# WORK PRACTICES, TECHNOLOGICAL CHANGE AND SHEET METAL WORKERS, 1929-1970

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This article surveys the history of work practices in sheet metal work from 1929 to 1970. It focuses on the role of internal labour markets and union power in sustaining such work practices as seniority, the strict allocation of work according to job classifications, and the regulation of working time. Internal labour markets were structured by formal and informal rules which made it difficult for employers to transfer employees or to recruit from the wider, external labour market. Such restrictions placed barriers in the way of the most efficient use of new technologies. Managerial control over how work was done and attempts to improve discipline and to increase work effort were also limited by work practices. To the extent that internal labour markets prevented the easy employment of labour from the external labour market, the bargaining power of employees was strengthened.

Keywords: technology, work practices, labour markets, metalworkers

### INTRODUCTION

Government appeals to industry and unions to eliminate rigidities in the micro economy have drawn attention to work practices that are said to reduce the adaptability and competitiveness of Australian companies. As yet, Australian academics have given little attention to these work practices; indeed, government policymakers have no clear idea of what constitutes such practices and how they arose.

Through a case study of sheet metal work this article argues that internal labour markets sustained by union power have prevented the optimal use of technologies and have encouraged over manning. Internal labour markets have also protected insider employees from changes in the wider labour market, which would have reduced their bargaining power by allowing employers to recruit labour from outside. Systems of payment according to job classifications and obsolescent margins for skill made it difficult for employers to obtain full cost savings. Internal labour markets within companies and union regulation of work also made it difficult to redesign jobs, to have unskilled workers perform tasks previously carried out by tradesmen, or to dismiss or redeploy employees. In addition, as a result of internal labour markets, employers responded to changes in the demand for their products and to the introduction of new work processes and technologies by modifying working time. Finally, conflicts with unions have often resulted from the use of time and motion studies and methods engineering in association with automation, a more detailed division of labour within production, and increased capital intensity. Here, too, the employers ran up against union regulation of work.<sup>1</sup>

Sheet metal workers were organised in the Sheet Metal Working Union. From its early years, the union strove for monopoly control over certain categories of work by the creation of internal labour markets. It tried to secure closed union shops and excluded non-unionists from possible employment in the industry. The union had a legal right to do so as a registered organisation and respondent to an award under the auspices of the Commonwealth Court of Conciliation and Arbitration. The union curtailed the use of sub-contracting and the hiring of casuals. The capacity of the union to enforce its monopoly varied between factories and over different time periods. It had great success in the 1940s when closed shops were secured throughout the industry and internal labour markets were consolidated. Effective networks of shop stewards and shop committees were crucial to the union's bargaining power, to its ability to obtain accurate intelligence, and to enforce its monopoly.<sup>2</sup>

#### **INTERNAL LABOUR MARKETS**

Internal labour markets in the sheet metal industry insulated the demand and supply of labour within companies from the wider, external labour market. Insiders who were already employed in the firm were treated differently from outsiders who were recruited later from the external labour market. In fact, most jobs within sheet metal firms were filled by the transfer and promotion of insiders, and the employers found it difficult to hire outsiders on other than a temporary basis. Internal labour markets operated through structured employer-employee relationships involving formal and informal rules which determined the tasks to be carried out by occupants of each job. Because specific tasks were involved, the person performing the job had to undergo job-specific training, or had to be a member of the appropriate union. Many of these formal and informal rules were the result of union power, as was the system of seniority. Not only were firms pressured to fill jobs with promotions and transfers of insiders, but the extent to which this could be done was limited by strict lines of demarcation between skilled and unskilled work. Even when a job had been deskilled, it could only be filled by an employee with an apprenticeship or with on the job training. Such employees often received a pay margin for skill, while union imposed rules preserved the privileges of skilled and semi-skilled employees in circumstances where technological change made them replaceable by unskilled workers. And as we show towards the end of this section, internal labour markets made it possible to buffer employees from the effects of unemployment by making it easier to ration the work available within a particular company or factory. The placing of restrictions on overtime was one way of doing this. For the employers, internal labour markets had the advantage of helping them to retain labour that could not be easily replaced. On the other hand, internal labour marketss reduced the freedom of management to dispense with less productive employees, or to promote employees according to their productivity when introducing new technologies. The formal and informal rules that restricted employers to the promotion and the transfer of employees from among unionised insiders were often conceded in periods when the demand for labour in the wider, external market was greater than the supply. In these circumstances, employers agreed to internal labour markets in order to hold scarce labour.

