

Martha Roldán

1 INTRODUCTION

At the beginning of the 1990s, a labour process perspective has been incorporated into new theories of economic growth, crisis and possible 'ways out of the crisis' of the 1970s and 1980s. The labour process - a long-established sociological interest - has become a fundamental element in theories of the transition from the old to the new paradigm of industrial production. Various theorizations of this transition are on offer.¹ The transformation of the industrial labour process, sometimes referred to as 'soft' or 'social' technological innovation, has come to be recognized as a key element in competitiveness and as a promoter of new regimes of capitalist accumulation on a world scale.

The incorporation of 'soft' technology as an endogenous factor in models of growth, recession and economic crisis is a milestone in these studies since it makes clear that determinist and reductionist positions have been abandoned and debate opened up to an interdisciplinary perspective. In spite of differences between them, the various viewpoints on transition argue, in effect, that the relationship between investment and productivity growth is not simply a technical relation between machines and output, but that it depends on the dynamics of the production system. The dynamics arise from the general context of production techniques and work organization dominant in a particular period (Marglin 1990; Glyn, Hughes, Lipietz and Singh 1990). According to the latter authors: 'Such an excursion beyond what is conventionally regarded as economics into the spheres of industry organization and sociology is, we believe, essential to a rounded account of patterns of growth' (Glyn, Hughes, Lipietz and Singh 1990: 40).

The articles by Marglin and by Glyn *et al.* contained in Marglin and Schor (1990) illustrate one possible application of Regulation Theory to the investigation of the historical conjuncture of institutional

factors which made the 'Golden Age' of post-war capitalist development possible. These factors included macroeconomic structures, the production system, the means of coordinating these first two areas, and an international order characterized by American predominance. The interrelation of these factors prevents one single cause of the exceptional performance of the period being identified. The same is true of the crisis and breakdown of the same system. However, for the purposes of this analysis, the exhaustion of the Taylorist and Fordist models which characterized production in the 1950s and 1960s are highlighted as prime causes of the crisis.

The spiral of decline began with a fall in productivity growth, which affected the level of economic surplus, the rate of profit of companies and, therefore, investment. The novelty of this focus was that the decline in the rate of growth of productivity was attributed to social rather than technical factors. Capitalist production is based on a cooperative conflict: between the structurally antagonistic interests of employers and workers and the necessity of renegotiating some accommodation or compromise in the short term in order to allow production to proceed. This process is crucial for productivity, but at the present time Fordism and Taylorism do not guarantee the degree of labour commitment needed to raise productivity. As a result, a 'solution to the crisis' requires a restructuring of the capital-labour relation as a precondition for beginning a new stage of sustainable economic growth.

What characteristics will these new productive systems have? Although Marglin and Glyn *et al.* are cautious, the majority of the Regulation School² are optimistic: labour relations will be harmonious and cooperative, and only high levels of skill and control by labour will secure high-quality, efficient production (Stankiewicz 1991). To summarize the argument briefly, both Marglin (1991) and Glyn *et al.* (1990) argue that full employment and high growth

¹ For example, neo- or post-Fordism (Aglietta 1979; Lipietz 1987), post-Taylorism (Stankiewicz 1991), Flexible Specialization (Piore and Sabel 1984), Lean Production (Womack, Jones and Roos 1990),

Systemofacture (Hoffman and Kaplinsky 1988) and the move from Just-in-Case to Just-in-Time (Sayer 1986).

² The use of Regulation School terminology, and in particular of

can be achieved in the central economies, but only if policy-makers recognise the need to restructure the productive system and **simultaneously** restructure the mode of regulation, macroeconomic structures and the international order. Without this, even though worker motivation and productivity gains are obtained, capitalists are unlikely to respond to increased profits by raising levels of accumulation. For the latter to occur, action has to be taken at both the national and international levels. The complexity of this task perhaps explains the importance given by the Regulation School (and other theories of transition) to inter-disciplinary studies - economics, sociology, anthropology, politics and psychology.

