

**POWER ASSISTED STEERING? - THE POLITICAL
DIMENSIONS OF TECHNOLOGICAL CHANGE IN THE
AUSTRALIAN AUTO INDUSTRY**

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*Working Paper 61/02
November 2002*

WORKING PAPER SERIES



ISSN 1327-5216

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Abstract

This paper addresses the organization of labour in the Australian automotive industry by examining the restructuring of production processes and the implementation of new forms of labour control. Contrary to the “convergence thesis” associated with the Lean Production model, the path of these developments has not been smooth and uniform in Australia. We will contrast the different experiences of Ford, GM-Holden, and Toyota. In particular, we will focus on the implementation of the Toyota model and contrast it with the approach adopted by Ford. We will then examine GM-Holden as an example of a hybrid form of the Lean model.

Our argument will centre on Ford’s use of “Normative” control processes (e.g. peer pressure through teamwork, the role of the company as a part of the wider community, and their “consensual” approach to industrial relations) and Toyota’s use of “Rational” control processes (e.g. JIT, TQC, and their “adversarial” approach to industrial relations). Finally, GM-Holden will be presented as a company that is moving away from the “Normative” and towards the “Rational” model of control.

We also argue that these contrasting approaches to Lean Production reflect long-standing preoccupations associated with the unique political considerations within each of the companies in question. Significantly for this theme, these cases reflect particular manifestations of “power assisted steering.” This leads us to conclude that at the idea of a monolithic, epoch-making model of production belies a reality of diverse socio-technical strategies that can only be understood through a detailed study of the local political processes associated with organizational change.

POWER ASSISTED STEERING? - THE POLITICAL DIMENSIONS OF TECHNOLOGICAL CHANGE IN THE AUSTRALIAN AUTO INDUSTRY

INTRODUCTION

To many Australia is still a far away place about which they know very little and on first encounter there are a few surprises in store. The first may be that Australia has a viable auto industry at all! Indeed, it is well-established and highly internationalized; leading American and Japanese producers have had a long association with the country in terms of manufacturing. The Japanese have been known to refer to the Australian vehicle industry as a “bonsai” industry; small but well-developed in all its detail. This bonsai industry is hardly thriving but is, nevertheless, striving to make sense of the ideological and practical effects of Lean Production as an ostensibly universal model of manufacturing that predicts a convergence of technology, inter- and intra-firm relations, and management practice. In particular, the unique configuration of industry structure, industrial relations climate, and individual corporate interpretations of the Lean Production to be found in Australia suggest that we should look to political factors in order to gain to some explanatory purchase on the implementation of this model of techno-organizational change.

The discussion in this paper focuses on how these political factors have been played out over time, some of them in ways that may also come as a surprise to students of Lean Production, especially those who subscribe to the view that the auto industry has been transformed into an integrated, monolithic structure through the dual forces of economic globalization and the isomorphic pressures associated with “Best Practice” ideologies. In voicing our scepticism concerning the homogenizing power of Lean Production we are subscribing to Benders and van Bijsterveld’s (2000) argument that Lean Production gets implemented in different ways in different settings to such an extent that, ultimately, there may be little similarity between the actual model and those practices that claim to be based on it. This leads us to conclude that, although the ideology of Lean Production is often used to legitimate the initiation of organizational and technological change, our understanding of the ways in which change is enacted is better served by developing an appreciation of the “power assisted steering” associated with organizational politics (Buchanan and Badham 1999). Our way into this is to examine the cases of three auto plants in the Melbourne region: Ford, Toyota, and GM-Holden. Using classic dimensions of political analysis we explore how the implementation of local interpretations of Lean Production were played out in these settings. In particular we are concerned with matters of coercion and consent and power and resistance played out at individual and collective levels. Before we deal with these matters as they relate to each case, however, we provide some theoretical background in order to develop our position on the rise of Lean Production as a powerful ideological component in systematic programs of organisational change that seek to maximise the discretionary effort of employees.

LEAN DOWNUNDER?: CONVERGENCE TOWARDS A UNIVERSAL MODEL?

In an apparently “globalized” industry such as car assembly one might legitimately ask: Why don’t the pressures for the convergence of manufacturing practice outweigh contextual issues such as culture, industrial relations, or economic milieu? The most common response is that we should never underestimate the power of local effects to mediate in the implementation of “Best Practice.” The less common response, however, is that we may have overestimated the homogenizing power of Lean Production itself.

