Industrial Restructuring: Some Questions for Education and Training

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There is widespread recognition amongst observers of industrial activity that the industrially advanced capitalist economics (IACs) are now experiencing an historically significant process of restructuring. Inevitably there are differences in emphasis in this recounting of economic transition, with some observers ascribing the dominant changes to long waves of technological innovation, others suggesting that the core transition is that between standardisation and flexible specialisation and yet others believing that the key phenomenom is the emergence of systemic technologies and forms of social organisation.[1] Which of these various views is correct — if indeed they represent alternative rather than complementary perspectives — is for the moment not relevant. But what is germane is that they all identify a similar sea-change in the way in which work is being organised, and consequently in the forms of education and training which are most appropriate to the maintenance of any particular pattern of economic and social accumulation.

At present these debates on industrial restructuring and on changes in education and training are largely confined to the IACs. Yet the implications for developing countries are equally relevant and perhaps even more important. There are a variety of reasons why this is so. For example, this radical transition may prove to be problematic for those countries with a long industrial history in which the social infrastructure which has evolved is now inappropriate. The prospects for what has come to be called 'leapfrogging' are thus high on the policy agenda.

In this short contribution the intention is merely to map out the nature of these changes in the organisation of work and to identify some of the major implications for educational and training policy. In so doing it is hoped that this 'challenge' to development educationalists will be met, perhaps by disputing the significance of change or by denying the validity of these opportunities being perceived by industrial economists. On the other hand it is possible that somewhere a sympathetic chord will be struck and that innovative policy responses might subsequently emerge.

Clearly the argument can only be put at the most general level here — for detailed clarification of the nature of these observed trends, readers are referred to the works listed at the end of this article and to the bibliographies cited therein.

Changes in the Organisation of Work in the IACs

One way of mapping the extent and significance of change in industrial work-practices and organisation is to begin with a brief recounting of the central features of the previously hegemonic paradigm. This can be usefully characterised in relation to six aspects of the capitalist labour process. The first, finding its impetus in the early years of the industrial revolution, involved the ever-widening division of labour and the specialisation of tasks. Next came the separation of skilled from unskilled work, so that the latter could be performed through the employment of easily replaceable labour from the reserved army of the unemployed. This was followed in the first half of the nineteenth century (the onset of the machine age) by the mechanisation of the skilled components of production. Then, towards the end of the nineteenth century, F. W. Taylor developed a systematic procedure for the detailed supervision of labour and the specialisation of middle management. In the fifth stage Henry Ford refined this system and vastly increased its productivity by superimposing the moving production line on this labour process, making the detailed labourer the instrument of the machine rather than the skilled manipulator of tools in production. And, finally, this streamlined capitalist labour process was extended to the global level, finding its high point in the employment of cheap, unskilled and predominantly female labour in export processing zones in the Third World. It is this which has come to be called the New International Division of Labour.

In this form of productive organisation, labour can be seen as one of the major costs of production. Since the nature of competition is one in which relative costs are of dominant importance, the desire to tap low-cost pools of labour was of dominant strategic significance. Hence the phenomenom of labour intensive export-oriented industrialisation, based upon the comparative advantage of surplus population in many developing countries.

[1] For a discussion of these three sets of theorisation, see Hoffman and Kaplinsky (1988), Perez (1985) and Piore and Sabel (1984).

Over the years a system of education and training evolved to support this paradigm of production, especially in the quintessential leading economies of the USA and the UK. Four particular characteristics are relevant to this discussion. First, the system recognised the polarisation of skills and concentrated on producing a narrow stratum of trained people. For many teenagers in these economies, education has assumed an irrelevant and sometimes even antagonistic character and is something to be endured before transition to adult life and, if lucky, finding an unskilled industrial job. Second, it adjusted to the increasing division of labour by specialising education and training, not only in disciplinary-based educational establishments, but also in industrial apprenticeships. Third, the ideological component in training was centred on the individual and personal growth — creativity rather than group cohesiveness was emphasised. And, finally, the emphasis on wage-cost competitiveness placed the focus on the interchangeability of labour so that the pool of unemployed could consistently hold in check any upward drift of wages — labour turnover and mobility was thus in some respects an integral part of the organisation of production.

After the late 1960s this previously dominant paradigm of production began to experience a variety of problems. Some were endogenous to this very labour progress which had evolved over the years and which now found itself beset by industrial action, poor quality products and a labour force which was trained not to care about production. (In the words of Henry Ford's direct successor, 'The average worker wants a job in which he does not have to put in much physical effort. Above all, he wants a job in which he does not have to think'.) In other respects the problems which arose were exogenous to this capitalist labour process. Its regulatory regime had begun to break down and the macroeconomic conditions for sustained accumulation began to disrupt the high productivity growth-rates which the world economy had experienced after 1950.

