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WHAT IS FORDISM? RESTRUCTURING WORK IN THE SOUTH AFRICAN METAL INDUSTRY

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A framework for understanding contemporary changes in the nature of work is provided by the fordist/post-fordist model which argues that fordism can no longer sustain high rates of productivity under changing conditions of accumulation and is rapidly giving way to new methods of production, patterns of consumption and relations of global domination. This framework forms part of the Regulation approach which focuses on the social structures, institutions and relations which regulate and resolve the system of accumulation's contradictions, making it workable and enabling accumulation to proceed (Gelb 1991).

The Regulation school has developed this argument most successfully in its analysis of the Fordist regime of accumulation (or intensive accumulation). Its starting point is the labour process, defined as 'fordist' because of Henry Ford's pioneering role in developing a system of mass produced standardised goods by highly repetitive mechanical methods. The result was a labour process that was highly productive and provided the foundation for a norm of mass consumption

represented ideologically as the 'American Dream'. It was associated with a particular system of industrial relations characterised by collective bargaining and bureaucratic unionism which promoted relative industrial peace. It also provided the material basis for the United States' economic and political international domination, captured in the notion of 'Pax Americana' (Bowles, Gordon and Weisskopf 1984)[1].

The concept of fordism has been useful in identifying linkages between the labour process and other areas of economic, social and political life: for example the match between mass production and mass consumption, its association with a particular kind of industrial relations based on an historical compromise between capital and labour in the US, and the rise of the interventionist state. Fordism, as an ideal type, has considerable explanatory value in identifying and linking many significant characteristics of the post-war boom period in the industrialised economies.

However, this framework has also obscured much of the complexity within national economies and important differences between them. Theorists in this tradition have tended to take the labour process as given and uncontradictory and focused almost exclusively on the associated institutions, especially features of the macro-economic system. This paper attempts to rediscover the labour process in giving content to the concept of fordism when applied to South African manufacturing.

The fordist labour process is traditionally defined in terms of the characteristics of the continuous assembly line, the integration of the production process, the technical direction of work, the standardisation of production and process as well as the introduction of advanced machine tools and the associated deskilling of an homogenous workforce of semi-skilled operators. This labour process is unproblematically incorporated into Regulation analysis as the 'prevailing labour process' (De Vroey :48). Its unevenness, its overlap with other methods of organising work and the modifications introduced by an active and resistant workforce are not taken into account. Similarly theorists who have adopted the Regulation approach in explaining economic crisis in the South African economy have neglected to investigate the precise nature of the labour process and its restructuring.

A detailed empirical investigation of the labour process is necessary to establish the conceptual integrity of the concept of fordism, as well as its less-developed sibling, post-fordism. In the literature, post-fordism is defined purely in contrast to fordism and has little independent conceptual coherence. There is little 'explanatory core to the post-fordist case other than the decomposition of fordist structures'. (Hirst and Zeitlin, 1991: 6)

This paper seeks to empirically investigate the precise nature of the labour process in the South African metal industry. It will be argued firstly, that the literature which posits a sudden

rupture between fordism and post-fordism cannot account adequately for the restructuring of work in this industry whose labour process demonstrates many important continuities. It will also be argued that the notion of fordism (and 'racial fordism') has been unproblematically applied to South African manufacturing and does not adequately grasp the nature of its labour process, skewed as it has been by racial patterns of consumption.

This paper makes a case for the inclusion of a more detailed and systematic investigation of the labour process in developing a broader understanding of the mode of regulation.

(i) Fordism and Post-Fordism

Within the tradition of industrial sociology a comprehensive literature has developed around the fordist labour process, primarily in response to Harry Braverman's classic work, Labor and Monopoly Capital (1974).

The fordist assembly line brought the technical direction of work to its fullest potential. The process of assembly was broken into its constituent parts and each team of workers added only a limited number of parts to the work in progress before it was passed on to the next team. This new method of organising work was entrenched by the technology: the assembly line provided unambiguous direction to work. Henry Ford emphasised the 'delivery of work' to each worker instead of 'leaving it to the workmen's initiative to find it' (Edwards 1979: 118).