In the same way that others (for example, Hounshell 1984, Sayer and Walker 1992, Tomaney 1994) have questioned the universalism of Fordism or Taylorism (either together or separately), we shall argue that Lean Production has never exerted the influence that one might expect from an “Epoch-Making” model, at least in practical rather than ideological terms. By way of our basic intellectual instincts we are both necessarily wary of universalizing narratives and we will show that, in the case of the Australian auto industry at least, we should question whether any of the major manufacturers examined in this paper (Ford, GM-Holden, and Toyota) have adopted the Lean model in a systematic way that follows the predictions of its advocates.

Moreover, we will argue that the experiences of these producers in Australia are not indicative of a clean break with the past--what might be called the "Year Zero" approach of the more bellicose advocates of Lean Production. Rather, they should be seen as attempts to solve some of the perennial concerns of capitalist production--especially the indeterminacy of labour and the problem of control--in ways that reflect the unique histories of the organizations themselves. Thus, in the same way that Taylor's "One Best Way" (Kanigel 1998) was a flawed technocratic attempt to provide a universal solution to key problems of work organisation, Lean Production can be seen as yet another instance of the attempt to subsume work (and, of course, workers) under a totalizing instrumental rationalism (Sewell 1998). This is not to say that Lean Production is identical to Taylorism in either its practices or its outcomes, for Lean proposes a different way of managing labour to that advocated by Taylor. Rather, the salient point is that Lean Production is the latest of the systematic approaches to work organization in the auto industry that attempt to provide management with a unifying rationalism in the face of the perennial need to control the discretionary efforts of workers. Lean Production, however, faces the same problems that were encountered by earlier attempts to rationalise work organization such as Taylor's, namely the problem of ensuring workers compliance and consent to the regime of control employed in the factory. In this way, our preoccupation is with the exercise of power around the implementation of organizational and technical change that provides insights into the "power assisted steering" (Buchanan and Badham 1999) of programs that seek to maximise the discretionary effort of employees.

THE LEAN PRODUCTION MODEL AND LABOUR PROCESS THEORY: SOME THEORETICAL EXPLORATIONS

Why Nominal Autonomy and Control Coexist

Our theoretical starting point may seem quaintly old-fashioned. It is that Marxist critiques, especially Labour Process Theory (LPT), still have much to offer in furthering our understanding of the organization of work in the auto industry. This is because we believe that the central problematic of Marxist LPT--the indeterminacy of labour and, concomitantly, the perennial desire to reduce the gap between labour power and actual or executed labour--still has a good deal of relevance. We would, however, introduce one important caveat. It is this: orthodox (i.e. post-Bravermanian) LPT cannot easily explain the persistence of control and subordination in settings where there is a nominal reintegration of the conception and execution of work. Indeed, prima facie, work organization that eschews the standardisation and formalization of traditional manufacturing methods (for example, recent innovations in teamworking like Uddevulla's unitary production system) would seem to hold out the prospect of genuine emancipation under the orthodox LPT model in that it represents an apparent loosening of the "real" subordination of labour (cf. Adler 1993). This is because, under the orthodox approach to LPT, it is the indeterminacy of physical labour that is in question. In other words, the objective is to ensure that an individual worker expends an amount of manual effort that approaches the full potential of their labour power. But, as Boyer and Durand (1997) acknowledge, working "flat out" in order to maximize output under a nominally Fordist productive regime can be counter-productive. Where competitive advantage is sought through improvements in product quality or product/process innovation, the appropriation of workers discretionary mental labour becomes as important as the appropriation of their physical labour and the reliance upon one without the other many become counter-productive.

One way to resolve this anomalous situation whilst extending the applicability of LPT is to focus, not on the indeterminacy of physical labour alone, but on the indeterminacy of physical and mental labour combined--i.e. the exercise of skill and expertise; in short, "knowledge." Indeed, it would be fair to say that it is the indeterminacy of knowledge that most concerns us in this paper. Even in situations where there is a limited reintegration of conception and execution and where employees are expected to exercise their nominal autonomy for the benefit of the organization, a "double-bind of discretion" exists (Sewell 1998). This can be thought of as a trade-off between the benefits that might accrue from the act of ceding sufficient discretion to employees in order that they can apply their knowledge to problem-solving and the self-management of production processes, played off against the potential risks of that discretion being used to ends that may not align (or, at least, appear to align) with those of the organization. Thus, even under conditions of nominal autonomy some forms of organizational control are required to resolve this double-bind.