Since the 1930s, seniority has been an important part of internal labour markets. It represented a decline in the freedom of management to hire and fire, and to promote employees according to their lovalty. self-discipline and work effort. Hence, managers often tried to encroach on seniority rights, while sheet metal workers tenaciously defended them. Nor could employers use holidays or slack periods to not re-employ slow or older workers. When it seemed inevitable that metal workers would be retrenched, the union insisted that dismissal and re-employment be on the basis on seniority. When a firm did not go along with this, those who had been rehired could be threatened or persuaded not to take up their jobs until it was their turn.<sup>3</sup> There were times when a rash of disputes would occur as employers temporarily took concerted action to weaken seniority. This happened in March 1956 when all employees at Metters were on strike over the company's violation of seniority. In October a similar dispute broke out at another plant. In December seniority was a bone of contention at the Emmco factory in Orange, where a number of sheet metal workers were retrenched without regard to the existing seniority principle. At Metters, in March 1958 when orders dried up, dismissals were implemented without regard to seniority, the management taking this opportunity to rid itself of less productive workers. But generally, as a result of abortive efforts to erode seniority in the mid-1950s, most manufacturers were content to leave well enough alone, although there were some isolated outbreaks of conflict over seniority in the 1960s.

Internal labour markets prevented employers from making savings in labour costs that could have resulted from technological innovation which caused changes in the type of skill required or led to the obsolescence of traditional craft skills. Employers tried to increase the flexibility of their labour force by breaking down barriers between trades and between skilled and unskilled workers, thereby reducing labour costs. Moreover, it was also to the employers' advantage to replace more highly paid tradesmen with less skilled lower paid workers whenever this was feasible. However, attempts by companies to enhance the flexibility of the stock of skills at their disposal resulted in more failures than successes. Because they could not recruit freely from the external labour market, employers had to make the best use they could of the internal labour force. But the system of job classifications and the rules that determined what type of employee could hold a particular job prevented the employers from making the most effective use of the labour on which they were able to draw. An inadequate supply of labour during the Second World War forced employers to try to break down classifications between the skilled and the unskilled, and to transfer insider employees. In 1942, sheet metal workers at Ferrier and Dickson objected to skilled tradesmen being asked to do unskilled work. The firm simply pointed out that it did not have enough skilled work, and given labour shortages, it wished to make the most efficient use of available labour.<sup>4</sup> Similar conflicts persisted during the immediate post war years. Spot welders at Steelbilt's Sydney workshop went on strike with the support of the Sheet Metal Working Union, so that they would be paid the same rate as second class sheet metal workers. The lure of bonuses could be used to secure a change, but of course this was costly to the employer. Thus, in August 1948 some employers sought to have welders classified as second class metal workers. In return they were offered a bonus scheme to enhance their earnings.<sup>5</sup> In June 1952 there were retrenchments at a foundry run by Metters. The company needed to cut production so it planned to transfer some moulders to labouring work and to dismiss the labourers. Instead, insider moulders on piecework decided to slacken their work effort in order to keep more foundry workers in employment.<sup>6</sup>

In the early 1960s, tensions between metal unions and the employers over internal labour markets were highlighted at five plants owned by Wormald Brothers in New South Wales. There was disagreement among metal workers over an attempt to differentiate between tradesmen who had completed apprenticeships, or had certificates of recognition, and 'acting' or 'added' tradesmen. In the past the company had re-employed retrenched insider workers at lower classifications, and this made the Sheet Metal Working Union apprehensive of the granting to management of any freedom to reclassify employees. As a result, the union insisted that there be no discrimination between 'recognised' and 'added' insider tradesmen in terms of overaward payments. All new employees would also receive overaward payments equivalent to those paid to currently employed metal workers. In this way there would be less rivalry between the established and the new, outsider employees. Management would not be able to use a differential to exact more work effort, and there would be no likelihood of the company regularly resorting to a pool of newly hired, cheaper employees. Most significant of all, employees could be promoted, but not demoted; employees could be moved to a higher paying classification, but could not be moved to a lower paying classification.