The assembly line also established a uniform pace of work and dictated the work rhythm. Conveyors and handling devices integrated the different sections of the labour process and ensured the movement of materials around the factory floor and their arrival at the appropriate machine tool or assembly point. This meant fixing workers to positions determined by the layout of the machine system.

Starting with the Model T Ford the design of products was standardised. This standardisation facilitated the use of routine machine and work processes throughout the plant and meant that the work process could be planned in great detail beforehand, an elaboration of the originally Taylorist notion of preplanning. It also meant that advanced machine tools could be permanently incorporated into the production process as they would be used in the same way over and over again.

Advances in machine tool technology effectively transferred skill from machinists into the technology itself exacerbating the tendency toward deskilling and job fragmentation. This did not mean that machine operators and assemblers had no working knowledge or experience; simply that their skills were no longer all-round craft skills, nor were they formal or recognised by management. The 'deskilled specialist' as Meyer termed it became the principal occupation group in fordist plants, because workers were deskilled in the general sense, yet in possession of job-specific skills and competencies for operating specialised machinery.

This analysis of the fordist labour process is relatively uncontroversial, although its applicability across industry and across all advanced economies has been contested. It is the presentation of fordism as a regime of accumulation (or social structure of accumulation) that has generated considerable debate. This understanding of fordism can be summarised as follows.

Ford introduced the famous '$5 day' which attracted a continuous pool of job seekers to the gates of the Highland Park plant and visibly brought home the lesson of easy replaceability of recalcitrant labour. By boosting wage levels, it also provided the material means for the development of a 'social consumption norm' (Aglietta, 1979) creating a mass market for the products of mass production. After the Second World War, the increases in social wealth generated by the fordist labour process together with the growth of an industrial labour movement resulted in real wage improvements, and linked together in a virtuous circle, mass production with mass consumption.

The growth of industrial unions and the increasing power of the industrial working class was institutionalised in the spread of collective bargaining practices within American corporations. Bowles et al refer to this regulation of class conflict as the Capital-Labour Accord in which labour traded off material well-being for managerial control over the organisation of work (Bowles, Gordon and Weisskopf 1984). Rising real wages were supplemented by the state's provision of jobs and social security

in a Keynesian equilibrium. The productivity increases generated by the fordist labour process offset the rises in capital intensity and real wages so that the rate of profit was stabilised in the long run.

This model of fordism, which is clearly much broader than the labour process itself, assumed an international character in the post war years, underlying America's international domination. However towards the end of the 1960's the system's stability began to erode in the wake of a series of political and economic challenges including America's loss of the Vietnam War, the student-worker protests in Europe and the prominence of civil-rights/black power social movements in the United States, the economic ascendancy of Japan, the abandoning of the Bretton Woods monetary systems which introduced floating exchange rates, the oil shocks in the early 1970's and galloping inflation combined with rising unemployment[2]. Productivity rates declined and the social consensus was substantially undermined (Bowles, Gordon and Weisskopf 1984).

This crisis saw a shift in state policy towards control of the money supply as an international debt economy emerged. The balance of international power shifted in favour of countries like Japan, and the balance of power between classes changed with the growing inability of the union movement to maintain workers' standard of living. It also saw a restructuring of the organisation of work and the labour market as well as a change

in social consumption patterns in an attempt to regain the high rates of productivity increases of the fordist era.

According to its exponents, post-fordist work organisation is centred on the notion of flexibility[3]. It combines automation which increases the scope of technological flexibility with new managerial strategies of labour control which emphasise their numerical and functional flexibility. The flexible labour process produces a wide variety of products which are sold in niche markets.