In Latin America, social scientists have not yet responded to the call for interdisciplinary work, and perhaps for this reason no coherent and systematic response has been made to the challenge of the theories of transition, even though they are of interest for theoretical-academic reasons and because of their clear political and labour movement dimensions. It is true that various pioneering studies have brought to light empirical evidence and theoretical reflections on the implications of adopting and adapting new organizational technologies and, in particular elements of Just-in-Time, in specific sectors of industry in a number of Latin American countries.³ However, a wider debate on the labour process and possible 'solutions to the crisis', would require truly multi-disciplinary inputs, the development of a regional perspective and consideration of the interests of labour (men and women). This is still awaited in Argentina, although it may be beginning in Mexico and Brazil (Neffa 1990, 1991; Novick and Palomino 1992).

Marglin (1990) and Glyn *et al.* (1990) should not be taken to indicate unrestricted support for its principles. The author agrees with the criticisms made by Brenner and Glick (1991), but recognizes that a revised Regulation Approach is a useful starting point for the analysis of the current international situation. There is no single perspective on the theme of transition within the Regulation Approach. The positions of Freysinnet and Stankiewicz can be contrasted in the collection edited by the latter, for example. Both differ from Marglin *et al.* (1990), which is the main point of reference in this article.

³ A description of JIT is given in Section 2 of this paper. Important contributions to the debate in Latin America include, among others, Salerno (1985), Hirata (1991), Fleury (1990), Novick (1988; 1991), Novick and Levigne (1989), Novick and Palomino (1992), Vispo and Kosacoff (1990), Carrillo (1990) and Diaz (1989), in Brazil, Argentina, Mexico and Chile respectively.

⁴ This broader vision allows consideration of both the nature of industrial restructuring currently taking place in Latin America and elaboration of alternative public policies embodying principles of social ethics.

1.1 Micro Studies, Macro Environment and Gender Perspectives

This paper argues that two crucial axes of argument need to be developed. Firstly, in the face of the neo-liberal offensive and the growing internationalization, deregulation, polarization and impoverishment of the region's economies, the debate on new productive systems and their institutional frameworks is crucial.⁴

Secondly, there is a need for feminist social scientists to contribute to the development of a new view on these questions before a new body of male-centred knowledge becomes consolidated. Why should feminist social scientists investigate organizational innovations in the factory? For one clear reason - every model of the labour process has its own distinct managerial logic, its own type and level of technical skills at plant level and its own industrial relations system. The incorporation of women into world manufacturing is usually associated with the Fordist assembly-line model,⁵ although the real degree of rigidity of female assembly lines is open to debate, particularly in small- and medium-sized firms. Investigations around the New International Division of Labour (NIDL) (Frobel *et al.* 1979) have shown that women are given light, repetitive, short-cycle assembly tasks, requiring a high degree of manual dexterity and visual concentration. Women are also found working on machines, but they are not involved in their maintenance and preparation. In other words, they do not have access to the technical knowledge of the skilled trades. The economic and political gains which firms derive from 'cheap' female labour and the use of aspects of gender are a central focus of the literature on the NIDL.⁶

⁵ The incorporation of women into assembly-line processes obeys a gendered management logic, although union organization and women and men themselves at plant level generally assist in this process. From the firm's point of view, the employment of women results from gender differences arising outside of work which make female employment more profitable. This may be due to lower wages and benefits offered to women, or their greater productivity ('nimble fingers') or both. The economic logic is complemented by a political logic of control. Because of women's real or presumed docility, patience and lack of union experience, they are seen, at least in management ideology, as a more easily manipulated labour force than men. See Benería and Roldán (1987) and Elson and Pearson (1984), among others, for an elaboration of these points.

⁶ Feminist intervention in the debate focuses in general on the 'feminization' trend without exploring in depth the assumed features of the capital-labour relation as such. It accepts rather uncritically Braverman's notion of de-skilling as a mechanism for labour control. I refer to these issues in Roldán (1992b, Ch. 1).

The emergence and diffusion of new forms of production such as JIT has totally undermined the view that there is an irreversible tendency towards the NIDL, based on the increasing transfer of unskilled, labour-intensive manufacturing processes from the central countries to the periphery. Recent research has shown that the multiple sourcing strategy, which sought out cheap female labour in peripheral countries, is only **one** of the possible ways in which industry can evolve at the present time. As Schoenberger (1989: 100) argues, the NIDL model assumes that competitiveness and profit depend ultimately on product costs alone. While competition based solely on price is inevitable in some markets or for some types of commodities, this is clearly not the case for high quality, highly-varied products aimed at niche markets, where consumers are both demanding and volatile. For transnationals, in particular, company strategy can involve more than the NIDL. They may seek to invest close to final markets in central countries so as to capture key segments of the market and overcome protectionist barriers. This is what Japanese and non-Japanese transnationals are doing - investing in other central countries and basing their production on adaptations of the JIT system. This requires a skilled and flexible labour force.

