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**New Forms of Work Organisation in Ireland
An Annotated Bibliography**

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NEW FORMS OF WORK ORGANISATION IN IRELAND

AN ANNOTATED BIBLIOGRAPHY

I INTRODUCTION

The key question being addressed in this paper is whether, and/or to what extent, new production, organisation and industrial relations initiatives, approaches or systems have been introduced in the Irish economy. The research for the paper was undertaken in the context of an OECD project on local economic development in Ireland. Prof. Charles Sabel visited Ireland in the late autumn of 1995 in order to obtain material for this OECD project. Having looked at various central, regional and local state-sponsored initiatives to encourage economic development, the main area in relation to which he was unable to find answers was the one which forms the title of this paper.

As an industrial economist/sociologist, Prof. Sabel has published widely on such topics as flexible specialisation, industrial districts, and regional economies.¹ His work, unlike that of many other industrial economists, incorporates both the firm and the broader industrial sector or sub-sector. This type of combined focus is necessary, for example, in the analysis of industrial districts, which are product-specific, local groups of flexibly specialised firms. Sabel's work has been important in this respect, in that such factors as the internal organization of firms, and the nature of the relationships between firms - and the institutional environments in which those relationships develop - are increasingly argued to be prerequisites for success.²

Among the empirical developments most clearly imposing on academics the need to focus both on the internal structures of firms and the relationships between firms, are such techniques, processes and systems as Just in Time (JIT), lean production, concurrent engineering, Total Quality Management (TQM) and - the term that seems to incorporate all the others - World Class Manufacturing (WCM).³ In general these are new ways of thinking about organizing firms and relationships between firms that are actually practised within many - mainly medium and large, multinational manufacturing - firms.

¹ Piore and Sabel (1984) was a seminal contribution to the literature; Sabel and Zeitlin (1985), Sabel (1989), Sabel (1992) and Sabel (1994) are, among others, articles by Sabel that give evidence of continuing and developing interest.

² This area of economics combines the Coasian and Schumpeterian traditions. See, for example, Best (1990), Porter (1990) and Chandler (1990).

³ For clear definitions of these terms, see Hodgetts et al. (1994).

Adopting elements of WCM is neither a necessary nor a sufficient condition for success. Elements of WCM are often adopted in order to solve specific problems. A manager may aim to reduce inventories through JIT, reduce rejects through TQM, or reduce the power of unions through team-based organization. This partial, problem-specific adoption of elements of WCM rather than a path to success, is often a last gasp attempt to survive. Hayes and Pisano (1994) argue that such problem-specific focus is a contradiction of true WCM. Underlying WCM is a "strategic flexibility", involving the development of skills and capabilities to switch focus rapidly and reorganize continually. This suggests that what we might call a 'cherry picking' approach to WCM, in which an attempt is made to introduce only those elements that management considers to be appropriate for its needs, without considering the broader, systemic implications for the firm - and its buyer and supplier firms - is inappropriate and not really WCM.

II THE PROBLEM

How can the extent to which new forms of work organization have been adopted in Ireland be estimated? A purist approach would be to count the number of firms that have achieved - or are on the way to achieving - WCM in its most complete form. The difficulty with this approach is that it is not always clear whether a firm is a WCM firm. Are we to set a series of objective criteria and measure the firm against them?⁴ This is inadequate because of the dynamic element of WCM; if WCM necessarily involves the ability to change rapidly, for example between concurrent engineering during a period of market growth, and low-cost production during a down-turn, then it is impossible to tell during a period of stability whether the firm is world class. Are we to ask key managers whether their company is a WCM company? This is inappropriate because it is not objective. World class status may well, in any case, be aspirational, not something that is ever achieved but constantly aimed for. Managers that consider their organizations to be world class, are thus likely to be far from it, at least in the pure, Hayes and Pisano (1994), sense.

A more feasible approach is to identify a number of possible indicators of progress towards WCM, and through a combination of methods obtain an estimate of the extent to which these indicators are evident in Ireland. Such methods could include literature and field surveys, a census of firms and the Delphi method.⁵ The present

⁴ Osterman (1993) is an example of a study of this kind, which attempts, among other things, to estimate how common "workplace transformation" is in the United States.

⁵ The Delphi method uses panels of experts, first to suggest answers to questions, and then to respond in a number of phases to the aggregations of those answers. For a formal use of Delphi in the assessment of issues in manufacturing, see Malhotra et al. (1994).

study adopts the first of these, basing conclusions on an examination of all available literature and data.⁶

III LITERATURE SURVEY

There is a vast amount of material on World Class Manufacturing (WCM) and all its associated “hard” and “soft” constituents. Much of this material, however, focuses on theoretical situations, descriptions of new production, organisation and industrial relations in Japan or in America, and the advantages that might be derived by adopting the new approaches here. Some studies, again of a more theoretical nature, have focused on causation, attempting to identify why and how new forms of work organisation have developed. Where descriptions of actual situations are provided, they are usually based on small numbers of case studies; generalisation or extrapolation may be inappropriate. We are concentrating here on the literature on actual implementation in Ireland.