Piore and Sabel's model of flexible specialisation made a case for the empowerment of labour implicit in this restructuring. They proposed a revival of craft forms of production based on multi-skilled workers, technological sophistication and competition between small firms subject to constant innovation. Automation would allow firms to cut the costs of customised production yet still offer the consumer unbounded choice within niche markets. They based their argument on the development of industrial districts of defined communities with extended family structures, artisanal and merchant traditions and assistance from local state structures. Such a labour process would reunite conception and execution and facilitate relations of solidarity and communalism (Piore and Sabel, 1984).

This idealised notion of post-fordism's potential unleashed a host of critical responses. A number of authors responded to the political implications of Piore and Sabel's work arguing that the

working class was in fact further segmented by the restructuring which undermined their capacity for resistance and subjected them to greater subordination within production (Murray, 1987).

Other commentators have pointed to the inadequacy of generalising from a limited number of disparate industrial districts and argue that Japan's model of structural flexibility has more coherence and applicability[4]. Japanese flexibility is premised on a fundamental division within the labour market between a core and periphery: the former provides functional flexibility in the form of multi-skilled workers, easily redeployed, who are represented by docile enterprise-unions which facilitate a distinct style of class accommodation. Workers in the periphery provide numerical flexibility with insecure work contracts and their location in temporary and casual positions within large companies or in the small business sector which supplies the large, export-oriented assembly firms. Core companies are still engaged in mass production, but the innovation and flexibility provided by automation and skilled labour, combined with a targeted export-orientation, allow for product diversification and niche marketing[5].

While many of the critics accept the rupture thesis implicit in Piore and Sabel's formulation of the restructuring of work, Pollert explicitly contests this notion. She argues that flexibility in the labour process and labour market is not new: any changes that Piore and Sabel identify are a normal part of the process of capitalist accumulation and competition that

forces capital to continuously restructure work and adapt working practices. She cites for example the long history of sub-contracting in British industry and refers to functional flexibility in the engineering sector as the long-standing practice of combining production and maintenance work rather than multi-skilling per se (IDS 1987).

She contests the integrity of fordism as a 'technological paradigm' (Piore and Sabel 1984) arguing that Piore and Sabel set up a false dichotomy between mass and craft production. Instead her approach recognises that mass production is more flexible than the post-fordist literature allows. Pollert notes the co-existence of small batch, large batch and process production and attribute no primary importance to large batch or mass production. Furthermore she contests the break-up of mass markets, arguing instead that the capture of niche markets is a deliberate strategy to fine-tune consumer tastes as a result of intensified competition. It is evidence of capital's sophisticated manipulation of mass markets rather than evidence of its decline. Furthermore the core/periphery divide, distinctive of the post-fordist literature, ignores the long-standing nature of labour market segmentation.

Sayer's intervention in the debate also shows that mass production is not simply associated with Fordism. He shows how mass production is flourishing in Japan and in turn undermining the western (fordist) forms of mass production through competition. He contends that capitalist industry has always

combined flexibilities and inflexibilities and what appears to be new are the particular permutations rather than a straightforward trend towards flexibility.

While the fordist/post-fordist model, as an ideal type, has considerable explanatory value, it tends to over-simplify the changes in the work organisation and labour markets, as well as consumption patterns. If it is to be used effectively it should not be presented as comprising mutually exclusive labour processes but as a continuum which allows a more historically specific and accurate understanding of the labour process to emerge.

(ii) Racial Fordism (South Africa)

Gelb has effectively used Regulation theory to make sense of the post-war South African economy and explain the nature of its present crisis (Gelb 1991). He adapts the concept of 'peripheral fordism' developed by Lipietz (1987) to explain Third World development in its global context. Gelb presents 'racial fordism' as the peculiar combination of the technology/labour process of Ford but without mass consumption norms. Instead consumer goods were consumed primarily by a small but wealthy white community. This led to an industrialisation strategy of import-substitution in the consumer durables sector. The state adopted a policy of protecting nascent manufacturing against foreign competition. In addition, South Africa as a mineral exporter was able to import

capital equipment for manufacturing based on a fixed international price of gold which provided stable export earnings.