Faced with these new labour processes (which our countries are adopting or should be adopting in the future) as the strategy for escaping the crisis, there are questions that need to be asked: 'How do we, as women, relate to this process? Will it incorporate women into the labour force in the same way as the NIDL did? What are the implications for gender dynamics outside of the factory? Under what conditions, in what type of firm, in what sectors, and **with what capacities and technical knowledge** will women be employed? And, if women are not found in the dynamic, internationally-competitive industries, why not? And what strategies can we map out to respond to the challenge facing us?'

Developing an interdisciplinary, feminist intervention in the debate on transition involves taking on a difficult theoretical and conceptual challenge. In the first place, the relation between class and gender is almost entirely absent in the debate on new productive forms. Standard representations of Taylorism, Fordism, Post-Fordism, Lean Production etc., assume that male and female workers are involved in

them equally. The analysis of organizational forms proceeds on the basis of a 'unisex' universe operating according to exclusively economic or political class logic. The way in which this logic is operationalized in a society divided by gender hierarchies and the consequences this has for gendered variants of the productive system are not investigated.

Given this male-centred approach, social technologies are analysed exclusively in terms of the capital-labour relation. The lack of 'gender-awareness' (Elson 1991) in the micro-analysis of factories and in the analysis of transition limits and distorts our perspective. It prevents effective strategies for struggle being implemented by all the workers affected negatively by restructuring. The alternative perspectives arising from feminist studies question the generality of types of production characterized as normal or usual and throws light on less well-known or 'invisible' types of production which are involved in the current transition but have no place in the dominant discourse about it. Rediscovering the invisible and evaluating its role in restructuring is an essential activity for our understanding of the processes of transition and for the development of alternative policies aimed at achieving not only social equity but gender equity as well.

In this article, some examples of JIT innovations in Argentinian manufacturing will be presented. The article has three further sections. Section 2 describes some elements of JIT. Section 3 puts the debate in the Argentinian context and comments on some findings from studies which give emphasis to the construction of gendered skills. Finally, Section 4 examines some of the implications of the factory analysis and relates them to broader processes of regulation and deregulation.

2 SOME PRINCIPLES OF JAPANESE JIT/JER/TQC⁷

Before presenting the research findings a brief description of Japanese techniques is in order.

2.1 General Principles of JIT and its Supportive Context

The terms JIT/JER, combined with TQC, refer to a set of interdependent practices related to manufac-

⁷ For definitions of JIT and TQC, see the Appendix to the Introduction to this Bulletin. JER means Just-Enough-Resources and it derived from Fucini and Fucini (1990).

turing labour processes, supplier and customer relations, skills, industrial relations and production control. This set of practices is regulated by external social and economic conditions. One aspect of JIT is highlighted by Sayer(1986: 53): 'the essence of the JIT system is that work is only done when needed, in the necessary quantity at the necessary time' (1986: 53).

A second and perhaps most important aspect is the elimination of waste (*muda* in Japanese). This means using the 'minimum level of equipment, materials, components, space and labour time' (Suzaki 1985: 8). As a result, a JIT/JER system has no reserves of inputs or labour to cover for disruption, accidents, etc. A basic principle for the effective application of JIT/JER is kaizen - the permanent search for new ways of eliminating waste and improving production. As a result, a JIT/JER process is never static. It is dynamic and always being improved.

The TQC principle requires separate quality control departments to be abolished and control of quality to be carried out within the production area. Each work station is simultaneously a point of quality control. This is essential. JIT means delivery of parts when they are needed and **without defects**.

The effective functioning of JIT/JER/TQC requires sets of mutually reinforcing internal and external conditions. Internally, JIT requires a reduction in lot sizes (see the Introduction to this Bulletin). JIT production is most efficient when flows of material are simple and straightforward. This is mainly achieved by means of production lay-outs which require multi-tasking or multi-skilling of labour. Such labour can rotate between jobs and carry out quality control and preventive maintenance. This leads to a high degree of intensity of work.