Refocussing the debate of LPT on the problem of knowledge, rather than effort, allows us to reevaluate the many recent discussions of workplace control. The debate has focussed on control in terms of its “Post-” or “Neo-” status--i.e. whether these developments represent a clean departure from ideal types such as Fordism and Taylorism or whether new work practices are heightened and intensified forms of well-established practice. These antinomies of “Post” or “Neo” are it seems to us, somewhat artificial as there are clearly elements of both in contemporary work organizations. There are continuities with the past in terms of the standardisation of job designs but also discontinuities in terms of the reintegration of mental and manual labour.

The “Post” and “Neo” sides of the debate have somewhat different levels of analysis underpinning their concepts of work organization. In what might be called the “Postperspective”--for example, Boyer and Durand’s (1997) Regulation School model--there is a macroscopic emphasis on the integration of organizations into a broader sociopolitical “Production Paradigm” of flexible mass production. The “Neoperspective,” in comparison, places a more microscopic emphasis on the practices of individual organizations.

Case studies of automotive work organizations that adopt this latter line of argumentation are alert to the potential for continuities as well as discontinuities to emerge in work organization. For example, Adler (1993) depicts NUMMI in Fremont, California as a plant where standardization and formalization go hand-in-hand with greater nominal autonomy and employee commitment. Similarly Prechel (1994) demonstrates that a good deal of potential ambiguity exists between the “Post” and “Neo” perspectives.

Whilst adopting a largely neo-Fordist approach, in a study of a US steel manufacturer, Prechel shows that some firms are able to adopt the flexibility associated with post-Fordist models whilst maintaining Taylorism’s characteristic separation of conception and execution. Interestingly for this paper, Prechel points to the importance of management of information as a crucial determinant of the likelihood of either the centralization or decentralization of managerial control being observable in contemporary organizations. Thus, although the steel manufacturer he studied removed several layers of hierarchy and achieved significant improvements in terms of flexibility, senior managers were still able to define the tasks of subordinates and monitor their performance.

Clearly, Prechel’s position with respect to the persistence of control under new forms of work organization is consonant with the one we adopt in this paper. We would, however, like to establish a subtle but important difference between “information” as a commodity to be collected, processed, and disseminated and our idea of “knowledge.” It is our position--one that is not, admittedly, particularly novel, having been extensively explored in other disciplines such as cognitive psychology (e.g. Gathercole and Baddeley 1993: *passim*)--that knowledge is a complex nexus that incorporates a number of explicit and implicit practices, cultures, routines, and modes of understanding (Sewell 1996a). Information, in contrast, is merely our crude attempt to simplify these complexities and is, as such, no more than a standardized and formalized approximation or representation of knowledge. Moreover, it is an approximation that, once inscribed, remains inflexible--i.e. it is impossible to standardize a process or write a rule that can account for every contingency (Collins 1986).

This difficulty explains the inherent limitations of Taylorism in capturing knowledge; the first of Taylor’s (1912) “Duties of the Scientific Manager.” Although Taylor was fully aware that employees were constantly exercising their knowledge, it was only rendered legitimate once it had been codified by the “Scientific Manager’s” techniques of measurement, enumeration, and representation. In this way, under Taylor’s scheme, managerial control always won out over employee discretion and autonomy but, due to the limits of Scientific Management, all the skill, ingenuity, and knowledge of the workforce could never be captured. Moreover, by rigidly imposing managerially defined norms of practice and performance, any deviation from this was dismissed as disobedience, even if it improved on these standards. Thus, minima were transformed into maxima and organizations became locked in to a static system of production that could only change when managers made some external intervention. To overcome the inherent limitations of this approach and to facilitate “continuous improvement” or “organisational learning,” forms of workplace control are needed that enable discretion to be exercised within strict limits imposed by the organization.

Recently a number of researchers have assembled empirical evidence which supports our observations on the unexpected coincidence of nominal autonomy and control; but a form of control that is likely to be, in the words of Tompkinson and Cheney (1982), “unobtrusive” and certainly less obtrusive than Tayloristic approaches. Barker’s (1993) discussion of Concertive control is already emerging as the locus classicus of this body of literature (see also: Barker 1999). He demonstrates that, as part of a reorganized workplace, teams can unwittingly participate in their own subordination, even in situations where they are deemed to have autonomy. We subscribe to Barker’s view that Concertive control represents an extension beyond Edwards’ (1979) three modes--i.e. direct, technical, and bureaucratic control. We would add the caveat, however, that the forms of control deployed to resolve the double-bind of discretion need not necessarily be novel. Indeed, although some--for example, workplace surveillance--may be based on new technologies, others may be well-established whilst others still may even be atavistic; a throwback to a pre-Modern age. Moreover, they may incorporate both material technologies of control along with elements of ideological integration or internalization.