The white working class, through a preferential labour market policy, moved into skilled and supervisory positions in the mining and manufacturing industries, with steady rises in real wages. This allowed them to participate in the consumption of housing and consumer goods. Gelb documents how the institutions of collective bargaining, racially-skewed social welfare systems and favourable credit arrangements underpinned this pattern (Gelb 1991).

The African working class occupied a subordinate position within the labour market as their mobility was restricted by job reservation and they had little collective bargaining power up until the 1970s. Control over black workers was strictly enforced through the migrant labour system, the pass laws and hostels. Their consumption patterns were based almost exclusively on subsistence requirements. Industrialisation eventually produced a stratum of semi-skilled urbanised African workers as manufacturing companies sought the abolition of job reservation allowing them to employ cheaper African labour. The real incomes of blacks did grow in the post-war period, albeit very slowly (Gelb 1991). However their bargaining position remained weak given high levels of unemployment.

The post war period represented the golden age for white South Africa, particularly during the 1960s when African resistance had been forced into exile and underground, black workers remained unorganised, the gold price was stable and manufacturing displayed unprecedented high growth rates.

Following the Regulation approach Gelb documents how racial fordism began to reach its limits in the early 1970s and productivity growth began to level off. The economy was characterised by skill shortages, a meagre export market, a 'free' gold price and high levels of imports which imposed a ceiling on further growth as capital was not available to finance investment. Gelb argues that the mass production system imposed a constraint of inflexibility. The concentration of large numbers of workers in manufacturing companies had produced conducive conditions for the rise of industrial unions. This in turn generated rising real wages for black workers as the unions grew in numbers and strength during the 1970s. Unit labour costs were pushed up while productivity slowed. The oil shocks negatively affected the South African economy, as did capital flight after political upheavals, such as the 1976 uprising. By the late 1970s the economy was in recession and suffered from high levels of inflation and stagnation (Gelb 1991).

While this explanation of South Africa's economic crisis has been particularly useful in facilitating the development of new economic policies[6] it has not shed any light on the changing nature of the labour process itself. It assumes the ubiquitous

adoption of fordist manufacturing techniques and argues simply that inflexibility prompted restructuring of work in the late 1970s and 1980s. Following Amsden's critique of the use of the concept of peripheral fordism to describe industrialisation in Korea, 'to recognise and label the emergence of more complex production in the Third World as "peripheral Fordism" is not to explain it' (Amsden 1990: 9).

The next section will argue that not only was consumption skewed by racial fordism, but the limited nature of the market has in fact shaped the way in which work itself is organised. South African manufacturing has never been characterised by the fordist model because mass production has been impossible. Hence, the notion of 'racial fordism' is not based on a fordist labour process, and is essentially an imported construct which is unable to shed light on the way in which industrial work is structured and restructered in South Africa. Ironically, it is only with the current opening up of export markets and potential changes in the nature of domestic consumption, that fordism itself becomes feasible, as long as the problems of low productivity and lack of international competitiveness are resolved.

(iii) Work Organisation in the Metal Industry

It will be argued from the evidence presented below that some sort of restructuring of work is currently underway in the South African metal industry, although many of the specific management strategies have their origins in previous times. It is clear

that the influence of Japanese management strategies is pervasive, however, their implementation is both limited and piecemeal.

A survey was conducted, in 1990-1991, of firms affiliated to Steel and Engineering Industries Federation of South Africa (SEIFSA) and to the National Association of Automotive Component and Allied Manufacturers (NAACAM) which included companies from the iron and steel, fabricated products, machinery, electrical and automotive sectors[7]. This industry was selected for investigation due to its strategic location in the manufacturing industry in terms of its production of capital and consumer goods, its employment significance, its relatively high rate of unionisation, its potential for growth and preliminary indications of its restructuring.

In particular, two aspects of work organisation were addressed, the nature of technology and strategies related to the management of labour. The aim was to investigate the types and extent of automation and participative management. The fordist/post-fordist literature suggests that there is a relationship between the type of technology employed in production and the social organisation of work: as technology changes from the mechanisation associated with fordism to highly automated flexible technology, related changes in the management of labour could be expected. The notion of labour as a resource rather than a cost (Kaplinsky 1990) suggests that greater worker participation in the management of production would be facilitated.