A key external condition for JIT is the establishment of tiers of sub-contracting firms. JIT production needs frequent delivery of small quantities of products of guaranteed quality. A further major external factor is the regulation and coordination of the State. This is seen clearly in Japan, where the State implements long-term economic and industrial policies.

2.2 The Economic Rationality of JIT/JER/TQC

Firms seek a number of economic advantages from JIT implementation. Summarizing briefly, these include:

- more efficient use of capital. JIT cuts down work-

in-progress and the costs associated with storage and materials handling;

- better quality and productivity. Reductions in buffer stocks and lot sizes and application of kaizen principles improve quality and productivity. Sayer (1986: 53) summarizes the process as follows:

The reduction of buffers therefore not only reduces inactive capital but stimulates a continuous learning process. Indeed, ideally, the production process never becomes entirely standardized and the 'learning curve economies' continue long after the learning curves of orthodox firms have levelled out

- flexibility in meeting customer demands. Production in small batches allows companies to respond rapidly to customer orders. This flexibility is an important element of competitiveness;
- multi-skilled and flexible labour allows companies to improve efficiency through collective learning and adaptation to changing circumstances;
- group pressure imposes discipline on workers. Work teams control their own members, even to the point of controlling absenteeism (Fucini and Fucini 1990: 137).

2.3 The Logic of Discipline and Control in the Japanese System

How can 'soft' technologies such as JIT be reproduced and transformed across space and time? This is a hotly-debated topic, with one side stressing the influence of religious and cultural factors and the other preferring secular and historical explanations. JIT practices, taken together, are only sustainable if the workers and management identify much more strongly with the company than is the case with Just-in-Case production (Fordism). This requires very low rates of turnover and long periods of training, which in Japan is recompensed by life-time employment for workers in leading companies. It also requires unions (if they exist) to accept functional flexibility (see Introduction) and rotation between jobs. This is very different to the rigid job demarcations characteristic of Just-in-Case. In return, the employers guarantee stability of employment, and peaks in production are dealt with by compulsory overtime, temporary employment and certain types of sub-contracting.

The empirical evidence suggests, therefore, the importance of a range of factors varying according to each different industrial context. The wage relation is particularly important, however, and it is based on a scheme of benefits for employees (health and housing plans), payment according to seniority, profit-sharing (in some cases) and high wages in the larger firms. The active cooperation and discipline of labour is also obtained by means of an extremely rigorous selection process in which firms seek (i) inexperienced, 'green' labour without a history of union militancy or labour struggle, (ii) workers who have recently finished secondary school or university, and (iii) workers coming from rural areas. All of these factors make workers vulnerable to the exercise of informal, diffuse and paternalistic forms of control.

2.4 Centre and Peripheral Workers and the Uses of Gender

The JIT/JER/TQC model is based on a dual economy in which workers in central firms receive high wages and stable employment, while the same benefits are denied to workers in peripheral firms. This consolidates segmented labour markets. According to Godet (1987) it is estimated that less than 30 per cent of the Japanese labour force falls within the privileged category - enjoying high wages and stable employment. Similarly, in peak periods, production targets are achieved by using various forms of 'numerical flexibility' - overtime, subcontracting and temporary labour. The security of male workers is based on the insecurity of the many workers in large firms with temporary contracts and workers in smaller, subcontracting firms.

Generally speaking, the theorists of JIT systematically ignore the gender dimensions of the Japanese system. It is important to stress that aspects such as life-time employment and non-monetary benefits are only extended to the (male) workers in large companies. As Sayer (1986) comments, the objective is to obtain low absenteeism and 'responsible' workers, which is achieved by recruiting people who are not distracted by domestic obligations. In a patriarchal setting, this means a preference for men. Women are marginalized by central companies and are generally found in peripheral enterprises.

3 DE-INDUSTRIALIZATION AND RESTRUCTURING IN ARGENTINA 1976-1992

The period has two distinct parts: 1976-1990, characterized by stagnation and relative deindustrialization, and 1990-92, when expectations of rationalization and modernization were raised as a result of the 'change in the rules of the game' imposed by the Menem government.