Lean Production and Control

One implication of the previous section is that we do not have to prove “newness” to talk of control as a transformed phenomenon. In this sense, we are attempting to stand outside the Post/Neo debate. We would, however, reemphasize one perennial concern: in our view the very term “control” can be thought of as a convenient shorthand expression for the desire to subsume humans under a totalising rationalism. This view of a universal instrumental reason--if you will, an invocation of a Nietzschean Will-to-Power--can be identified in the works of the unfolding managerialist canon, from Ure and Taylor, through Mayo and McGregor, to Womack et al. and beyond. This, for us at least, is the defining characteristic of Modernity as it pertains to the industrial workplace. It is, however, a nuanced view for it is an instrumental reason that has manifested itself in many guises.

In seeking a way of organizing our own understanding of how this control imperative has recently been played out in the Australian auto industry, we deploy a qualified version Barley and Kunda’s (1992) discussion of “Normative” and “Rational” control rhetorics. Barley and Kunda’s (1992) basic thesis is that, instead of considering the “natural” progression of (American) managerial ideology to be one away from rationalistic forms of discourse (especially Scientific Management) toward more normative discourse that emphasises the ideological integration of labour (for example, the HRM and the “Corporate Culture” movement), we should consider a cycle that oscillates between the two poles depending on the prevailing economic conditions. Thus, at times, a discourse of rationalism driven by market pressures (for example, “efficiency” and cost-cutting) prevails whilst, at other times, a normative discourse driven by the need to engage employees (for example, unitary interests and “mutual gains”) is in the ascendant. Barley and Kunda add the important caveat that, although the rhetoric may change, it is still highly likely that control remains unrelentingly rationalistic in its enactment. As such, they see the cycle of discourse as attempts to resolve perennial antinomian tensions found in modern Western society, such as those between mechanistic and organic solidarity or communalism and individualism.

Our view is that these types of binary opposition are themselves elements of discourse rather than organic processes of society. It is also our view that Barley and Kunda do not make this important distinction clear enough and, as a result, we are cautious of representing Australian industrial history in these quasi-functional terms. Nevertheless, we propose to use their definitions of “Normative” and “Rational” control as taxonomic, rather than theoretical, categories that help us to convey the control activities of Australian auto manufacturers in the context of their responses to the influence of the Lean Production model. We shall have to leave our social theory to another paper and, from now on, we will concentrate on the story of Lean production in Australia in the light of these descriptive categories.

THE AUSTRALIAN EXPERIENCE OF LEAN PRODUCTION

The Australian Vehicle Industry

Australia has a long history of automotive manufacture with the Ford Motor Company commencing local assembly of the Model-T in 1925. Local manufacturing began in 1928 when Ford opened a purpose built factory at Geelong - the first Ford plant built outside of North America - to produce the Model-A (Ford Motor Company private archives). Whilst the locally manufactured Ford vehicles introduced innovations such as the body style utility, the first Australian designed vehicle did not appear until 1948 when General Motors commenced manufacture of the first Holden. General Motors had entered the local industry in 1935 through the acquisition of the local vehicle body builder Holden, but it commenced an assembly only operation and local manufacturing did not begin until after the end of the Second World War (Davidson and Stewardson 1975). The second locally designed vehicle went into production in 1963 when the first of the Ford Falcon range appeared. With the shift of GM-Holden to global vehicle designs in the 1980's, the Falcon remains the only fully Australian designed car in production. Australian vehicle manufacturers tried unsuccessfully (Hartnett 1964) to enter the industry but it continued to be dominated by the two big US firms and there was little change in the Fordist structure of the industry until Japanese manufacturers such as Toyota, Mitsubishi and Nissan entered local manufacturing in the mid-1970's (Edgington 1990).¹

The Fordist structure of auto assembly in Australia, where two US firms dominated a small industry focussed upon domestic production, began to unravel in the 1980's. The arrival of the Japanese and changes in Australian government policy towards the industry, led to a dramatic restructuring. The Australian state took upon itself the nation-building task of reforming the industry and integrating it with the new networks of global accumulation.