The results of the survey show that 61 percent of companies have introduced some form of automation although these remain mainly islands of automation with very little integration between automated functions. It is in the integration that the key to flexible manufacturing lies as it allows design, manufacture, conveyance and testing to be linked together. In the absence of integration, automatic equipment tends to be utilised in a dedicated fashion, simply replacing monotonous human intervention.

One company surveyed contracted out its numerically controlled (NC) machining to companies that have spare capacity because the 'reduced market does not allow us to invest in such machinery'. Another manufacturer involved in jobbing claimed that 'because each product is custom-made, it is very diverse. Therefore there is no potential for automation in production or design'. A metal pressing company had a completely dedicated spot-welding robot beside a number of manual welding booths. Flexibility in scheduling and product change came from the manual welders rather than the robot. Local managers claim that the market is simply too limited to promote extensive automation or to allow integration. 'I need to be flexible; that's why I can't automate', was the comment of one production manager summing up this approach.

The nature of the islands of automation were investigated further and a particular pattern began to emerge. Seventy six percent of companies have automated their design process by introducing

computer-aided design (CAD). Forty three percent have automated some aspect of manufacture and 19 percent use automatic test equipment. Very few companies have introduced automation for materials handling, packing and storage. These latter three functions have not been extensively automated mainly because they are all low skilled occupations and have traditionally been carried out by cheap manual labour. Design and testing on the other hand, require relatively high degrees of skill which are in short supply in South Africa. It is these functions that have been prioritised in the companies' automation initiatives. One technical manager commented that automation was necessary to 'produce high quality goods with much more accuracy'. Another linked quality requirements and automation because 'labour cannot be made more sophisticated'. Hence automation is prioritised in highly competitive and export-oriented markets in order to replaced under-skilled labour.

Quality emerged as a key issue for manufacturers. Many companies interviewed were involved in acquiring quality ratings either from the South African Bureau of Standards or other recognised international bodies (such as the Q101 rating). This was particularly true of companies looking to export markets to supplement their orders.

The automotive sector (including motor components) has a higher proportion of companies than the sample average with some form of automation (72 percent) while iron and steel is still predominantly semi-automatic (related to the technology of

fordism). Further-more, in the electrical and fabricated products sectors companies with semi-automatic technology are numerically equivalent to those who have introduced some automation. Even those companies which have introduced CAD or automatic testing devices, remain on the whole semi-automatic because of the absence of any integration between islands of automation.

When taking the size of companies into account, a clear trend emerges. In the smallest companies low levels of automation predominate: 58 percent of small companies[8] have not introduced any form of automation. Medium sized companies follow the industry trend[9], while large companies[10] have no manual work processes and much higher levels of automation than the industry average: 82 percent of companies with between 200 and 300 employees have some form of automation. In addition, it is worth noting that in very large companies of over 300 employees, integrated automation is more common than islands of automation, suggesting a far more developed programme of automation.

The introduction of workplace participation in the metal industry was similarly piecemeal and varied. Managerial responses to the survey identified a host of communication and suggestion schemes which incorporated workers into a system of information sharing but did not extend their participation in decision-making. Many of these schemes were designed to actively solicit workers' ideas about improving throughput, quality and productivity. They were introduced on the assumption that workers can productively contribute to problem-solving and innovation on the shopfloor,

under the influence of Japanese management. One production manager related how their quality management had changed: 'three years ago we made as many products as possible and then sorted out the good ones from the bad ones. Now the operator is made responsible for quality. They mark their clock numbers on their parts and they can be traced back if there is a defect. This approach we call quality first and production second'.

Since the late 1970s, unionised workers won for themselves the right to participate in decision-making via collective bargaining. This process has historically related to decisions about wage levels and conditions of employment and not about corporate policy on work organisation, investment patterns or new product or marketing strategies. In addition, this process has been characterised by adverserialism backed up by increasing rates of strike action reaching a peak in 1987, and not by codetermination.