Towards the end of the 1960s, when companies pushed for change in internal labour markets in order to obtain maximum output from new equipment and changed methods of production, they once again came up against the rigid set of informal and formal rules that regulated which employees could perform particular jobs. A not untypical example of how this interfered with employers obtaining full cost savings was provided by Carrier Air Conditioning. On its assembly lines there had to be one first class operator for every two second class operators. Electrical and leak testing and the charging and dehydration of units were classified as first class work and paid for at a higher rate. The firm expected imbalances to occur between the different sections of the plant and the union agreed that employees could be reclassified to do different tasks, a change made possible by the deskilling of specific engineering and sheet metal work. But reclassification could only be one grade at a time; an employee could go up or down by only one grade. When reclassified, an employee would retain his or her rate of pay at his or her previous classification for two weeks. If an employee received a higher rate of pay as a result of reclassification and worked at this higher rate for two weeks or more, after returning to the lower classification he or she was entitled to retain the higher rate for two weeks.<sup>8</sup> Such rigidities could be complicated by demarcation disputes between unions, the more so when technical changes were involved.

### WORKING TIME

Internal labour markets made it difficult for employers to increase output per worker by extending the length of the working day through overtime, shiftwork and by cutting into rest or meal periods. This was because internal labour markets insulated the workforce from competition from outsiders and thus helped to sustain the bargaining power of insiders. Employers tried to change working time in response to a growth in the demand for their products, or from a desire to work their capital equipment continuously. But the extension of labour time was rarely left solely in the hands of management; the union played a decisive role in the regulation of overtime. Particularly, in times of unemployment in the industry, the existence of internal labour market arrangements made it easier for the union to resist the working of overtime, claiming that overtime should not be allowed as long as insider sheet metal workers were unemployed. With union support, insider employees were able to ration the available work so that each employee worked less and earned relatively less, with the intention that all of them could earn something. Employers were unable to take this opportunity to dismiss slower, less productive employees.

Able to use formal and informal rules that prevented employers from drawing freely on the outside labour market, the Iron Trades Group of unions in Sydney in the 1930s often embargoed overtime, except for those doing necessary maintenance. Overtime was deemed to be necessary only if the factory would cease to operate without it. When an employer succeeded in applying to the union for permission to offer overtime, the overtime worked and penalty rates paid would be deducted at a subsequent period when the employees would work for less time than the normal working week. This scheme was promoted by officials of the Sheet Metal Working Union who were Communist Party members and believed that such a tactic would lead to a more equitable distribution of work and would help insider sheet metal workers to avoid falling prey to unemployment. While it was possible for more persons to be employed to work the normal day, overtime was refused by unionists.<sup>9</sup> Shiftwork was also controlled. Through the 1930s many companies decided not to try to introduce night shifts, especially when they realised how much they would have to pay in penalty rates. Sometimes in factories where shifts were worked, the union offered resistance to a change in the length of shifts, and to modification in the times when shifts commenced and ended.<sup>10</sup>

During the Second World War, when labour shortages combined with an expanded demand for the products of the metal working industry, employers still found it hard to secure overtime. This was because internal labour markets sustained the bargaining power of the union, so that it could exclude outside workers and more easily regulate the labour process. In February 1941, in New South Wales, the Sheet Metal Working Union decided to allow overtime only when absolutely necessary, for maintenance work, or when it was essential for keeping a workshop clean and safe for the general body of workers. In any case, no more than eight hours per week could be worked on overtime, and any decision to do overtime required the approval of union officials, who would first consult with the members concerned.<sup>11</sup> In the early months of 1941, a large number of employers requested the Sheet Metal Working Union to allow the offer of overtime. All the employees were willing to stick to the union's limit of eight hours per person per week, with no work on Saturday mornings. Many of these requests were deemed to be reasonable, especially in wartime when the sheet metal industry was providing products for military purposes.