World Class Manufacturing was being introduced into Ireland from as early as the second half of the 1980s. The Proceedings of the 7th (1990) National Conference of the Irish Production and Inventory Control Society show that in the vanguard were mainly American-owned companies like Power Conversion Europe in Youghal (Brennan, 1990), Abbott Ireland in Sligo (Chrystal, 1990), Apple in Cork (Corkery, 1990), Northern Telecom in Galway (O’Grady, 1990) and Thermo King in Galway and Dublin (Smyth, 1990). It is virtually impossible, however, for WCM to be introduced in isolation. JIT, for example, of necessity involves close interaction with suppliers, and if a firm has a Total Quality Management system in place, then this requires that its suppliers do, too. So, increasingly, Irish firms supplying Irish subsidiaries of WCM multinationals have had to introduce WCM as well. During the late 1980s, for example, Higgins Engineering in Galway developed into a JIT, high quality supplier of manufactured components in order to maintain its approved supplier status with Thermo King (Higgins, 1990).

Following this first group of mainly American firms, subsidiaries of multinational firms continued to constitute the main focal points of new forms of work organisation but these innovations also began to be introduced into Irish firms, including state-owned

⁶ Suggestions both as to what should be read and who should be spoken to in the context of this literature survey, were provided by a Steering Group set up by NESC. The Steering Group was made up of WCM experts from the following organizations and disciplines were represented: IBEC, ICTU, SIPTU, Forfas, Forbairt, Department of Enterprise and Employment, and academics from UCD (HRM) and Trinity (WCM). Representatives of NESC were also present, and the NESC Secretariat administered the process and provided secretarial assistance.

companies like Bord na Mona, for purposes other than to meet the requirements of multinational industrial buyers. Among published work in Ireland on significant inter- and intra-firm organisational change and/or WCM-type developments, most common are studies of individual firms and/or case studies of a small number of firms.

Examples include Faughnan (1992) on autonomous work groups in Bord na Mona, ICTU (1993) on new forms of work organisation in twelve (mainly foreign-owned) manufacturing firms, Jacobson and O'Sullivan (1994) on buyer-supplier alliances and new technology in the software manual printing industry and Hurst (1994a) on the introduction of concurrent engineering in a foreign-owned electrical goods manufacturer. There are a number of studies of Microsoft, including Fynes and Ennis (1994), and Keegan and Lynch (1995, Appendix 1).

In relation to public authority interventions McCall (1995) summarises some of the results of Forbairt's WCM programme, and Murphy (1995) provides details of two models of networks aimed at servicing the needs of small and medium enterprises (SMEs).

Survey-based research of relevance is less common. There is little or no such research on comprehensive WCM, new forms of production and organisation, changes in organisation structures, buyer-supplier or supplier-supplier alliances in Ireland.

There are a number of studies in which the focus is on an element or issue related to WCM, including FitzGerald and Breathnach (1994) on technological innovation in Irish manufacturing, Breathnach (1995) on R&D in the business sector, Sinnott (1994) on customer service, Hurst (1994b) on product development performance in Irish engineering, Roche et al (1993) on quality practices in Connacht, Woodcock (1994) on changes in management accounting systems arising from the introduction of advanced manufacturing technology, and the work of the European Foundation for the Improvement of Living and Working Conditions (e.g. Frohlich, et al, 1993 and Gill, et al, 1993) on attitudes to, and impact of, new technology.

A study of 25 Irish SMEs, pre-selected on the basis of existing international links (Martin, 1995) is somewhere between a survey and case studies. It also includes two case studies, one of a UK-Ireland licensing arrangement and the other of an Irish-Italian joint venture. Killian (1994) similarly based his study of the impediments to modern production management systems in SMEs on a multiple case study approach.

Perhaps the most comprehensive single source on the extent to which WCM has been introduced in Ireland, based mainly on literature review and the authors' experience, is Roche and Gunnigle (1995). In the same vein, but focusing on a categorisation of the industrial relations aspects of the changes, is Roche (1995).

All the above, and a large number of other studies which contribute to but do not provide the answer to the key question with which we began above, are listed in the annotated and categorised bibliography that follows. (Note that the categorisation is of necessity somewhat arbitrary, as it is in the nature of the types of changes that we are describing that they impinge in all parts, at all levels within and between firms.)

In addition there are a number of examples of developments in relation to which - usually because they are too recent - written work is not yet available. These include:

- 1) Five indigenously-owned SMEs involved in the production of printed circuit boards (PCBs) in the Shannon region have formed an alliance or group in an attempt to strengthen their hand in negotiations with the larger, usually multinational, buyer companies.
- 2) There is an electronics industry association in Cork which seems to constitute a cluster of both buyer-supplier and supplier-supplier alliances. The firms cooperate closely in various ways. This cooperation is maintained by monthly meetings of the managing directors of the firms. They have formed a small number of groups, the focus of one of which, for example, is WCM. Some aspects of this cluster were covered, from the Apple point of view, in a presentation at a conference by Malachy Moynihan (1994).
- 3) SIPTU is undertaking, under the ADAPT programme, a project to introduce cross-functional teams into the Union's system at the branch level. Under Des Geraghty's leadership, this project aims to create a "world class union".