The results of the metal industry survey show that worker participation through collective bargaining is widespread and facilitates unionised workers' influence over conditions of service: more than half of the companies recognise unions while 30 percent have formalised regular meetings with shop stewards who voice grievances and present the views and interests of their members. One human resource manager described the content of such meetings with shop stewards: 'we discuss general things like the need to be competitive. We discuss benefits, retrenchments and grievances. Stewards are also given the opportunity to raise

workers' problems'. This description seems to typify the management approach which in general restricts its disclosure of information and allows stewards to table their queries and demands related to shopfloor working conditions. Wage bargaining mainly takes place at industry level although 35 percent of respondent companies supplement industrial negotiations with company or plant level bargaining.

The automotive sector shows the relative strength of the union. Union representation through collective bargaining, consultation and joint committees takes place in over 50 percent of companies. Table 1 demonstrates the relative penetration of union organisation in the motor sector and explains the very high level of participation through collective bargaining.

Table 1: Unionisation rates by sector

Sector	% Unionised	% Numsa
Iron and Steel	69%	41%
Fabricated Goods	75%	57%
Machinery	64%	43%
Electrical Goods	64%	50%
Automotive	81%	68%

This is the type of industrial relations most closely related to the fordist model which excludes the union from policy related decision-making. In South Africa, a union culture of boycott has

developed which labels participation in management as co-optive and pursues a strategy of defending workers interests. Management now perceives this culture as problematic: 'for this company shop stewards are really unnecessary for the benefit of the company. They never make any positive contribution and they are always anti (sic)'.

To overcome this, a number of innovations have taken place. Firstly, a significant number of companies are attempting to change the nature of their labour force to avoid what they see as 'militant' unionism. One manager claimed that he had not hired any black workers since his workforce was unionised: 'the whites may be unionised but the white unions are not militant'. Another has regularly hired white students who are largely unskilled as they constitute an ununionised, temporary labour force which provides numerical flexibility. A further company employs a stable temporary workforce to run an electrical furnace for nine months of each year. During the other three months the furnace is closed to cut electrical costs. Subcontracting also frequently allows companies to hire very small permanent workforces. These innovations provide employers with greater numerical flexibility in a way that often undermines union organisation.

The second important innovation is the widespread introduction of shopfloor communication structures which included quality circles, green areas and other formal and regular channels for workers to contribute their ideas and problem-solving skills in 30 percent of the companies surveyed. These structures have clear

parameters and involve consulting workers on production schedules, work allocation and product runs as well as eliciting their suggestions as to productivity and quality improvements. They represent a direct form of participation, unmediated by union representation. In the vast majority of cases these shopfloor structures of participation have not been negotiated with the union.

In a further 17 percent of companies less formal channels of communication have been introduced and are intended to encourage workers to contribute to productivity and quality improvement. This means that 47 percent of companies have adopted this new approach to the management of labour. It does not provide much opportunity for workers to influence decisions, but recognises that shopfloor workers have a wealth of experience and tacit skill which needs to be harnessed to ensure more productive and innovative working practices. One company's motivation in introducing green areas was to achieve 'a team culture, improve communications and introduce a disciplinary factor as each member of the team makes sure that all are pulling their weight. Workers who let the team down have to face peer pressure rather than the supervisor's discipline'. This quote illustrates the very limited nature of participation provided by these shopfloor structures, as well as their implicit coercion.

Very few companies in the sample had developed co-operative forms of decision-making which involved union representation. Less than 10 percent established joint committees of union and management

representatives involving consultation about corporate decisions or actively including unionists in the process of decision-making about appointments, production organisation, job grading or technology upgrading.

Finally 20 percent of companies have neither union-based representation nor any opportunities for workers to communicate with management or influence their decisions. The complete absence of participation is clearly related to company size as NUMSA has been unable to penetrate the small companies effectively and only 10 percent of small companies have shop stewards. However, these small companies do have a relatively high incidence of shopfloor communication structures (over 70 percent).