After the war, changes in overtime and shiftwork were required as a result of the adoption of new technologies, but once again the benefits enjoyed by employees from internal labour markets took precedence over the employer's desire to make cost savings. In 1949, Steelbilt moved to reorganise its production by changing from two shifts to day work only. New machines were purchased to increase output from the day shift so that the afternoon shift could be eliminated; it had become uneconomic due to steel shortages. This had the effect of rendering 38 insider employees redundant, and union resistance was opposed unsuccessfully by the Metal Trades Employers' Association, which acted on behalf of Steelbilt. A representative of the Association declared: "The right of the management to manage its place efficiently cannot be challenged and having chosen the course of altering from a 2 shift to a 1 shift basis, it was evident that certain employees would not be re-engaged".<sup>12</sup> Internal labour markets also got in the way of a more general attempt to encroach on union regulation of labour time in May 1949, when advocates of confrontation within the Metal Trades Employers' Association tried unsuccessfully to vary the Metal Trades Award to allow the employment of metal workers on shiftwork at ordinary rates of pay. Until then unionists would not work beyond ordinary hours unless they were paid much higher penalty rates. In any case, union policy was that no overtime or shiftwork be accepted unless the employer could demonstrate that it was absolutely necessary.<sup>13</sup>

The rationing of work among insider employees that occurred in the 1930s was also important in the early 1950s. The management committee of the New South Wales branch of the Sheet Metal Working Union was galvanised into action by rank-and-file agreements with particular employers to ration the available work. Caught off guard, the management committee felt compelled to develop a policy on the issue. This policy was applied at Metters when the company agreed that insider sheet metal workers could work four days a week to avoid the need to dismiss some of them. In one section unionists accepted a three day week because there was not enough work for four days. For the union the regulation of working time recaptured some of its acme in 1960-61, when rationing of work was also used to preserve employment in the face of the credit squeeze, which had dampened demand for household appliances, motor cars and consumer durables. Sheet metal workers refused to do overtime at some factories while members of their union were retrenched at other plants. At other workshops overtime bans were also imposed as soon as some employees were laid off. In Oueensland, in April 1962, sheet metal workers introduced an overtime ban so that whenever possible all employees received at least 40 hours work per week.14

Through the 1960s, when shortages of skilled and unskilled metal workers encouraged manufacturers to adopt new technologies and to substitute physical capital for labour, sheet metal workers regularly went on strike if overtime and penalty rates were not to their satisfaction and the employer refused to negotiate. Union regulation of overtime became pervasive and more difficult to dilute, in part because the inadequate supply of labour made internal labour markets more secure. As a result, employers also found themselves struggling to ensure that they got all the normal working time to which they felt they were entitled. Clyde Engineering provided a typical example. Employees would arrive and check in, but they would still either be heading for their workplace or would be in the changing room when the time clock had begun. Also, the employees would not begin to return to their workplaces until crib or lunch time ended. Work ceased fifteen minutes before the official knocking off time. Management tolerated this simply because it did not have the power to impose its will: it wanted employees to be at their workplaces until five minutes before the end of a shift, not fifteen minutes before the end. Boilermakers demanded that all or none of them would work overtime, and they would not work any overtime at all unless at least one night per week was available to each of them. The sheet

metal workers also refused to work overtime unless it was available to all of them on at least two nights a week.<sup>15</sup> Such restrictions posed a threat to the competitiveness of the firm and inhibited management's ability to vary the way it could use the stock of skills.

There were many conflicts along the borderline between technological change, work effort and working time. For example, at De Havilland's Bankstown plant a strike got in the way of the company's efforts to reduce 'smoko' times from ten to five minutes. At Richard Hughes Pty Ltd, a canister making firm, sheet metal workers banned overtime to win higher wages and a shorter working week at a time when the company wanted to obtain maximum output from new equipment. At Clyde Engineering there was a clash between management and labour over a ten minute rest period. This had been granted to employees when a twelve hour shift was introduced. The ten minute rest period was withdrawn when overtime was no longer required. Metal workers retaliated by continuing to take the break, but found that their pay was docked for the time lost. Both sides refused to give ground.<sup>16</sup> Even on these apparently less important issues, unionists promptly applied their most powerful sanction. At Harris Hutchinson, sheet metal workers withdrew their labour when the management would not allow a morning tea break.<sup>17</sup> Changes in work methods also affected working time. Thus, in mid-1959 there were disputes over changes in enamelling methods and in the starting and finishing time of work.<sup>18</sup>

