major conflict when the chain was introduced in other states. Noting the grim lessons of the Victorian dispute, other branches endeavoured to accommodate the new system whilst, as far as possible, protecting wages and conditions. This policy was more successful in South Australia and Western Australia than in New South Wales where the introduction of the chain system was accompanied by considerable rank and file dissidence.[55]

This dissidence was organised by the Militant Minority group with several unofficial strikes which expressed the slaughtermen's bitterness at being deskilled with the loss of craft status and skill wage margins it entailed. This bitterness and anger flared with tragic consequences in January 1938 when an AMIEU organiser in Sydney, A.E. Smith and his wife were killed by a bomb thrown into their home. Smith had been bitterly criticised by the rank-and-file dissidents for his acceptance of the chain.[56] Although no one was ever brought to trial for the bombing, there was considerable circumstantial evidence to link the killing with the dispute over the introduction of the chain.

But while the diffusion of the new technology to other export freezing works in other states was quite rapid, its diffusion to other areas of the meat trade was partial and never complete. Most abattoirs killing stock for the local meat trade remained 'solo'. The Melbourne City Abattoirs for instance, were still operating on a 'solo' basis when it closed in late 1982. The Shepparton freezing works were still operating on a 'solo' basis in 1936.[57] While an economies of scale factor is important in explaining this pattern of diffusion (a large volume of stock killed would offset the large capital cost of installing the chain), this is not the whole explanation. The chain was introduced particularly in areas of union militancy, including the Homebush abattoirs in Sydney in 1937. Furthermore it was not introduced to kill beef until the 1950s in Victoria and then in a modified form so the men worked in teams.

THE EFFECT ON THE LABOUR PROCESS

The major effect of the introduction of the chain system was to render the skills of the slaughtermen largely redundant. From being tradesmen, the slaughtermen were deskilled to become process workers. Much of the blind opposition by the rank-and-file to the new technology, even in the face of the New Zealand experience and the success of the employers in recruiting volunteer labour, must be understood in these terms. The trauma of the loss of an occupational identity and a way of life should not be underestimated ("It took away all my pride in the job"). The demarcation between slaughtermen and labourers became less marked as the workforce became more homogeneous and more quickly trained. With their skills redundant, slaughtering required only heavy muscular work and the slaughtermen's industrial strength based upon the possession of special skills was destroyed. In future meatworkers had to rely on other strategies of cohesion and job tactics.

The introduction of the chain system vested control over the labour process firmly in the hands of the employers. From having considerable control over the pace of work, the meatworker's pace of work became dictated by the speed of the chain and without the application of skill, the work became more monotonous, leading to the recognition of a new occupational health and safety hazard, known as 'mutton stare':

> a sort of dizzy blindness, only momentary but constantly recurring from the monotony of their jobs, the same action repeated 400 and 500 times an hour — the temporary "blackout" in which habit and instinct fail and the razor sharp knives that could shave the hair off a man's arm miss their accustomed mark.[58]

Against this, it should also be noted that there were some aspects of the new technology which served to upgrade the work of mutton slaughtering. The introduction of the chain removed much of the stooping and bending which had been a feature of the solo system as well as making the work easier (if more monotonous) and thus alleviated to a certain extent the problem of bad backs, a major occupational health hazard of the industry.

EFFICIENCY AND CONTROL

Most rationales for the introduction of new technology stress their greater "efficiency"[59] and it is thus appropriate to consider the economics of the new technology, especially the effects of the installation of the new technology in terms of the conventional measures of productivity. Detailed economic data has been gathered for the period for two of Borthwick's Victorian works, Brooklyn in

TABLE 1

Economic Data for Thos. Borthwick and Sons Victorian Works, Brooklyn and Portland, 1931-1935

	BROOKLYN				PORTLAND			
Financial Year	**1931/32**	**1932/33**	**1933/34**	**1934/35**	**1931/32**	**1932/33**	**1933/34**	**1934/35**
Total sheep/lambs killed	411,379	522,105	856,821	834,909	48,577	84,898	92,784	128,475
Treatment rate per pound (pence)	.61	.41	.246	.015	13.16	.619	.491	.046
Total killing cost per head (pence)	11.23	11.29	10.19	8.96	10.84	10.93	10.56	8.62
— repairs	.75	1.57	1.15	.92	.84	2.03	2.11	1.12
— wages	8.67	8.12	7.83	7.01	8.31	7.76	7.40	6.63
Financial result (£-s-d)	+1394-13-9	-379-17-6	+17523-3-1	-507-17-4	+1150-10-11	+1685-12-11	+287-8-4	+197-6-6

Source: Thos Borthwick and Sons (Australasia) Ltd., *Annual Reports,* Melbourne University Archives.