Following the bibliography and based on that bibliography and on discussions with others who have knowledge or experience of WCM in Ireland, there will be a conclusion.

IV A CATEGORISED, ANNOTATED BIBLIOGRAPHY

Industrial Relations

ICTU (1993): *New Forms of Work Organisation: Options for Unions*.

A study of new work organisation initiatives in twelve manufacturing companies in Ireland, nine subsidiaries of MNCs and three indigenous firms. The deepest and most advanced forms of new work organisation were found to be in subsidiaries of MNCs. In only one of the Irish firms were the initiatives “sophisticated”, with management-employee relations characterised as “co-operative with a high degree of trust”. One of the other Irish firms may be moving in this direction from the category: “limited” initiatives and “positive but suspicious” management-employee relations. The consultants, having reviewed union responses in Germany and Sweden recommended that unions adopt a generally positive attitude to new work and organisation initiatives, the particular approach to be determined on a company by company basis.

ICTU (1994): *Managing Change: Review of Union Involvement in Company Restructuring*.

A general review of management and union attitudes to change with recommendations on appropriate policies for unions. Emphasises both positive - competitiveness, improved service, devolution of control, etc. - and negative - fewer secure jobs, more casual and part-time employment, etc. - aspects of new forms of work organisation. Identifies the importance of the replacement of “pluralism” by “unitarism” in modern management thinking and recommends that a new industrial relations framework be developed to respond to this. Also recommends intensive training in new forms of work organisation or WCM, and a national programme of information and awareness for union members.

Roche, William K. and Patrick Gunnigle (1995): “Competition and the New Industrial Relations Agenda”, in Brian Leavy and James S. Walsh, eds. *Strategy and General Management: An Irish Reader*, Oak Tree Press, Dublin.

Following a discussion of the how competitive pressures (particularly in the private sector) and the European Union (particularly in the public sector) have influenced a re-thinking of Irish industrial relations among managements and unions, the authors

discuss responses under four headings: flexibility, quality management initiatives, employee involvement and participation and the role of trade unions.

Flexibility: There has been an increase in “atypical” (part-time, temporary and sub-contract) employment in Ireland in recent years; there have been a few “multi-skilling” initiatives, particularly in the engineering industry (though in practice these are usually “extra-skilling”); there are even fewer examples of “complete flexibility”, one such involving the agreement between Analog Devices and SIPTU in Limerick; many pay increases have been given in return for agreement on “flexibility”; pay systems remain largely conventional, with performance-related pay common only at the managerial and professional categories; there have been many cases of concession by unions on work practices and conditions, but few in relation to pay cuts; in relation to both, unions have rarely obtained concessions in return (employee shareholdings in Aer Lingus, for example). All these forms of flexibility are increasing, but on a piecemeal basis “in reaction to depressed labour and product market conditions...”

Quality initiatives: Traditionally low levels of trust between managements and workers make the implementation of quality initiatives problematic. JIT and TQM, for example, require active and cooperative workforces. Referring for evidence to ICTU (1993), the authors write of a change from opposition to acceptance of the inevitability of TQM. However, "there is little evidence that the new managerial concern with quality has resulted in any radical restructuring of work and industrial relations practices based on a shared concept of 'partnership'. Cases like Aer Rianta, where quality initiatives did impact on traditional practices, and Analog Devices, where quality and flexibility are associated with non-traditional forms of industrial relations", are unusual.

Employee involvement and participation: There are a number of examples of this in Irish companies, but progress "remains piecemeal and the pace of change again appears to be slow". "Instances of greater or lesser degrees of actual or attempted direct union involvement in broader business decision-making can be found, for example, in ESB, Telecom Eireann, Waterford Crystal, TEAM and Analog Devices. But these remain brave experiments in a realm dominated by adversarial collective bargaining and a managerial posture that seeks to marginalise unions from major decisions on company business strategy. Frequently, unions themselves remain satisfied with their marginal status..." The scope for union involvement may be least

in relation to Irish branch plants of multinationals, greater in the case of Irish firms with subsidiaries abroad, and greatest in Irish firms, and, in particular, those in the public sector (Worker Participation Acts).

The role of trade unions: The proportion of non-union companies - mainly US-owned greenfield manufacturing and service companies - has increased in the last decade, and is likely to continue to do so. This may reduce the power of unions at the central level. Added to this are the problems of atypical employment. One result is that when unions do attempt to broker change, they are accused by some members of doing managers' (or the State's) jobs. Nevertheless, ICTU and some key unions like SIPTU and AEEU, have been responding positively to the new managerial agenda, for example holding seminars and conferences on WCM. Unions have proactively promoted "partnership" in some major companies like ESB, Telecom and Bord na Mona. ICTU (1993) and ICTU (1994) show that there is support for WCM, but also that there is awareness of the risks to unions and their members.