# PIECEWORK AND SCIENTIFIC MANAGEMENT

Given the existence of internal labour markets, the ability of the Sheet Metal Working Union to regulate overtime and shiftwork, and its capacity to influence how work was performed at the point of production, employers resorted to piecework as a method for increasing the work effort and productivity of insider employees. Piecework offered a means by which wages could be related in some way to individual output. The union used dargs (limits on output) and other work practices to curb managerial power over piecework in the 1930s, when there were both furtive and open attempts by employers to introduce piece rates in factories. Where piece rates existed, there was an intensification of the struggle over how they would be calculated, over compensation for faulty equipment, when there was an inadequate supply of materials, and over changes in bonus systems.<sup>19</sup> When employers took steps to reduce the working time of meter makers and to cut piece rates, meter makers retaliated by using their shop committees to set alternative piece rates and then negotiated over these with management.<sup>20</sup> In the 1930s, companies moved to dismiss slow workers who did not earn at least 10 per cent above the day rate allowed by the Metal Trades Award. The Sheet Metal Working Union responded to this breach of internal labour market principles by having its members work only as fast as the slowest pieceworker.<sup>21</sup> How much pieceworkers received was open to continuous renegotiation when workers and factory owners sensed a shift in the balance of power.<sup>22</sup>

Changes in work organisation and technologies also affected the level and type of piecework. In the 1930s, employers were especially active in reorganising the labour process when they tried to cut unit costs and to lift output by the use of new machines. A representative example of this and the restrictions on the freedom of employers occurred over the introduction of new moulding machines for stove making at Metters. The employer exercised his prerogative under the award for stovemakers and fixed a price of 71/2d for adults and 51/2d for juniors. The union demanded 81/2d for both adults and juniors, because the new moulding machines could be handled well by juniors. The machines reduced the work by half, yet the union succeeded in restricting the cutting of piece prices by only one-third, even though work was simpler and less skilled because the stove boxes were now assembled in parts, not made as a whole on the floor.<sup>23</sup>

In the 1940s, there were tensions over piece rate payments as employers searched for ways to get around the limits placed on their ability to obtain optimal use of their physical capital and stock of labour skills. Compromises were more common than absolute victories or defeats. This was the case with a struggle over piece rates at Gas Meters Ltd in 1940, when a different piecework schedule was to be introduced by the management to make more efficient use of new equipment. Faster working was the other way of overcoming labour shortages during the Second World War, but slow workers were protected by the formal and informal arrangements that constituted internal labour markets, and under the federal award they could obtain slow workers' permits.<sup>24</sup> Of course, the insufficiency of labour enhanced the bargaining power of employees and made it possible to protect internal labour markets, as the management of Metters discovered when it tried to convert work hitherto done at ordinary rates into piecework without the union's approval and co-operation. And the employees were well aware of the implications for their incomes that would flow from management tampering with piece rates.<sup>25</sup> The Sheet Metal Working Union scrutinised new bonus systems and profit sharing arrangements, and these were often rejected if the union was not given access to the firm's books. An attitude of class suspicion was reinforced by militant and Communist organisers and officials.<sup>26</sup>

The wartime assertiveness of sheet metal workers persisted into the 1950s, when companies began to experiment with incentive schemes as a way of increasing labour productivity when internal labour markets made it difficult to attain optimal output by tapping into the external labour market, or by transferring employees in defiance of seniority and job classifications. In October 1951, frictions arose at Metters in Sydney over a new group bonus scheme. In May 1954, the Sheet Metal Working Union reaffirmed its "opposition to all systems of payment by results or so-called incentive schemes", as methods which "lead to speed-up

and in due course to lower living standards, a decline in health and victimisation of ailing and ageing workers". The union's basic aim was to lift the living standards of its members by securing higher weekly wages. At the same time, the South Australian branch of the union noted the spread of incentive payments, and despaired that "it seems impossible to combat it in any way, as members themselves are always looking for it, on account of the benefits they are receiving as a result of the increase in their pay envelopes". Despite this, the union was far from helpless: "In most cases piecework prices are satisfactory, as when there is any difficulty with the rates we are able to get them adjusted".<sup>27</sup> Generally, the resilience of internal labour markets and union power made it difficult for manufacturers to modify bonus systems in a way that led to lower costs and the optimal use of new technologies. In May 1963, at the Rheem factory, sheet metal workers won changes to the bonus system that increased unit wage costs for the employer. In July 1963, when management at Eveready tried to modify the bonus system, an industrial dispute occurred. However, it was also possible to negotiate changes, especially when this was compatible with seniority. For example, in 1965 Hawker De Havilland replaced its merit rating system of overaward payments with an incremental system based on length of service.<sup>28</sup>