The relationship between automation and participation was investigated and it was found that companies with islands of automation and some integration do not commonly have shopfloor communication structures. This contradicts typically post-fordist predictions. It is rather in the companies that have retained the essentially semi-automated production processes that quality circle-type structures are found. It may be concluded from this that companies which face restricted access to advanced technology are focusing on labour as a source of productivity improvement. One company based its programme of improving productivity purely on a changed relationship with labour involving more open communication and better training: 'why

invest money in capital equipment if it costs no money to get people to work smarter?'

The SEIFSA/NAACAM survey also investigated the nature of work organisation in the industry. It found that management's control strategies are organically linked to the nature of the labour process, which varies considerably from sector to sector. The iron and steel and machinery sectors, for example, have a higher than average incidence of shopfloor communication structures (48 percent each): in these sectors the layout of the production process involves the grouping of similar operation together. Hence work teams are relatively common thereby facilitating group working arrangements.

Table 2: Group-based layout by sector.

Sector	Percentage Companies
Iron and Steel	34%
Fabricated Goods	26%
Machinery	41%
Electrical Goods	27%
Automotive	28%

The most common type of shopfloor layout amongst the sample companies is that of the 'flexible assembly line'. Run sizes are simply not large enough in the South African market to have dedicated assembly lines. One manager explained the implications

of this: 'we make 180 different parts. We inherited equipment from Germany where they make long runs of parts. We have to change over the machinery frequently and this is time-consuming. It takes on average one and a half days. It's no wonder that Germany is so much more productive than we are'.

Although there is commonly a logical progression in the movement of work-in-progress around the shopfloor, there are often deviations to accommodate customised orders. The ad-hoc nature of work organisation is captured in one production manager's description of how he creates a specialised job card for each order and a work route suitable to the job. He said 'you get a feel for how things should be done, from experience'.

Supply networks have undergone significant changes in recent years. These networks have been instrumental in the restructuring of work organisation in the motor components sector in particular. Aspects of the Japanese just-in-time (JIT) system of production have been widely adopted in this sector and are beginning to spread to other sectors. In particular the production of goods to order and not for stockpiling is common, particularly in the light of a stagnating economy in which companies cannot afford to tie up their capital in stock. One manager commented: 'I can't buy things now and then only get paid for the work I do in six months time. JIT is the only way to do it'.

The implementation of such a supply system places pressure on the work process to ensure that orders are met in the required time once they have been placed. It has particularly affected the automotive component manufacturers as the large motor assemblers, two with licensing agreements with Japanese companies, have been at the forefront of this innovation. This explains the relatively high incidence of shopfloor communication structures in this sector.

Table 3: Companies that manufacture to order, by sector.

Sector	Made to Order	Partially to Order	Not to Order
Iron and Steel	48%	24%	21%
Fabricated Goods	44%	36%	16%
Machinery	30%	41%	25%
Electrical Goods	27%	41%	13%
Automotive	52%	29%	13%

The relatively high incidence of companies that manufacture 'partially to order' indicates the problems that arise when implementing management systems from elsewhere. Many companies cannot afford to follow this path rigidly primarily because of the essentially 'fordist' industrial relations system prevalent in South Africa. If deliveries cannot be guaranteed 'just-in-time' then suppliers will lose their contracts and hence they build up stock in the context of a volatile industrial relations environment in which strikes and stayaways are frequent and

unpredictable. Another common restriction on JIT implementation is the sourcing of many parts from overseas, particularly in the motor assembly sector. This places pressure on local suppliers: 'Nissan waits for CKD stores from Japan and, as soon as they arrive, expects our parts to be delivered immediately. We are the ones squeezed by their JIT system - we have to carry the stock'.

These results provide ample evidence to support the argument that the labour process should be conceptualised as a continuum, rather than in terms of the polar opposites of fordism and post-fordism. The small runs, customised production and non-continuous plant layout contradict the fundamentally fordist features of mass production. In addition, there is considerable evidence of long-standing labour market segmentation and employment of temporary and casual labour.