In the first sub-period, generalized social repression and economic and financial liberalization undermined the dynamism of the manufacturing sector, even though they did not fundamentally modify the regulatory scheme of the import substitution stage (Beccaria 1992). The metal-mechanical industries declined in importance, while sectors intensive in natural resources benefited from special support. At first, the new policies raised the profitability of individual firms, but then the negative effects of opening up the economy became apparent: falls in output as import penetration grew, a fall in internal demand, unused capacity, and the dismantling of engineering and design facilities. The failure of this policy culminated in a severe recession in the early 1980s, which increased indebtedness among employers and led to the flight of capital abroad and serious balance of payments problems.

The new democratic government in 1983 was, therefore, faced with industrial decline, external indebtedness, inflation and balance of payments problems. With high international interest rates and big falls in the prices of agricultural exports, the Alfonsín government (1983-1990) had little room for manoeuvre.

Under the current government of President Menem, who took power in 1990, drastic policy measures have been taken to 'clean up the economy' and honour external commitments. In doing this, the mode of regulation of the economy has been altered. The government's economic team argue that the removal of barriers to the full and free operation of markets will create the conditions required for a new stage of accumulation. The solution to the crisis is for local economic agents to compete in an open, unprotected domestic market and, therefore, to invest and restructure in accordance with the standards applying in global markets. So far, however, there has been no growth or productive investment.

Inflows of capital have been directed to the purchase of privatized State companies or short-term financial operations, while the most powerful sectors of industry, represented by the Union Industrial Argentina, clamour both for further deregulation in order to increase labour flexibility, and at the same time for new restrictions to help them confront intense competition with Brazil arising from the Mercosur agreement.⁸

The State has also dramatically reduced its resource allocation role. It has not only abandoned much of its productive role, but also abandoned guaranteed provision in the areas of health, education, housing and pensions. These policies, together with a decade-long stagnation in production, have led to increases in unemployment, underemployment and precariousness of employment and living conditions for broad sections of the population.

4 JIT, 'SOFT' TECHNOLOGIES AND THE GENDER DIVISION OF LABOUR

The analysis presented here is based on two continuing investigations being carried out on innovation and gender dimensions in contemporary Argentinian manufacturing. One of these, already completed, focuses on a light engineering company in the filters sector (Roldán 1992a, 1992b). The second, still in progress, consists of a series of studies of various industries in the areas of Buenos Aires, Córdoba, Misiones and Santa Fe.⁹ In this article, examples will be taken from the steel, light engineering, plastics and electronics sectors.

The different factories studied can be categorized according to their gender composition:

- Exclusively Male: more than 95 per cent male production workers;
- Predominantly Male: 75-95 per cent men;
- Mixed: over 25 per cent men and women;
- Predominantly Female: 75-95 per cent women;
- Exclusively Female: over 95 per cent women.

The presentation here will summarize some of the research findings, paying particular attention to the

issues of skill, given that gender hierarchies in the labour process are fundamentally, although not exclusively, constructed around skill. Skill in this context has both socio-economic and symbolic dimensions.

Precise data on the degree of diffusion of JIT/JER/TQC in Argentinian manufacturing is not available, but there is evidence that some adaptations of these new production systems have been introduced right across industry (see Note 3). It can be argued that there is a consistent and gendered variation in organizational forms which spans the whole spectrum from, at one pole, functional flexibility and 'high-level' JIT, to crisis JIT at the opposite pole, with variants of 'low level' JIT in between.

4.1 Functional Flexibility and 'High-level' JIT

Firms at this end of the spectrum have adopted, or intend to adopt all, or nearly all, of the characteristics of the Japanese model. There are limits, however, to what can be achieved in Argentina, particularly with regard to subcontracting and JIT supply with guaranteed quality. High-level JIT is seen in transnational and large Argentinian firms which have a clear strategy for growth and competitiveness in external markets based on international technical and quality standards. They seek multi-functional working, continual training, with labour being considered (in management discourses, at least) as a productive resource, and not merely a cost. Wages in these establishments are higher than those determined by collective agreements and the local union branches do not oppose management strategy. Such firms are a minority element in current restructuring.

In private steelmaking, an exclusively male sector (as defined above), at least two cases of high-level JIT can be found, one of which will be described here. It is a subsidiary of a transnational, specializing in making seamless steel tubing and exporting 90 per cent of its production. The company has incorporated microelectronics and information technology into most of its processes and adopted many elements of JIT. While inputs are not supplied on a JIT basis, lot sizes have been reduced, as have buffer stocks of raw materials and parts. The firm is

⁸ The Mercosur establishes freer trade between Argentina, Brazil, Paraguay and Uruguay.