Internal labour markets and union regulation of labour time encouraged employers to resort to time and motion studies and methods engineering to increase work effort. These came into greater use in the 1940s as employers looked to increase labour productivity, in part to compensate for a shortage of labour. The Sheet Metal Working Union's federal organisation reflected in March 1940 that although piece rates had existed in the industry for a long time, by the end of the 1930s there had been a change of sorts with "a strong move for the introduction of the system of time studies".<sup>29</sup> After the Second World War, the faction within the Sheet Metal Working Union that was most opposed to piecework and time and motion study predominated. In the 1950s, with growing foreign investment in metals manufacturing and with the establishment of new, modern factories, the Queensland branch of the Sheet Metal Working Union drew a connection between United States investment, automation, more capital intensive production, and the use of methods engineering.<sup>30</sup>

Efforts to time work rarely went unchallenged. Sheet metal workers in New South Wales greeted the introduction of stop watches with almost automatic strike action. In September 1956, at Howard Auto Cultivators, employees stubbornly refused to fill out time cards. And at the AEI plant in March 1958 shop stewards met to discuss the management's hiring of a firm of methods engineers. They wanted to know what their function would be, why the management had decided to use them, and the likely consequences flowing from their report.<sup>31</sup> The 1958 biennial conference of the Sheet Metal Working Union was told that the bigger companies were "re-organising the plant for greater efficiency, and time studies which seem to have the tendency to reduce rates, and bring about dissatisfaction amongst the men in the factories".<sup>32</sup> In Victoria, disputes broke out in factories introducing piecework, bonus and incentive schemes. The Sheet Metal Working Union advised against the acceptance of such schemes as "physically and morally"<sup>33</sup> damaging. At H.V. McKay, Massey Harris, stoppages occurred over the introduction of a new scheme based on time and motion study.<sup>34</sup>

From 1958 the Sheet Metal Working Union gave even closer attention to the use of time and motion and scientific management experts. The New South Wales branch declared: "While there is much discussion about increasing mechanisation in industry leading to automation, the drive for greater and cheaper production has been brought more to our notice through the activities of so-called 'methods engineers' and 'efficiency experts'."<sup>35</sup> A growing number of metal factories was hiring these experts to help them improve work effort, under circumstances that made it difficult for them to recruit freely from the external labour market or to transfer insider workers without regard to seniority, job classifications and union demarcation lines. The New South Wales branch concluded: "As the chief aim is to get more production, not through more up-to-date equipment, but through 'organisation' of the existing equipment and the efforts of the workers, it involves speedup".<sup>36</sup> Employers misjudged their ability to use the scientific management techniques associated with work study. When one firm, Personnel Administration, arrived at the Commonwealth Engineering Co.'s Granville plant, there was an immediate strike. Eventually the company put an end to the open use of stop watches and other data gathering techniques. In December 1963 similar opposition resulted at Steelbilt. In June 1966, at the Amco factory in New South Wales, employees resisted time and motion study. Effective piecework, incentive and bonus schemes required work study. The union knew that work study was vital to the reorganisation of the labour process and to any changes in systems of payment, so it was quick to assert a veto power over the conduct of work study.

# CONCLUSION

While output was in part a result of the kind of physical capital used and the number and skills of employees, in particular workplaces output was also the result of work effort. Work effort was highly variable and depended mainly on the relative power of employers and employees. Unable to draw freely on the external labour market and unable to transfer employees irrespective of seniority or the formal classification of work, incentives and sanctions were used by employers to maximise work effort, to raise the quantity and quality of output and to reduce unit costs. Resistance was offered by employees and took the form of work practices, bans and strikes. In this struggle, the outcomes differed from factory to factory, from period to period, as the power of particular employers and employees changed. Relative power decided whether strikes were won or lost. It was influenced by labour demand and supply, by the degree of unity of each side, by the pressures felt by employers keen to maintain production in order to meet orders, and by the pressures felt by employees facing the risk of unemployment. However, internal labour markets protected the bargaining power of insider employees from fluctuations in the supply of labour in the external labour market and encouraged solidarity against the employer.