Roche, William K. (1995): "The New Competitive Order and the Fragmentation of Industrial Relations in Ireland", Address at IBEC Annual Employee Relations Committee, November.

This paper begins with a summary of the evolution of industrial relations in Ireland up to the beginning of the 1980s. Through convergence across sectors, in firms and in institutional frameworks, the system had become consistent with the adversarial model. This was reinforced by centralised pay bargaining. Since then, a change in the intensity and nature of competition in the private and public sectors has challenged the adversarial model, and there has been divergence and fragmentation in industrial relations. The author identifies four models "now evolving in Irish practice".

The Non-Union Human Resource Model: There is a 'core' of employees and a 'buffer' of part-time, temporary and contract workers. The core employees are subject to excellent conditions, often including performance based pay, profit sharing and share ownership. This model prevails in increasing numbers of mainly US electronics firms, which have innovative ways of structuring jobs and organising work. This model is being seen as an appropriate one for banking and finance.

The `Partnership'/New Industrial Relations Model: Management and union are involved in traditional collective bargaining over pay and conditions, but move beyond this in genuine partnership to develop business and product plans, and the redesign of production systems. There is in this model often commitment to flexibility, and performance based pay systems. It is in place in various companies, both Irish (including particularly state companies like Bord na Mona) and US companies like Analog Devices and Syntex. The N-UHRM is usually introduced ab initio, the P/NIRM is often introduced in response to competitive crises. The P/NIRM has support from ICTU and SIPTU, and the `Partnership in Enterprise Unit' in the Department of Enterprise and Employment.

The Deregulation Model: This is a managerial dominance model, in which management insists on maximum flexibility in labour recruitment, deployment, etc. In this model union recognition is resisted, or if there is already recognition, union influence is minimised. This model is prevalent in SMEs, and, recently, in some large firms as well, e.g. retailing (Dunne Stores). See also Packard Electric. It is like the N-UHRM without the latter's positive aspects. It is attractive to SMEs, as evidenced in their call for exemption from labour legislation.

The Adversarial Model: "Unions and managements remain wedded to adversarial relations across a wide spectrum of industries". This model includes instances of `cherry picking' from the list of aspects of the new IR. It is most common in naturally protected markets and mature product markets. It is also likely to survive in the parts of the public service not affected by EU competition policy.

Of these four models, the author seems to consider the deregulation and adversarial models to have the highest incidence in Ireland. The N-UHRM is common in US multinationals that have come to Ireland since the beginning of the 1980s, particularly in the electronics industry, and the P/NIRM is in some multinationals, some major indigenous companies and some state companies.

The paper concludes with three arguments for broad public intervention to ensure the general adoption of `post-adversarial' industrial relations:

- 1) that good practice on the part of individual enterprises will not necessarily succeed or spread. "Good practice needs to be incentivised and ways found to diffuse innovations beyond the companies in which they originate";

- 2) that the major potentially competitive industries in Ireland have traditional, adversarial IR, and for that potential to be realised, new IR must be introduced. But the core IR institutions, the Labour Relations Commission and the Labour Court, are orientated towards the adversarial model, and the potential. Both industrial and training policies ignore the role of working practices and IR in the new competitive order. “[W]hat seems to be required is a focused programme of policy supports and incentives geared to fostering the partnership/new industrial relations model”; and
- 3) that the three tripartite programmes on pay, economic management and social policy since 1987 have not assisted in diffusing innovation in IR at the level of the firm. Ways must be found in national agreements to encourage these innovations.

Wickham, James (1993): *New Forms of Work in Ireland: An Analysis of the "New Forms of Work and Activity" Data Set*, European Foundation for the Improvement of Living and Working Conditions, Dublin.

Although the data set is now out of date - for more up to date information see Forfas's 1994 Employment Survey (also Roche and Gunnigle, 1995) - the conclusion may still be relevant. Wickham's conclusion is that while non-standard work can meet needs of both employers and employees, in Ireland the main reason for the introduction of non-standard work "has been the needs of employers". However, he puts this in context by pointing out, among other things, that where the choice is between non-standard work and no work, non-standard work is preferable.

SIPTU Research Department (1995): "World Class Manufacturing: A Survey of Industrial Relations Implications of WCM and Related Developments", SIPTU (internal document). (Note: where companies names are mentioned in this summary, the source is *Industrial Relations News*.)