Melbourne and their works in the coastal port of Portland (see Table 1). In both cases the chain was installed at the end of the 1932/33 financial year.

Firstly, in terms of the labour costs of slaughtering, there was a considerable saving on account both of the operation of the Babbage principle and also the cut in wages associated with the removal of wage margins for skill. Between 1931/32 and 1934/35 the wages component of the killing cost per head declined almost 20 per cent in both plants, which together with other savings (such as electrification) saw the treatment costs plummet. Against this was the initial capital outlay for the modification of the freezing works and the installation cost of the machinery. At the Brooklyn works the installation of the chain cost £1,400[60] in the year ending 31st August 1933, accounting for the bulk of the 'repair' costs at that time.[61] On top of this was the direct cost of the strike itself of £557, or 11d per head of stock killed during the strike.[62] In addition while the 'volunteers' were being trained to work on the chain, the rate of rejection of carcasses because of poor workmanship more than doubled in the year 1933/34 compared to the previous year when the solo system had operated. This resulted in a loss of revenue to the company of £5,917-2-3.[63] Overall though, killing costs did drop, partially from economies of scale with the huge increase in production in terms of numbers of sheep and lambs killed over the period. The company put its return to a profit situation in 1933/34 as compared to 1932/33 down in part to the benefits of the chain, but also to the benefits of electrical conversion and an increase in the value of by-products.

Secondly, in the huge expansion and modernisation of processing facilities which subsequently occurred, the chain required less space than the solo system and therefore building costs were less than they would have been had similar expansion of facilities occurred utilising the solo system.[64] Thirdly, the companies claimed the quality of work was better; the skins were in better condition and more usable offal saved under the chain system but this was hotly disputed by the union and the overall position is unclear. Certainly Borthwicks attributed the improved performance of the "Sundries" Dept. (organs, etc.) to their greater ease of collecting and transporting under the chain system.[65] Finally, there is the productivity measure of output per man and here it is interesting that claims that the new technology was superior are conspicuous by their absence and took no part in the discourse. Indeed the Borthwick's official history admits that the chain system was no more productive by this measure.[66] What it does claim were the benefits were the lowering of production costs and *greater control.*

To what extent then does the evidence support the claim frequently made by the union that the main reason for introducing the chain was

in order to "smash the union"? Certainly there is plenty of evidence that the control issue was uppermost. Meat exporters and rural producers saw from the New Zealand experience the implications of the new technology and pursued it in the Australian context. An *Age* newspaper editorial reviewing the dispute after it had finished, recalled, "the exporters, on becoming tired of the obstructive methods employed by the men, decided to introduce the team system of slaughtering sheep and lambs".[67] Borthwick's, justifying a substantial loss in the 1933/34 financial year (mainly the installation cost of the 'chain' system) to head office in London wrote:

> Against this [loss] we have had uninterrupted killings and discipline throughout the works, better skins, better yield of offal, and what must not be overlooked, the fact that if we had not fought the union on the chain issue and gone on with volunteers, the union would have been in such a strong position under the solo system that they would have acceded to the wishes of the Federal Executive of their union for a reduction of tally from 100 to 80 per day.[68]

Alternative explanations frequently given for the introduction of new technology should also be considered, in particular varieties of technological determinism. The first of these argues that technology is inevitably introduced once it is available. Yet the 'chain' technology had been available for 30 years before it was introduced into Victoria. Furthermore, Borthwicks for one had been contemplating introducing the new technology for several years before they eventually did.[69]

Secondly, there is the pressure of competition argument. This certainly featured in the dispute. An *Age* newspaper editorial during the dispute argued:

> All tradesmen naturally are reluctant to accept a change which puts them in a position of routine workers contributing to a common output by performing their allotted repetitive tasks. But their objection alone does not suffice to condemn a new method which has been adopted by competitors. Slaughtermen are not the only tradesmen to be affected by the mechanisation of industry and mass production methods which are the concomitants of a fiercely competitive age. They are among the last. Though the trend may be regretted, if the chain system is proved by experience to be more efficient or more economical, it must come unless Australia is to be outstripped by rival exporters.[70]

Yet the Ottawa agreement enshrined a healthy competitive advantage over traditional rivals such as Argentina. Furthermore with rivals such as New Zealand, the fact of operating in both countries allowed the companies to influence if not control the pricing structure. On the basis of the argument presented above, it is more likely that the introduction of the new technology was a response to resistance

offered by meatworkers. The move toward installing capital-intensive meat slaughtering must be seen as an attempt to decrease the union's strength by reducing the reliance on skill.

THE TRADE UNION RESPONSE

Pierce Carney, a delegate to the AMIEU Federal Council meeting to discuss the chain in 1933, drew a distinction between the chain system as a technological advance which improved the work in some respects, and its use by the employers to undermine the wages, conditions and strength of the union. Carney argued that the installation of the machinery was a fact and that the union should attempt through organised resistance to modify the technology to suit their own ends.[71] Opinion about the appropriate response by the union polarised around either fatalistic acceptance and attempted modification by the union leadership on one hand, and total opposition by the radical rank-and-file faction on the other. The inability of the union to generate a coherent response along the lines suggested by Pierce Carney led to a major setback for the union from which it took a decade to recover. It did however recover and by the 1940s had reasserted itself as a militant union.[72] The effects of the chain in deskilling the slaughtermen removed the status differential between labourers and slaughtermen. A more homogeneous and unified union membership resulted.

The union also showed it had learnt from the bitter experience of the chain dispute when the new method of slaughtering was extended to beef with the development of the Canpak system in the late 1950s. At the union's instigation a clause was inserted in the federal award in 1962, that no changes in the method of production could be introduced unless agreed to by the union. If no agreement could be reached the matter could be referred to the arbitration commission.[73] As Mr. George Seelaf, the Victorian secretary of the AMIEU between 1947 and 1963 recalled of the reorganisation of beef slaughtering:

> That was handled entirely differently . . . We had the experience of the 30's. I was secretary at the time it came in. It was a lot of headaches, a lot of opposition from the troops, but the thing didn't get to a position that we had got in the 30's. We said in essence yes, change is coming, we are not Luddites, we have got to go with the change, but we said we wanted the best we could get out of it. As a result we started negotiations that went on I suppose for three or four years and I would say that in the end it was costing the employer more to get his cattle killed on the chain system that what it was on his old method of slaughtering.[74]

The attitude of the subsequent union leadership towards the dispute is clear, being critical of union leaders of the time, not so much for

their attitude towards the chain, but for their inability to unify the members in their response to the installation of the chain. Seelaf for instance, commented:

> I think the leadership at the time didn't know what to do and how to go about it. In those days, rank and file decisions were very, very important . . . In those days there was very little what you call real leadership given by union officials, they were tailors rather than leaders and I think they were confused, they didn't know what to do or how to bloody well do it. But they could see after a short period that the struggle couldn't be won and it was that the chain system was coming in and the best thing to do was to turn round and use it to advantage, to grab hold of it and control it.[75]

Mr. Wally Curran, the Victorian secretary of the union since 1973 argued:

> One got the impression that it was a long drawn out, bitter struggle, when in fact it wasn't. Indeed it was a minor scuffle in relation to our history of the union in time. In that dispute it showed an attitude of the IWW members at the time, and some of the anarchists about, who had some of the over-hangings of the Luddite movement in relation to opposition to machinery and mechanisation. It also showed the arrogance of the employers. But above all, I think the union leadership was clearly shown to be non-political, non-understanding of what it was all about and allowed a very divisive position to come into the industry without attempting to resolve it. . . They allowed, in my view, a super-militant attitude to prevail on the work which was quickly taken up and got out of hand and some of this was by slaughtermen who had a very bad attitude to labourers who he regarded as second class citizens.[76]