But it was really only the old industrial centre which found itself faced with a significant slowdown, and even here there were striking exceptions. Not only did Japan and the East Asian NICs perform relatively well but so too did industrialised economies such as Sweden, and parts of Italy and West Germany which had a long history of craft-based and educationally-intense production. Thus a new capitalist labour process has begun to emerge, one which many of the most advanced firms in the older industrial countries such as IBM, Ford and Hewlett Packard are trying to emulate, but one which educational policies are much slower to recognise.

This change involves a radical disjuncture in the labour process and has the following relevant central features. First, instead of seeing labour as a cost of production which has to be minimised, labour is seen as one of the primary resources in competitiveness. This is associated with a fundamental transition in the nature of competitive conditions in which product innovation and quality have become factors of primary importance. The consequent transition from the production of standardised to differentiated goods has led to a growing emphasis being given to flexibility, and for this to occur, the inherited emphasis on the division of tasks has had to be jettisoned.[2] But for multi-tasking to prevail, it is essential that detailed labourers also be multi-skilled, and this is a further distinguishing characteristic of the new labour process. Moreover, Taylor's precepts of hierarchy and the separation of conception from execution are also being rapidly jettisoned, and much attention is being given to two-way flows of information and the development of group-based skills and orientation.

All of these tendencies find their expression in the attitudes of management towards their labour forces. Multi-tasking and multi-skilling are the order of the day, and more generally workers are being paid for what they can do rather than what they do do. Flexible agreements between management and trade unions are becoming increasingly prevalent, and payment systems are being geared to take account of group-dynamics. Finally, because of their investment in multi-skilling, many firms are concerned to limit the mobility of their workers even though they are aware that this might mean an enhancement of real wages and an improvement in working conditions.

What is especially interesting and challenging about these developments in education and training is that these changes are not confined to detailed labour and to blue-collar workers. They are equally prevalent in industrial management, and as agriculture and services become increasingly 'scientised' there are also signs that a similar trend is emerging in these sectors.

From all this it is apparent that the inherited programme of training and education is beginning to shift in a variety of radical ways. Individual firms are placing greater emphasis on training, and in a multiplicity of skills. Education systems are beginning to adjust as well. For example, in Japan most universities now teach mechatronics rather than electrical and mechanical engineering. A highly skilled and stable labour force is becoming a dominant characteristic of many of the most successful firms, sectors and economies. But what is most evident is a sense of ferment and multidisciplinarity, and despite the fact that the precise forms through which these changes can best be accomplished are still unclear, the IACs are experiencing a radical change in philosophies towards training and education.

[2] For an analysis of these links between multiskilling and flexibility, see Kaplinsky (1988).

Policy Implications for Education and Training in LDCs

As we have just observed, there is as yet not a great deal of solidity in the educational and training systems which are emerging in the IACs. But despite this there is now widespread recognition that the inherited system which may have been appropriate to the dominant labour process in the previous era of capitalist industrial development is no longer appropriate.

What are the implications of all this for the Third World? Should educational and training planners not be responding to these developments in a proactive rather than reactive manner? The purpose of this short contribution has not been to lay out a path of policy response, for that is beyond my competence as an industrial economist. But surely the challenge should be taken up by educational planners?

As a passing shot in this challenge to educational reform it is useful to finish with two observations drawn from the experience of industrial economics. The first is that many empirical studies have shown that the primary productivity gains in the IACs are now coming from the adoption of new work-practices and organisational changes, rather than from the purchase of expensive imported equipment.[3] Many of these new ideas are relatively easy and cheap to acquire and to diffuse so that arguably there are real opportunities open to developing countries in the next stage of industrial development. And, secondly, the adoption of this new capitalist labour process is often affected by the pattern of social relations which prevails. Countries with a history of relations which evolved to meet the needs of the previous paradigm of industrial development sometimes find it difficult to make a successful transition — in the jargon of the field, greenfield sites are easier to establish than to turn around brownfield sites. If this is true, developing countries are faced with a relatively unique opportunity to change the pecking order of industrial development. This occurs seldom, and probably only at junctures of radical technical change. It is an opportunity which should not be missed. Thus the onus on education and training policies in LDCs — especially in the context of a transition from an order emphasising labour as a cost of production to one seeing it as a primary resource of production — is manifest.

[3] See Hoffman (1988) for a review of this evidence.

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