Since 1991 there have been WCM, or WCM-type developments with industrial relations implications in some 50 companies - the majority being subsidiaries of multinationals. These include:

- i) relatively non-contentious, open negotiations of a “partnership” type between management and employee representatives (Thermo King, Galway IRN 41/92);
- ii) attempts to “buy” WCM/flexibility by payments, increases in wages, etc., sometimes successful, sometimes not. (Many examples of both; included in the survey are 24 companies that introduced some aspect of WCM in return for some type of payment, wage increase, etc. An example of success is Woco Industrial Components, Leitrim, where the company obtained commitment to TQM, operator self control and introduction of operator teams with responsibility for output and quality in return for wage increases IRN 5/93. An example of failure to introduce WCM, is Avery Dennison, Youghal, where the company was attempting to introduce WCM, became involved in a dispute over recognition of the union - SIPTU - and eventually recognised the union and agreed not to introduce WCM in the immediate future IRN 19/94);
- iii) attempts to “save” companies by introducing new work, payment, etc. systems - or threats to close unless they are accepted (e.g. agreement at Lissadell Towels, Drogheda, on a survival plan involving redundancies, cut in annual leave, and introduction of WCM-type changes, IRN 16/93).

A number of features of the industrial relations aspects of the changes emerge from the survey. **First**, there is great diversity and complexity in the process of introducing WCM and WCM-type changes. **Second**, these changes are regarded by workers and their representatives at the shop floor level in most firms to be primarily in the owners'/managers' interests, and as such to require some type of compensation to convince workers to accept the changes. It may be that, over time, despite these apparently adversarial beginning, the changes will ultimately lead to a more united perspective on the interests of the company. **Third**, there is widespread awareness of WCM, even if there is not universal acceptance of the advantages of these types of changes.

Technology

Breathnach, Marcus (1995): *Research and Development in the Business Sector: Findings from the 1993 Census of R&D Performing Performing Enterprises in Ireland*, Forfas.

This very detailed report has a number of interesting findings relevant to the present context. Business expenditure on R&D (BERD) as a percentage of GDP has been and continues to be well below the EU average, though the gap has closed to some extent in the last decade; own company is by far the most important source of funds for R&D (86%); R&D performers in Ireland - in all sectors - are more likely to be cooperating with other firms outside Ireland than other firms in Ireland; in general, the proportion of R&D performers in Ireland cooperating with other firms in Ireland is lower than the equivalent in Holland, Norway or Denmark; very small firms in Ireland (<20) are more likely to be undertaking some R&D than their equivalents in Holland, Norway or Austria, (not Germany), but larger firms (200+) are less likely to be undertaking some R&D than their equivalents in Holland, Austria, Norway or Germany (not Denmark); the electronics, software, chemicals and pharmaceuticals sectors account for 60% of BERD in Ireland; the per annum real growth of BERD in Irish-owned companies (1988-1993) was 9%, and in foreign-owned companies in Ireland, 23%.

FitzGerald, Anne and Marcus Breathnach (1994): *Technological Innovation in Irish Manufacturing Industry: Preliminary Findings from the Irish Innovation Survey*, Forfas.

This report also contains a great deal of interesting and relevant information. Much of it is consistent with Breathnach (1995), though innovation is broader than R&D, including in addition to R&D, product design; trial production, training and tooling up; patents and licenses; and market analysis. The most important sources of information for innovation were: clients/customers (67%), within the enterprise (64%), within the group (58%), competitors (45%), fairs/exhibitions (45%), suppliers - materials (41%), suppliers - equipment (38%) ... Large, foreign-owned, high-tech firms are most likely to have cooperative R&D activities with other parties. Among the main factors hampering innovation were lack of funds, high risk, and lack of information.

Fröhlich, Dieter, Colin Gill and Hubert Krieger (1993): *Workplace Involvement in Technological Innovation in the European Community. Volume 1: Roads to Participation*, European Foundation.

Though the data on which this report is based may be dated - the surveys were done in 1987 and 1988 - this research provides the best, comparative information on

attitudes to technological change in the EC. In terms of opportunities for participation by employee representatives in tech. change, Ireland, Netherlands and Belgium are categorised as “middle ranking countries”, below Denmark and Germany, but above the rest. In Ireland, “there is very little legislation promoting participation and Irish managers generally do not favour participation and have a low reliance on the skills and co-operation of the workforce” (p.6). However, in Ireland as in other countries, both management and employee reps. “indicated that they wanted more participation in the future” (p.8).

Gill, Colin, Thérèse Beaupain, Dieter Fröhlich and Hubert Krieger (1993): *Workplace Involvement in Technological Innovation in the European Community. Volume II: Issues of Participation*, European Foundation.

This is based on the same surveys as Fröhlich, et al, (1993). In terms of “participation in work organisation”, Ireland is ranked at the top, together with Germany and Denmark; in participation in investment decisions on new technology, Ireland is ranked among the lowest; and, in “participation in product and service quality” Ireland, together with Denmark, Greece, the Netherlands and the UK is ranked highest. On attitudes towards the benefits of participation, the study notes that enthusiasm for participation on the part of British management is not matched by British employee reps. On the other hand, the “most positive employee representatives in Europe can be found in Ireland. This is another indication that Irish industrial relations is increasingly diverging from the British tradition” (p.14). Interestingly, Irish management is less positive about the benefits of participation than their British counterparts.