In 1985 the industry was protected by tariffs (57.5%) and import quotas (110,000 vehicles). Five vehicle manufacturers produced 13 different models with average production runs of less than 30,000 vehicles (Automotive Industry Authority 1986). The government sought to restructure the industry by removing quotas and progressively reducing tariffs. The government car plan sought to internationalise the industry by: a) encouraging the development of an export focus amongst vehicle and component manufacturers through the use of export incentive schemes; b) reducing model numbers through co-operation amongst manufacturers and the cross-badging of vehicles; c) increasing average production volumes to 100,000 vehicles; and, d) reforming employee relations practices to encourage the adoption of new work methods and new production practices (Automotive Industry Authority 1987).

Vertical Disintegration and Structural Change

The implementation of the new policies led to the spatial reorganization of the industry. The reduction in the number of models in production led to the closure of plants by the US firms and an investment in new production facilities by the Japanese firms. Ford and GM-Holden both closed plants and concentrated their vehicle assembly operations on a single site whilst Toyota and Nissan invested in new single-site facilities (Automotive Industry Authority 1987).

The vehicle producers' rationalisation of their production facilities was followed by the restructuring of their supplier networks. They also attempted to implement many aspects of "international best practice," such as producers just-in-time delivery, the transferral of responsibility for quality to suppliers, the introduction of "cost-down" policies, and the single sourcing of components (Berggren 1992, Jureidini 1991). The Toyota Motor Corporation, for example, was able to reduce its supplier base from 300 firms in 1988 to 100 firms in 1994 through the implementation of such policies (Langfield-Smith & Greenwood 1998:338). This continuing rationalisation of the manufacturing chain has seen the vehicle producers move towards "modular" production organizations with Ford, for example, selling off existing plants and developing a supplier park at their Broadmeadows site, to house first tier suppliers of modular systems. Fully built-up suspension units, trim units such as the dash and interior systems such as seats and climate control, are now delivered directly to work stations on the assembly line.

The shake-out in the component industry led to the closure of component manufacturing plants and the break-up of long established Australian component manufacturing groups such as the Hendersons group, but

1. A Melbourne firm had been importing and assembling Toyota kits from the 1950s. When Toyota eventually decided to establish a presence in Australia they did it by buying this assembly facility.

it also led to new investment in the sector as the US firms outsourced more of their component manufacture (Lynch 1996) and the Japanese established new joint venture firms. The component sector was increasingly being integrated into global supply chains as large multinational component firms entered the Australian industry (Berggren 1992).

This restructuring of the industry was driven through the extensive use of bipartite government-industry bodies and tripartite government-industry-union bodies (Bramble 1993, Jureidini 1991), a process which was widely criticised at the time for its corporatist orientation (Beilharz 1994, Stilwell 1986). Government intervention normalised the restructuring of the industry as a progressive act in favour of Australia's national interests.

Vertical Disintegration and Cellularization

If the new industry structures displayed some common features across the industry, the restructuring of work practices and labour relations within vehicle manufacturing firms took some very divergent paths. New production practices such as just-in-time (JIT) and total quality control (TQC) were adopted in very different ways, even within the same firm, and the management approach to employee relations varied from an emphasis on elements of normative control to approaches that stressed the use of rational controls.

The vehicle producers and component manufacturers had implemented JIT supply but this did not mean that they had all implemented internal JIT systems. The implementation of JIT control methods varied with firms using batch systems, manufacturing resource planning systems and hybrid push-pull systems (Sohal, Ramsay and Samson 1993). Not all firms used visual control methods such as Kanban boards, Heijunka posts and Andon boards. Only five of the thirty manufacturing firms surveyed by Sohal, Ramsay and Samson (1993), for example, had introduced Kanban systems.

The use of JIT was adapted to different ends in different firms but value-adding process redesign methods of cellularisation were more widely used. The US firms (Dawson 1994, Mathews 1994) and leading component manufacturers (Langfield-Smith and Greenwood 1998, Nichol & Sunderman 1993, Sohal, Ramsay and Samson 1993) adopted cellular plant lay-outs and introduced cycle-time reduction techniques such as lot size reduction, quick tooling changeovers and stock reduction.