⁹ The study includes firms in the steel, motor components, electronics, plastics, tobacco, textile and light-engineering sectors (Roldán 1991,

1992a). This research was carried out with financial support from the Canadian IDRC.

increasing its use of JER (Just Enough Resources) and is making considerable and continuous efforts to introduce TQC principles. Quality control is being incorporated into the production process and separate inspection jobs eliminated. Jobs have been enlarged and enriched, with the integration of both quality control and maintenance activities into the work of production operatives.

The labour force in this case of high-level JIT has high levels of formal training and general education. Individuals are expected to be flexible and be able to respond rapidly to new working methods and frequent changes in jobs and departments. New entrants to the firm must have completed a minimum of secondary education in a technical school, and 5,000 people enter the Training Centre every year. Specific courses may be designed to meet the needs of a particular person or job.

The firm has an overwhelmingly male labour force. Out of a total labour force of 4,700, only 124 are women. These work mainly as secretaries, nurses and in certain administrative tasks. The firm does not foresee any change in the existing sexual division of labour, and the management representative interviewed could not imagine any valid reason for contemplating such a change. Nevertheless, it is possible that the old, non-automated processes demanded certain physical efforts that women, had they been invited to undertake them, would have preferred not to make. This restriction does not apply after the introduction of new computerized technologies.

4.2 Low-level and Crisis JIT

The majority of plants studied occupied points on the continuum from high-level JIT through to low-level, even crisis, JIT. The firms concerned had been used to a protected internal market. With the opening up of the domestic market, and in particular the reduction of import tariffs, they have been obliged to undertake some form of restructuring. These firms are making only limited use of JIT techniques and methods, adopting 'common sense' equivalents of some elements of the JIT model as a means of survival. Extreme cases of this strategy are referred to as 'Crisis JIT'. The competitive strategy is based not on sophisticated product quality but rather on reducing costs without investment. The functional flexibility implanted in these firms is merely an

extension of that previously existing, with workers taking on a wider range of tasks requiring less skill (hence the term 'low-level' JIT). The workers earn the minimum wage established by contract for the category and the trade unions concerned are not consulted.

A number of cases illustrate this process, with variations according to the gender-composition of the labour force. Firms with mixed labour forces show different tendencies to those with predominantly female or wholly female labour forces. The plants with mixed labour forces will be considered first.

4.3 Plants with Mixed Labour Forces

Two cases of small- and medium-sized firms will be considered: one firm produced plastic bags, the other industrial filters.¹⁰ Although both plants had mixed labour forces, they were undergoing a clear process of masculinization. The two plants had incorporated new products as part of their strategy to cope with the crisis and had introduced elements of JIT. The research found production in smaller batches to customer orders (a reflection of falls in demand) using JER methods, the partial application of kaizen and waste elimination principles, worker responsibility for quality and reduction in set-up times. New relations with suppliers were just beginning to develop, although tiers of subcontractors were not evident. Both firms had brought engineering staff and production managers closer together. They had also introduced multi-tasking and job rotation, but in neither case were women and men equally incorporated into the rotation of jobs.

The plastic bag company had two plants, using similar equipment to extrude plastic and make bags. In the older of the two plants, the traditional sexual division of labour persisted. Women had the more sedentary jobs on the bag-making machines and were paid as unskilled workers, while the men, who were younger, looked after the extrusion machines and rotated the jobs of machine-minding and supplying raw materials. The management argued that while it had no intention of making any of the women redundant, if a woman worker decided to leave of her own accord she would not be replaced. The work would be incorporated into the jobs of the male extrusion machine operators as part of the process of introducing functional flexibility.

¹⁰ For further analysis of the second plant, see Roldán (1992b).

In the newer plastics factory, functional flexibility was already in operation. Men alone were responsible for each set of extrusion and bag-making machines. At peak times, they constantly rotated between jobs. The worker in charge of the extrusion machines continues to be responsible for the most skilled elements of his old job - classified as Grade Three. This includes monitoring automated machinery and occasionally using his knowledge of chemistry and electricity obtained in technical school. But in addition to this he has to operate the bag-making machine, previously operated by a woman.