Hurst, Dermot (1994a): "The Introduction of Concurrent Engineering in an Irish Engineering Company - A Case Study", paper given at the 2nd International Product Development Management Conference on New Approaches to Development and Engineering, Gothenburg, Sweden, May.

In this paper Hurst describes the background to and the process of introducing "concurrent engineering" into an unnamed (Firm A) Irish subsidiary of a multinational corporation producing electrical devices like switchgears and circuit breakers. Concurrent engineering is a product development version of WCM, where all aspects of a new or potential product, including design, manufacture, suppliers of components, buyers of finished product, etc. are considered in an integrated way. It

generally - and did in the case of Firm A - requires significant organisational change, involving cross-functional teams, devolved responsibility and a new organisational culture. It also involves new technology, though this aspect is usually easier to introduce than the organisational change aspects. The project team in Firm A did not include customers for the new circuit breaker - though a marketing person represented them - but it did include sub-contract mould tool makers. As part of concurrent engineering, the firm brought in new, sophisticated CAD. Firm A's experiment with concurrent engineering, involving the actual development of a new circuit breaker, though not successful in all respects, significantly reduced the time and cost of the development process.

Hurst, Dermot (1994b): "A Review of Product Development Performance in the Irish Engineering Sector", paper at the 11th Conference of the Irish Manufacturing Committee, on Lean Production: From Concept to Product, Queen's University Belfast, Aug/Sept.

Hurst surveyed firms known to have received grant aid for product development, and compared the results with all firms undertaking product development (data extracted from the 1990 Eolas Science and Technology Survey). His conclusion was that, while "there are signs of the increasing use of computer aided design and cross functional teams being used in product development, design and development practices that provide the competitive edge to the development efforts of industry are essentially absent in Ireland."

Mulvihill, Mary (1995): "£28m R&D boost for business", *Irish Times*, 5/12/95.

Minister for Commerce, Science and Technology, Mr Pat Rabbitte, announced that under a new initiative (known as Measure 1) 181 companies have been granted £28m for 398 projects; each firm will at least match the funds provided. For every £1m invested in R&D, he said, there were additional sales of £3.5m, at least three new products or processes, and 11 new jobs. Among success from an earlier pilot scheme was Waterfood Foods, which developed a range of new products under the Yoplait name with the assistance of the £300,000 R&D it obtained.

BERD in Ireland, according to the latest figures, has doubled since 1988 to 0.84 per cent of GDP, still well below EU average of 1.2 per cent.

Organisation

Brennan, James (1990): "The Journey has Begun" in *Integrated Manufacturing in the Nineties: "Producing for Profit"* Proceedings of the 7th National Conference of the Irish Production and Inventory Control Society, pp.15-26.

In this paper the process and components of changing a firm - Power Conversion Europe - towards WCM are described, both worldwide and within the Irish subsidiary. The definition of WCM adopted was "the level of excellence which is competitive with any company on the planet within the power supply manufacturing industry". A 14 point Deming improvement plan, and intense education towards APICS (American Production and Inventory Control Society) certification were adopted towards the end of the 1980s. JIT, employee involvement and Statistical Process Control (SPC) were the main techniques for achieving WCM. The author reports substantial improvement in many aspects of the performance of the company as a result of the changes.

Corkery, S. (1990): "Demand Driven Manufacturing" in *Integrated Manufacturing in the Nineties: "Producing for Profit"* Proceedings of the 7th National Conference of the Irish Production and Inventory Control Society, pp.73-99.

This conference presentation describes the way in which changes in the distribution system allied with EDI (electronic data interchange) links with distribution sites and customers, improved the performance of Apple at Cork. The aim was to improve product availability yet at the same time reduce the number of sites in Europe to which Apple in Cork ships, and reduce inventory levels. Corkery reports a reduction in the sales cycle from 25 to 3 days.

Faughnan, Pauline (1992): *The Dynamics of Work Group Operation in Bord na Mona: Synthesis Report*, Social Science Research Centre, UCD/Bord na Mona.

This report describes the evolution of autonomous work groups in this semi-state company, towards a team-based approach to milled peat production, in which each team consists of a balanced mix of skills within a small core of members with additional (peripheral) workers being employed as required, each team having a particular bog area, a high degree of autonomy in relation to its operations, and payment by results. In general the experiment was seen by participants as successful, though this was particularly so for core members.

Fynes, Brian and Sean Ennis (1994): "From Lean Production to Lean Logistics: Providing Manufacturing and Service Quality from a Peripheral Location", UCD - Centre for Quality and Service Management, Working Paper No.94-3.

Following a general discussion about lean production/WCM and the implications for marketers, the authors describe the introduction of lean production in Microsoft (reduction in number of suppliers, reduction in batch sizes, employee involvement and focused production) and the introduction of a new distribution system (lean logistics). Like other cases of WCM, Microsoft's focus has been on close relationships with suppliers, with long term commitment, significantly reducing Microsoft's transaction and communication costs. However, one aspect of other WCM companies' strategies towards their suppliers is not evident in the Microsoft case, namely the strategy of preventing over-dependence [see, on Amdahl, Murphy and Leavy (1994)].