Methods to increase the mobility of capital, to improve cash flows and reduce fixed capital, were widely implemented but this was not always associated with the full implementation of just-in-time. The disciplinary controls of JIT (Sewell 1996b) were not essential where normative control methods were used and these two aspects of JIT (the disciplinary control of labour and the improvement of capital mobility) should be viewed separately. They are combined in the Lean model but have been disarticulated in other models.

These efforts to improve the efficiency of production were complemented by efforts to improve the quality of cars and components. Quality control methods were widely disseminated but once again there were differences between the more normatively oriented approaches to quality management and the more rationally oriented approaches. In this case, in fact, these differences resulted in the institutional separation of the peak quality bodies in Australia with the Australian Quality Council (AQC) promoting employee involvement and organizational culture change along with the implementation of specific control techniques (Dawson and Palmer 1995) whilst the Australian Organization for Quality (AOQ) focussed almost exclusively on control systems engineering and quality certification (Nettle 1990).

The vehicle manufacturers all produced their own standards for supplier certification and also required suppliers to achieve ISO 9000 certification but beyond this, enterprise managements exercised discretion about the methods of quality management used in individual enterprises. The use of the broader organizational change elements that were promoted by the AQC varied from firm to firm. The implementation of process control techniques was mandatory but the ways in which continuous improvement and employee involvement were implemented were decisions for the individual firm.

Employee Relations

The differences in the adoption of just-in-time and quality management techniques reflected the different emphasis placed on rational and normative elements of control by different firms and this is further in evidence when we consider the differing approaches to the management of employee relations at the leading vehicle manufacturers.

In the mid-1980's, at the beginning of the industry reform process, the auto manufacturers in Australia sought to reform the conflictual industrial relationships that existed in the industry between management and industry unions (Bramble 1993, 1996). Long strikes at Ford (Lever-Tracy 1990) and at many of the component suppliers had given the industry a poor industrial relations record and with the support of government, the industry set about improving this.

Enterprise level consultative bodies were widely established (Marchington 1992) and the industry began to implement employee involvement programs. These latter programs, however, varied widely in their design. The North American producers, Ford and GM-Holden, who had established "Quality of Worklife" programs, sought direct, on-the-job forms of employee involvement, where all employees in a work area were involved in communicative, decision-making and problem solving activities (Bramble 1993 b, Simmons and Lansbury 1996, Wilkinson 1988). These participative groups met in normal work time and exercised some level of self-direction of their activities. The Japanese producers, in comparison, separated communicative and problem-solving activities, using work area groups to communicate with management and establishing specialised off-line groups such as Quality Circles to undertake problem-solving activities. The Quality Circle groups comprised employees from across many functional areas and met outside of normal work time.

The preference for integrated, on-line employee involvement or parallel off-line employee involvement reflected the relative emphasis that was placed on the use of rational and normative controls by different producers. Some emphasised the involvement of all employees in an attempt to change the adversarial industrial relations culture of the industry whilst others rationalised problem-solving and continuous improvement activities into specialised groups and employed more limited forms of employee consultation.

NORMATIVE AND RATIONAL CONTROLS AT FORD, GM-HOLDEN AND TOYOTA: Three Cases of Power Assisted Steering?

In order to examine the implications of the split between normative and rational controls it is useful to compare our three cases with the Lean model. It is our argument that these characterisations of normative and rational controls are consonant with the particular politics of lean production to be found in our three case study companies, thereby reflecting their status unique examples of "power assisted steering" in relation to technical change.

The reform of the vehicle industry in Australia has followed different paths in different enterprises. The new production practices and new employee management practices contain, as we have seen, both normative and rational elements and the relative emphasis on the normative or the rational varied from producer to producer. On the one hand Ford Australia can be seen as developing an archetypical system which emphasised normative control elements whilst on the other the Toyota system placed more emphasis on the use of rational controls. GM-Holden developed a hybrid system which shifts between the two models.

Normative Controls at Ford

Ford was an early entrant to the Australian auto industry and transferred classical Fordist production techniques to Australia when it commenced local manufacturing in 1928. When the company was faced with the Japanese threat in the 1980's, it sought to reengineer its production systems to incorporate lean production techniques and it sought to do this through the extensive engagement of employees in the change process. The change from mass production at Ford was marked by a heavy emphasis on cultural change within the company. Employees were to be recognised as the foundation of Ford's success and indeed recent corporate advertising in Australia promotes not the Ford product but the Ford people, the people who are so committed to their work that, in the words of the advertising slogan they "Live It". Ford people are "Proud,

Passionate and Way Out In Front” or so they are told in corporate training sessions. Ford sought a new unitary company culture through the reinvention of the Ford family as committed, autonomous, self-managing employees and whilst this reflected a new departure in terms of the Ford self concept, it also reflects a long standing interest in employee orientation on the part of the company, one that dates back to the Ford Sociological Department.