In the factory making filters, a similar process was taking place. Male workers formerly performing only highly-skilled, Grade Three, tasks were also taking up Grade One tasks, such as sweeping floors, and Grade Two tasks formerly carried out by women. The latter tasks included the operation of winding machines, which had been the main female work in the plant. The firm plans to phase out the old sexual division of labour and in future, if product development allows it, to hire only men, of whom a 'desexed' complete functional flexibility would be expected. At present, training in all three factories mentioned is carried out in-plant, although men are hired with some technical training which is later complemented by training on-the-job.

These developments do not mean that the women remaining in the filter plant are not themselves functionally flexible. However, their flexibility involves rotating between Grades One and Grade Two jobs. They operate machines, but they are not involved in preparing or setting them. Women have no access to the electromechanical technologies which are important for the company. At the same time, a certain functional rigidity of male labour remains. The firm does not believe that it can rotate men between jobs in such a way that they can perform highly delicate manual jobs in which women retain the 'advantages of their sex'.

It is worth asking why in both firms all workers are not included equally in functional flexibility and why there is a tendency for masculinization to take place. The functional flexibility required involves various degrees of technical competence, including machine preparation and maintenance. Women do not have this type of technical knowledge. The economic logic of the firm indicates that, for the moment at least, it is better to integrate less skilled jobs in male work than to invest in the training and

skilling of women. Wage differentials are a further factor. Men are rewarded at Grade Three for carrying out a series of tasks at Grades One, Two and Three. If women were trained sufficiently to undertake Grade Three jobs, the firm would find it difficult to avoid increasing their wages to above the current unskilled wages for Grades One and Two jobs.

There is a further aspect to this logic. The crisis, unemployment and underemployment so evident in the late 1980s has allowed firms to employ men at lower wages than before. They are also more 'docile' and more inclined to accept with apparent goodwill jobs formerly done by women and unskilled workers. Companies are now able to insist that skilled workers sweep floors or unload machines in a way that they never would have dared to before.

4.4 An All-Female Plant in the Electronics Industry

This company, which produced alarm systems for banks and high-income residences, was a latecomer in the field of industrial restructuring because the Argentine banking market has only recently started to contract. As part of the process of gearing up to compete in a more competitive domestic market, the company has introduced some product innovations and new marketing strategies, and it has also revamped its managerial and technical staff. For the time being, however, it has only just begun to implement organizational changes at workshop level.

Like the other industries studied, this firm has experimented with some elements of the Japanese model, such as stock reduction, but it has not attempted a full-scale adoption of the Japanese manufacturing system. The women in the factory assemble circuit boards using simple tools, but their work is not organized in 'lines' as in most other electronic plants. Women specialize in two or three specific alarm systems, and the assembly of any given batch may take from one week to one and a half months. Quality control takes place in a different department and is carried out by a group of technicians led by an engineer.

The new production manager, an electronics engineer, does not plan to radically innovate workshop organization, at least for the time being. He knows about Japanese techniques but considers that if he were to implement TQC he would have to train women and this would be expensive. However, the same management has started a new way of rotating

circuit-board assembly so that in future each woman operator will know how to assemble all the different models. This new rotation does not involve any additional technical training for women workers, only the ability to follow different lay-outs on the same boards. The same manager explains that rotation is advisable because in this fashion all women will be ready to complete any model, working on any order that may come along.

In brief, given that production in this electronic plant consists entirely of assembly jobs, and given that women are very efficient workers, no new gendering of the labour force is presently being considered. In such a situation, JIT application in the productive sphere may be delayed or not applied completely, because it would involve either (i) giving some technical education to the all-female labour force, to enable women to incorporate some sort of TQC; this is not impossible, but costly; or (ii) trying a different 'gendering' of the labour force, by first firing all the women, still a costly procedure in Argentina and complicated by seniority, and then hiring men with technical skills. This would only work if they can be made to work as productively as women assemblers, tied to a work bench putting together components for nine or ten hours a day.

5 CONCLUSIONS

5.1 New Production Systems and Their Gender Dimensions

While a limited number of case studies cannot be extrapolated to the whole of manufacturing, it seems plausible to conclude that many firms are experimenting with their own versions of JIT/JER/TQC along the lines described in this paper. A few firms are taking the 'high road' to JIT, while the majority do no more than maintain their market position or merely survive by means of low-level or crisis JIT. In other words, a largely-ignored process of industrial restructuring is underway. A number of 'paths' of peripheral industrial restructuring are being taken, corresponding neither to Fordism nor to the Japanese model. A range of options is open, varying according to sector, size of firm, nature of the product, market (domestic or international) and competitive strategy (price or quality). This last factor is associated with the gender composition of the work force.