Higgins, Joe (1990): "Partners in Business" in *Integrated Manufacturing in the Nineties: "Producing for Profit"* Proceedings of the 7th National Conference of the Irish Production and Inventory Control Society, pp.113-118.

Higgins is the MD of J. Higgins Engineering (Galway) Ltd. This firm concentrates its business on a small number of multinationals, mainly because of "their ability to pay quickly for their requirements". Among the multinationals the firm supplies to is Thermo King. In this paper Higgins explains how the introduction of quality control was initiated by Thermo King in 1984. By 1986 Higgins had obtained ISO 9000. Following this, Higgins obtained "Ship to Stock" status as a supplier to Thermo King and, by the end of the 1980s, had begun to operate JIT with Thermo King. This involved an increase in frequency of delivery from one delivery per month to daily deliveries.

The author explains that JIT requires a great deal of communication between the firms, including detailed forward orders from Thermo King and frequent visits by Higgins staff to discuss with Thermo King staff what they think of the Higgins components. It has also imposed on Higgins the need to improve the supply of its raw materials in Ireland. Its own flexibility has been enhanced by multi-skilling (e.g. training machine operators to drive fork lift trucks).

Jacobson, David and David O'Sullivan (1994): "Analyzing an industry in change: the Irish software manual printing industry", *New Technology, Work and Employment*, Vol.9, No.2.

The software manual printing industry (SMPI) - consisting of a small number of SMEs, subsidiaries of Irish multinationals, and a subsidiary of an American multinational - has grown rapidly since the mid-1980s. Through heavy investment in advanced, product specific printing machinery, and supplier-buyer alliances with the subsidiaries of multinational software companies like Microsoft and Symantec, the firms in the SMPI have adopted advanced technology, but with few exceptions have not become "learning firms". Also, while there is much evidence of supplier-buyer alliance, there is little evidence of supplier-supplier alliance. Follow-up research since the publication of this article, suggests that the vertical focus continues, in some cases involving separate business units of SMP firms undertaking activities further up and down the value chain, and in other cases SMP firms forming alliances with other, independent firms, further down the value chain. This industry is an example of IDA success in terms of high levels of linkage between an indigenous industry and foreign owned branch plants, but of limited success in developing independently of those foreign owned branch plants. Also, the industry continues to experience tradition problems of demarcation in the printing industry.

Keegan, Richard and John J. Lynch (1995): *World Class Manufacturing ...in an Irish Context*, Oak Tree Press.

This book advocates WCM and describes in detail how it can be introduced. It has, despite the title, very few references to the Irish context. The exception is an appendix in which WCM in Microsoft's Dublin operation is described. This involved a customer focus, team working, build to order, and a sharp reduction in the vendor base - from 40 to 10. [Microsoft's transformation is described in more detail in Fynes and Ennis (1994).]

Killian, Daragh (1994): *Modern Production Management Systems in Small and Medium Enterprises - Barriers to their Adoption and Implementation*, Unpublished MBS dissertation, DCU.

This project began as a result of the need for research into the relatively slow response by SMEs to a programme of assistance being offered by AMT (Advanced

Manufacturing Technologies) Ireland, which, at the time, was part of Eolas. It was undertaken at DCU Business School by Daragh Killian under the supervision of Brian Leavy.

The research was based primarily on case studies of 15 firms, one in each of five industrial sectors, with three different levels of production management systems (PMSs) - no formal PMS, problems with PMS, and, successful PMS. The author discussed the factors giving rise to - or preventing - successful PMSs under nine headings:

- 1) Leadership and management support. Fear of loss of control reduced commitment of some managers, particularly owner-managers. At other levels, fear of new, "user-friendly" systems that might undermine their role led some - e.g. middle level managers - to resist the successful implementation of these systems.
- 2) Use of teams. Few had formed teams to implement a PMS, though many had quality standards such as ISO 9000, and had experience of team work in that context. There were cross-functional teams in only three firms, and even there the absence of full integration resulted in "various parts of the team pulling in opposite directions towards their own individual goals rather than the overall company goal" (p.101).
- 3) Quality practices. No level one companies had ISO 9000 or had begun to consider its implementation. Some level two companies had ISO 9000 and others were implementing it. They considered it more important than PMS, and some feared that introducing PMS would require "reprocedurisation" that might result in loss of ISO 9000 certification. All level three companies had ISO 9000 and had "their PMS incorporated into their operations procedures" (p.102).
- 4) System champion. Only one level one company had a PMS champion. Most of the level two companies had a PMS champion but most of them were not senior managers or directors; in level three companies all the champions were senior managers or directors. In the two companies with the most successful PMSs, the champions were operations directors "with direct input and influence into both the production and company-wide policies" (p.104).