The emerging Ford Production System in Australia uses techniques such as JIT and TQC sparingly. Just-in-time has been used to reduce stocks at Ford by implementing JIT supply and JIT delivery but there is little use of internal JIT in the reformed production process. A large, variable batch production system is used and the rationalisation of batch sizes evident at Toyota is not apparent at Ford. Likewise, quality control systems at Ford are implemented and maintained by specialised quality personnel within each plant rather than by line operators, as is the case at Toyota (Cooney 1999).

When viewed in comparison to the epoch-making Lean model, the Ford system in Australia diverges from the ideal-type in several important ways. For example, there is little evidence of the spatial reorganization of the labour force. Direct Ford employees design, develop and manufacture Ford cars in Australia. Furthermore, there is little evidence of internal sub-contracting, outsourcing of key functions and only a limited reorganization of external supplier networks.

The production organization likewise is only moderately reformed along Lean principles. There is little evidence of the standardisation of production batches or of the use of internal JIT systems to eliminate waste. There is some use of JIT for the management of buyer-supplier relationships but even here Ford continues to multiple source components and switch suppliers on the basis of price.

On reflection Ford has not completely embraced the Lean model but it has chosen to concentrate on the labour organization and the development of the plant culture. What distinguishes Ford is the investment in people related activities. Ford provides an internal career structure for employees that reaches from operator level to middle management, with company sponsored training and qualifications available at each step along the way. Ford provides significantly more training than other firms in the industry and led the industry in the introduction of vocational qualifications for its employees (Cooney 1997).

Ford has also extended its employee involvement programs to encompass the formation of semi-autonomous work groups in its factories (Simmons and Lansbury 1996). These groups are larger and more heterogenous in composition than comparable work teams at Toyota and thus offer greater scope for job enhancement and employee multi-skilling. Employees at Ford participate in the election of their own group leaders whilst all team leaders at Toyota are appointed by management. The work groups at Ford meet more regularly and for much longer than do comparable groups at Toyota, since they deal with communications from management, work area decision-making, work area problem-solving and continuous improvement activities (Cooney 1999).

The emphasis on normative integration through employee development activities and teamwork at Ford and the lower priority given to rational controls over the production system itself, presents almost a mirror image of the situation at Toyota. Toyota relies extensively upon the use of rational controls. Just-in-time is extensively implemented in the factory with batch sizes and manufacturing cycle times being heavily standardised. The system is controlled by management through the use of kanban and andon with Toyota managers having their own mini-andon boards in their offices to monitor the state of the line. Quality controls such as Statistical Process Control are also extensively implemented with the concomitant standardisation of machine settings and work tasks. The rational control of all aspects of the production system – machines, tools and employee tasks – is in the ascendant at Toyota whilst there is less emphasis on employee development and normative integration through teamwork.

Rational Controls at Toyota

Toyota was a late entrant to the Australian auto industry, compared to Ford, and it arrived ready to implement the fully developed Toyota Production System. Toyota sought a simple technical transfer of its production system to Australia, to the point of even instructing Australian employees in the system using

Japanese terms. Where Ford sought continuous improvement, Toyota sought Kaizen and where Toyota used Kanban, Ford developed Smart Cards and whilst Ford emphasised the normative orientation of employees towards the company and the change process, Toyota sought the instrumental control of labour.

Toyota extensively applied lean production techniques, using the extensive standardisation of work tasks and the extensive monitoring of production performance, that is typical of Japanese work systems. Employees have little involvement in problem solving and improvement and direction about performance standards and targets derives exclusively from management.

Toyota offers only short career ladders in comparison to Ford with career progression only being applied within the band--i.e. operator level, trades level, etc. Toyota has fewer employee training programs and the work teams at Toyota have a communicative function only. These teams are small, homogenous and rarely have meetings. They exist to undertake production tasks with problem-solving and continuous improvement being the responsibility of the off-line Quality Circles. The Quality Circle groups involve only small numbers of employees and thus represent a very limited form of employee involvement. The Toyota system emphasises the use of rational controls over and above the normative management of employees.