On the other hand some characteristics of the fordist model are present: the widespread use of semi-automatic technology; collective bargaining and adverserial unionism; stock piling of products and the lack of skills training, maintaining the traditional 'deskilled specialist'.

Evidence has been presented of a restructuring of work based on Japanese management. However there is no coherent post-fordist model emerging. Islands of automation are not providing manufacturers with production flexibility because of the short runs involved. There is no evidence of multi-skilling and in fact many managers see automation filling the skills gap. Just-in-time

strategies have been partially introduced because of the economy's continued reliance on imports and because of the essentially fordist industrial relations system.

Some of the features of so-called post-fordism are however evident. The widespread implementation of shopfloor communication structures is significant, particularly where they are posed in direct opposition to representative union structures. Associated with these new structures is the increasing emphasis on quality which requires companies to meet international standards and also requires shopfloor workers to 'build quality in', rather than 'inspect it in' after production.

(iv) Conclusion

The empirical evidence from the South African metal industry exposes the incoherence of a rigid model of fordism and post-fordism in South African manufacturing. As Pollert and Sayer have argued, flexibilities have always been combined with inflexibilities. But ignoring the complexity of the labour process itself has a particular significance for the concept of 'racial fordism'. It suggests an inadequate grasp of the relation between the labour process and the other social institutions and structures associated with the fordist regime of accumulation.

More importantly, the racially skewed nature of consumption has exerted a major effect on the nature of the labour process by preventing the emergence of mass production in many significant

sectors of manufacturing. This has in turn affected the nature of work restructuring and prevented the introduction of integrated automation. Hence the flexibility associated with 'post-fordist technology' is absent. The result is a piecemeal adaptation of Japanese management strategies which combines quality circles and modified just-in-time supply relations with long-standing practices of employing temporary and casual labour. The evidence suggests that these flexible innovations have more to do with manufacturers' attempts to adjust to a stagnating economy, than slavishly following the model of post-fordism.

The implications for the notion of 'racial fordism' are self-evident: it is precisely the non-fordist nature of the labour process that emerges as a primary factor in explaining its ongoing decline in productivity. Solutions to economic stagnation and lack of competitiveness should take account of the absence of mass production (and consumption) associated with the benefits of economies of scale, high rates of capital investment and technological integration as well as draw selectively on some of the positive innovations associated with post-fordism such as the recognition of the formal and tacit skills of labour. It points to a need for a detailed investigation of the labour process and the restructuring of work in formulating South Africa's future economic policies.

NOTES

1. This paper focuses on fordism as a labour process and simply refers to the fordist regime of accumulation. See Lipeitz, Aglietta, De Vroey, Boyer.

2. This is by no means an exhaustive description of the crisis.

3. See for example Piore and Sabel, Kaplinsky and Murray.

4. See for example Kenney and Florida, Sayer

5. See for example Sayer, 1989 and Chalmers, 1989.

6. The Economic Trends project from which this analysis is drawn provided Cosatu with the foundation of its economic project

7. The SEIFSA/NAACAM was designed to investigate the nature of the restructuring of work in the metal industry. This industry is strategically located in the manufacturing industry due to its production of capital and consumer goods, its employment significance, its relatively high rate of unionisation, its potential for growth and preliminary indications of its restructuring. A random sample of 700 SEIFSA companies was drawn (out of a total of 3419), stratified for region and sector. In addition, a 100% sample of 300 companies affiliated to NAACAM was included, as well as some members of the Motor Industries Federation, and all seven motor manufacturers. A 40% response rate was obtained. The careful design of the sample and the relatively high response rate, indicate that the results of this survey may safely be generalised for the industry as a whole. To supplement the survey, 15 companies in the PWV were visited: detailed factory tours and in-depth interviews with production management took place.

8. Small companies are defined as those with less than 51 employees.

9. Medium-sized companies are those employing between 51 and 150 employees.

10. Large companies employ 150 or more employees.

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