Employers assumed that some employees were more productive than others, but could not know on hiring how productive each employee would be. Similarly, while awards set uniform rates of pay, they did not necessarily take account of differences in work effort. The history of work practices in the sheet metal industry suggests that, given the existence of internal labour markets, employers had three main ways of overcoming the uncertainties of imperfect information about individual skill and productiveness. First, they could build up records on the work performance of individuals through the use of time and motion studies and other scientific management techniques, and where possible by measuring the output of individual employees. Such information also made it possible for the employers to devise ways of increasing labour productivity that did not lead to conflicts over seniority or the transfer of employees between jobs. Second, they could use piecework and other bonus and incentive systems to ensure that wages corresponded closely with labour performance. This approach was often accompanied by new technology and changes in production. And third, they could try to use the threat of dismissal to compel employees to work with greater proficiency. All three implied the close monitoring and supervision of employees. All three were the focus of bargaining with the union.

Trade unions and the arbitration authorities regulated labour markets within particular industries, companies and factories. These regulations were represented in awards, and limited the freedom of employers to make optimal use of their labour force. If technological innovation changed or eliminated the work of tradesmen, employers could not automatically use unskilled workers who were paid less to do the work. Nor could they easily hire workers from the external labour market. They had to continue to employ insider tradesmen at higher rates of pay. This prevented employers from obtaining the full benefits of new technologies, which included a reduction in the number of employees and the hiring of employees at lower rates of pay. Employers were unable to use freely incentives and bonuses to increase work effort and productivity. Promotion and job security were important incentives, but seniority prevented employers from using these incentives effectively. Piecework in its various forms was another incentive, but piecework rates were usually negotiable. This prevented employers from manipulating piece prices to obtain the greatest possible output at the lowest cost. Such

bargaining was inevitable and employers were concerned that they were not allowed to introduce piecework, and that piecework and other bonus systems were restricted by union imposed limits on daily output.

#### NOTES AND REFERENCES

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- 2. E196 and E245 refer to the records of the Sheet Metal Working, Agricultural Implement and Stovemaking Industrial Union of Australia, New South Wales branch (SMWIUA), held at the Australian National University Archives of Business and Labour. These records contain rule books, minute books and correspondence files from the 1900s to the late 1960s. The records also include copies of awards, piecework agreements and the transcripts of arbitration cases over this period. Sheet metal workers were organised into unions in various Australian colonies in the 1880s; after federation these unions operated within the States. In 1911, a federal union, the Sheet Metal Working Industrial Union of Australia was formed. It consisted of the Sheet Metal Workers' Unions of Victoria and Queensland. In 1919, New South Wales sheet metal workers joined the union. Throughout this article, the union will be referred to as the Sheet Metal Working Union for the sake of uniformity. The union covered stovemakers, enamellers, agricultural implement makers, tinsmiths, shot and sand blasters, and those who worked with porcelain. Such persons were employed in factories that manufactured tins and canisters, stoves, baths and other products that required enamelling, meters, and white goods such as refrigerators and washing machines. Sheet metal workers were also employed alongside other metal workers, such as moulders, engineers, fitters and turners, blacksmiths, various machinists, toolmakers, pattern makers and furnacemen.
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- 12. E245/80, Commonwealth Conciliation and Arbitration Act 1904/47, nos. 41/49 and 48/49, March 1949, p. 3.
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- E196/2/3, minutes of executive meeting, SMWIUA, 6 February 1936 and 20 February 1936.
- 23. For the above material in this paragraph, see E245/128, Industrial Commission of New South Wales, before the Deputy Commissioner, 30 April 1929; and E245/93, Industrial Commission of New South Wales, no. 420 of 1928, Chairman's notes of proceedings.
- 24. See E196/2/3, minutes of general meeting, SMWIUA, 12 February 1942.
- 25. See generally E196/2/3, minutes of SMWIUA, 3 January 1929-8 December 1949.
- 26. E196/2/4, minutes of executive meeting, SMWIUA, 9 April 1946.
- E196/2/6, minutes of biennial federal conference, SMWIUA, Adelaide, May 1954, p. 16-18.
- 28. E245/76, 'Service payment (incremental system of over award payments)'.
- 29. E196/2/6, minutes of federal council conference, Queensland, March 1940, p. 1.
- 30. E196/2/6, minutes of biennial conference, SMWIUA, Brisbane, May 1956.
- 31. E196/2/6, minutes of the biennial federal conference, SMWIUA, Sydney, April-May 1958, p. 16.
- 32. *ibid.*, p. 17.
- 33. ibid., p. 19.
- 34. ibid.
- E196/2/6, minutes of the biennial federal conference, SMWIUA, Sydney, April-May 1958, p. 10.
- 36. *ibid*.