UNDERSTANDING TECHNOLOGICAL CHANGE

It remains to return to the labour process paradigm as a means of analysing technological change and examine the implications of this case study for that paradigm. The case study demonstrates the difficulty of separating control aspects of new technology from aspects related to efficiency, as both Braverman and also Marglin[77] attempt to do. What is more efficient from the employers' point of view is closely related to the establishment of management control over the labour process; in short, what ensures the labour process will proceed free of disruption. Whether a technological innovation is more efficient from the employers' viewpoint is not related only to conventional measures of productivity but also the establishment of control over the labour process. In other words, efficiency cannot be analysed independently of resistance to the imposition of management control.

Two related points flow from this argument. Firstly, technology must be seen as having both material and ideological components, that is comprised both of machines and tools (material and also the social relationships of power or domination which go with them[78] (the ideological). The two are closely related, since the machines may be designed as the chain was, to allow for the operation of the Babbage principle, to cheapen the cost of labour. As well the chain controlled the pace of the work and set it more firmly in the hands of management. The material and ideological components of new technology are inseparable, since the search for efficiency becomes the search for domination; the more effective means of converting labour power into actual labour.

Secondly, resistance cannot be seen as merely derivative as Braverman does, or reduced to 'internal friction' in the labour process. Whether one sees it as the advance of the scientific, technical revolution or the development of the capitalist labour process, this process hinges not only on the requirements for capital accumulation in response to competition, but also on struggle, on resistance on the part of the dominated. In the instance analysed here, a conscious re-design of the labour process took place, one that was directed at the establishment of control so as to permit greater efficiency through less time lost as a result of disruption, etc.

The lessons from this case study are several but two are important to mention here. Firstly, the importance of the issue of technological change as an agenda item for the labour movement, as a body of organisations which represent the interests of a large proportion of Australians. In particular it demonstrates the crucial importance of effective union leadership around the issue of technological change. Formulating a coherent response to technical innovation requires an acute awareness of both the technology itself and its likely consequences. Secondly, it is to argue for the relevance of theoretically informed historical case studies of major technological changes. Case studies such as these demonstrate the dangers of an ahistorical approach to technological change, with the attendant dangers of failing to learn the lessons of the past. Such an awareness is essential in effectively dealing with further modifications in the labour process of livestock slaughtering currently being evaluated such as mechanised pelt removers. Only by a clear understanding of the dynamics of technological change in the past, or indeed comparatively in other industries,[79] can a coherent response be developed.

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35. There is disagreement about the extent of the pay cut. Cutler (*op. cit.*, p. 254) supports the union claim of 40 per cent though employers claimed it to be less.
36. Davies, *op. cit.*, p. 104.
37. *The Age,* 10th October 1933.
38. *The Age,* 9th October 1933.
39. G. Harrison, *loc. cit.*, p. 126.
40. *The Age,* 13th October 1933.
41. *The Age,* 20th October 1933; *Red Leader,* 27th October 1933 (Archives of the AMIEU, University of Wollongong).
42. *Red Leader,* 4th October 1933.
43. Cited in Cutler, *loc. cit.*, p. 256.
44. A. Davies, *loc. cit.*, p. 105.
45. *The Age,* 25th October 1933.
46. Cutler, *loc. cit.*, p. 256.
47. *The Age,* 31st October 1933.
48. A. Davies, *loc. cit., p. 112.*
49. *ibid.*, p. 106.
50. *ibid.*, p. 123.
51. A. Davies, *loc. cit.*, p. 155; Interview, G. Seelaf.
52. *Pastoral Life,* 16th November 1933, p. 112.
53. Borthwicks Archives, *loc. cit.*, Outward Correspondence, 11th December 1935.
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55. T. Cutler, *loc. cit.*, p. 258.
56. *Red Leader,* 1st November 1933.
57. A. Davies, *loc. cit.*, p. 116.
58. *Smiths Weekly,* August 1939, University of Wollongong Archives.
59. Recognising, of course, that the notion of 'efficiency' is a highly political one, that there is no necessary generally beneficial course of action which is most efficient since what is most efficient for employers may not be most efficient for employees and *vice versa.*
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