In summary, Toyota conforms closely to the Lean model in terms of using extensive sub-contracting and single-sourcing components and it also has a production organization focussed upon the elimination of all waste through JIT. It does not, however, appear to be as successful in its pursuit of teamwork and the development of a unitary plant culture. In effect teamwork and participation at Toyota are used as an extension of rational controls. This accords with Benders and van Hootgem's (1999) thesis that Japanese-type teams are frequently just a means to an end--i.e. the implementation of Lean production in itself--rather than a force for greater workplace autonomy or empowerment. In the Australian context, a "Globalized" model of the Toyota production system has been imposed on the workforce with little regard for local custom and culture, nor for the uniquely Australian industrial relations milieu. This has led to a mis-match of norms that has impeded teamwork, participation, commitment and employee identification with the company's objectives. In reality, rather than recognising the constraints and opportunities posed by the local context, Toyota has tried to embrace Australia into the "Toyota Family" through a process of heavy-handed normalization.

If Ford and Toyota represent archetypes of normative and rational control then GM-Holden represents a mixed type, a producer in transition between the two, trying to overlay the new rational controls on a pre-existing normative model. General Motors has tended to be more eclectic in its approach to work organization than other vehicle manufacturers with NUMMI (Adler 1993) and Saturn (Rehder 1994), for example, representing quite different approaches to the renewal of a mass producer and quite different approaches to the question of control. The same dynamic is evident in Australia with NUMMI trained managers rationalising the production system at some plants whilst indigenous managers focus on cultural change at others (Dawson 1994). This combined and uneven development of normative and rational control within GM-Holden represents a further adaptation of the Lean model to Australia, albeit one less studied and less well understood than those represented by Ford and Toyota.

From Normative to Rational Controls at GM-Holden

When we compare Holden to Ford and Toyota a number of interesting observations can be made. Holden has rationalised its supplier networks in line with the Toyota practice of single-sourcing but not with the same degree of uniformity across the whole group. Holden, for example, separated its engine manufacturing plant as an independent company with complete autonomy over its production organization and buyer-supplier relationships. This plant was seen as a test bed for the Lean model, to be judged by international benchmarks. If successful the intention was to sell it off as a separate concern but of recent times the plant has been brought back into the Holden parent group and the sub-contractual arrangements between GM-Holden and the engine plant have disappeared.² This suggests that Holden's commitment to the Lean model is experimental and that past practices may be making a return to favour.

2. Indeed, it seems that the apparently 'unexpected' success of the engine plant was so impressive that Holden reevaluated its strategy of selling off the plant.

Holden, unlike Ford or Toyota, does not pursue a unitary strategy of normative or rational control that places the emphasis on either, preferring a pragmatic balance of the two depending upon the local context. For example, at the vehicle assembly plant in Elizabeth, South Australia, normative controls are pursued in much the same way as Ford. Instances of this would include participation through teamwork within the plant and involvement in the local community. In contrast the Fisherman's Bend facility in Victoria, which includes the engine plant and technical centre, uses extensive cellularisation and adopts work practices that closely resemble those of NUMMI at Fremont in California (Adler 1993). In our view, this pragmatic and piecemeal implementation of the Lean model reflects General Motors' historical use of the multi-divisional form that enabled each division to adopt strategies and practices in an autonomous manner. At the moment GM Holden appears to be at a cross-roads and it remains to be seen which path they will take, moving closer to a universal Lean model or continuing a localised approach takes into account the unique operating environments of their main Australian plants.

CONCLUSION

The adaptation of Lean Production to Australia represents something of a disappointment for those seeking evidence of a homogenous transformation wrought by an epoch-making model of production. Yes, the new practices and techniques associated with Lean have been taken up by all Australian producers but no, this has not led to a convergence of either production practice or forms of work organization. Rather what we can see is the playing out of the different dynamics of control – the rational and the normative – in answer to the problem of the indeterminacy of labour. We would re-emphasise, however, that this concept of indeterminacy should be expanded to include a labour process that involves a limited reintegration of mental and manual labour. Lean production has not solved the problem of control by providing a totalising management logic; rather, it has raised the question of management control in a new way by demanding that management control both the physical and the intellectual efforts of workers, the skill and the knowledge of workers. The ways in which the new conditions of control have been affected by Lean are just beginning to be understood and the Australian experience provides some interesting case studies of this dynamic at work.

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