The continuing implantation of variants of JIT, from high-level JIT through to 'crisis JIT', is creating a new

multi-skilled, masculine working class, with its own internal segmentation into centre and periphery. To the extent that firms adopt 'soft' technologies and their associated functional flexibility, women will lose their former comparative advantage - based on low wage costs, high productivity in manual jobs and docility - to men who can perform preventive maintenance, quality control work and other functions in addition to basic production work. If things continue as they are, women will become even more confined to peripheral activities and peripheral firms. A lack of technical education will prevent them from entering 'high-level' activities. Men are much more likely to take over jobs formerly done by women than vice versa.

It should also be pointed out that firms using JIT/JER need a labour force with low levels of absenteeism and a willingness to work overtime at short notice both during the working week and at week-ends. As a result, irrespective of the skill question, firms will tend to hire men. This enables them to avoid the 'unpredictability' of women's reproductive and domestic responsibilities and also avoids conflict with male workers and trade unions over mixing male and female workers. Protective legislation works against women in this area. The right to be absent for reasons of menstruation and the right to maternity leave are in conflict with the maximization of the benefits of the Japanese model. Finally, it should be stressed that in a continuing climate of crisis, unemployment and underemployment, skilled, flexible male labour can be paid low wages and kept under strict control.

The process of transition to new productive systems is clear in general terms, but there is a core of uncertainty which defies the theories currently in vogue. A multi-faceted strategy involving employers, the State and unions is required and it should have as its basic condition the full and active involvement of the people worst affected by it - working women.

5.2 Bringing the Labour Process into Models of Solutions to the Crisis

The cases described above show the role played by soft technologies in various strategies adopted in response to crisis. Restructuring enables the stronger high-level JIT firms to compete internationally. Low-level JIT firms may overcome the recession, gain a minimum of stability and maintain prospects for a

return to 'normality', or even renewed growth in the future. However, the prevalence of peripheral varieties of JIT underlines the limits of Argentinian restructuring in terms of international standards of competitiveness.

In Japan the JIT/JER/TQC system was developed in large firms favoured by a protected domestic market and was stimulated by a macro-regulatory environment which simultaneously promoted competitiveness, growth and the conquest of external markets. A variety of labour discipline mechanisms were also instrumental in the achievement of this goal. In Argentina, the institutional and economic environment has been almost diametrically opposed to this and constitutes a fundamental obstacle to any strategy resembling that adopted in Japan.

Firms have managed to make significant changes in their production systems, raising productivity and obtaining the necessary compliance from labour without having to make concessions over the control of the labour process or increasing real wages. Fear of unemployment and, in the past, outright repression have played a crucial role in labour control. Change has been accomplished without the institutional mechanisms which would encourage growth with equity. In a situation of increasing deregulation of markets and no industrial and technology policies, few firms, except transnationals and large, consolidated local enterprises, are willing or able to invest in either modernization of equipment or training. The State is not fulfilling its role either in the distribution of social resources or in the promotion of industry and education.

In our view, a debate is required urgently on new production systems and their related institutional frameworks. Such an inter-disciplinary debate would help to throw light on both the situations of national economies and also the many links these economies have at both intra-regional and inter-regional level. At the same time, it would be conducive to the development of alternative public policies aimed at promoting social equity.

Once again, however, it must be stressed that the moulding of a set of social and economic forces which can promote growth with equity must involve interventions which are gender-sensitive. Such an approach would help to eradicate the male-centred approaches to restructuring described in Section 1 above. If this is not done, the solutions to the crisis and the trade union strategies based on them will be more attuned to the interests of men than women.

The final aim of feminist analysis must be to 'degender' post-Fordism, Flexible Specialization, etc. It is essential to do this, because current interpretations of the crisis and solutions to it have an influence on policy. At present, discourses on JIT and its relation to Regulation Theory have not solidified - there is still time to prevent interpretations based on male experience being taken as objective and neutral. Achieving this involves political as well as theoretical work. Competing with male-centred models will not be easy. Rediscovering gendered history involves power relations and is part of the struggle for a more equitable society.

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