- 5) Use of consultants. The attitude towards the use of consultants was generally negative. Particularly in indigenous SMEs, the owner/founder/managing director would see much outside advice as interference. No level one companies used consultants, for two of them, the IDA and Forbairt satisfying any such needs they might have had. Only two of the level two companies had used consultants and they were dissatisfied with them. Two of the level three companies had used, and were pleased with, the services of consultants, which they had managed tightly. The other three level three companies had not used consultants because they had not needed to. Lack of scepticism, and the capacity to use consultants properly, seem to be the keys here.
- 6) Acceptability and confidence. In many companies owner/managers saw no need for computerisation or operated manual systems as well. “In the case of level three companies, they all had total confidence in their systems, with senior management prepared to accept and act on generated system information” (p.106).
- 7) Business and system planning. All level one and some level two companies had very short time horizons. In these there was reluctance to commit themselves to introducing PMS where that introduction would take longer than their planning horizon. Some level two and level three companies had been involved in other changes, like new technology (CAD), quality (ISO 9000) and new lines. In some level two companies this had been done at the same time as PMSs were being introduced and this may have caused problems. All level three companies planned effectively and had long term business plans.
- 8) Education. “[C]ompanies with engineers and graduates within middle to top management had more successful systems in operation than those which had none”. Age was also important; “the younger and more recently educated ... the manager, the more receptive he is to new technologies and their benefits”. Once the management understood and accepted the PMS, the training of the floor operators was not an issue (p.109).

- 9) Management/organisational structure. Level one firms were mostly small and new, with the owner as manager, managing relatively autocratically. The owner resisted the introduction of a formal control system and the organisational structure did not allow for an effective system champion other than the owner/manager. Most level two companies had evolved to that from level one, and retained an element of autocratic management. In addition, departmental managers often acted as gatekeepers, hindering the implementation of PMSs. "Category three companies tended to have a much flatter, broader management structure, with more power and decision making being delegated to the second tier in the structure" (pp.112-3).

There were other factors: foreign ownership (five of the 15 were foreign owned) encouraged PMSs; the companies that had "active employee participation are among the five companies with the most successful PMSs in operation" (p.118); problems in the system vendor/company relationship, often interpreted as technical problems; and computer usage, which tends to be much lower in level one, higher in level two and highest in level three companies.

Lucas Engineering & Systems (n.d.): "A Business Fit to Grow: Dublin Fine Meats", Lucas.

This is a brochure providing a case study of Lucas' work with this company over a ten month period, bringing it through a 'step change' in performance towards WCM. Among other things, "Dublin Fine Meats established teams of four or five full time people from all levels of the company supported by part time people as required" to lead the "redesign of the business" under Lucas' guidance. The company was radically changed. It has improved - and is continuing to improve - an all aspects of its operation.

Martin, Tom (1995): "Study on the Conditions of Cooperation: the Case of Small Enterprises in Ireland", in Dermot P. O'Doherty, ed. *Globalisation, Networking and Small Firm Innovation*, Graham & Trotman, London/Dordrecht/Boston.

Martin obtained information on 25 Irish SMEs that have some type of cooperation agreement with a firm or firms in another country. By far the most important forms of cooperation involved agency, distribution or sales agreements with firms in other EU countries (mainly UK), and the main reason why Irish SMEs entered these

agreements was to expand sales. There were a small number of more sophisticated agreements, involving joint ventures (4), manufacturing/production (2) and licensing (1), and these were more likely to be found in the computer or, more generally, the new technology sector. In a follow-up discussion with Tom Martin in November 1995, it became clear that none of the firms, and no other firms to his knowledge, have cooperation agreements of these kinds with other Irish firms (though he did point out that this was not the focus of his study).

McCall, Barry (1995): "The Winning Side", *Enterprise and Innovation*, Vol.1, No.4, February.

This article reports on Forbairt's WCM programme, based mainly on an interview with programme manager, Kevin Kavanagh. The programme involves Forbairt assistance in hiring a consultant to facilitate the introduction of WCM. The first, demonstrator project was at Dublin Fine Meats (see above, Lucas Engineering & Systems). This was followed by Moffett Engineering in Monaghan, whose output nearly doubled in 1994, meeting of delivery dates improved and there was little increase in stock. Other examples of the implementation of WCM include refrigeration equipment manufacturer Press-O-Matic, aluminium and PVC door manufacturer APA Systems in Dublin, vehicle security systems supplier CEL in Tuam, ready-meals manufacturer Rye Valley Foods in Carrickmacross and manufacturer of corrugated packaging for food, Irish Co-op Society in Limerick. Despite these success stories, Kavanagh points out that WCM is not appropriate "where management is weak, or lacks the commitment to radical change. Nor is it a 'quick fix' for companies with severe financial difficulties." A complementary Forbairt programme, not involving a systemic change of the participating firm, is the National Technology Audit Programme. This programme provides specific assistance to mainly small firms for which integrated WCM-type change may not be appropriate. The key criteria for successful implementation of WCM are competent management committed to change, competent consultants and the support of the workforce. The number of such consultants has increased, now including IPC, the Western Management Centre, AMT, TMS Cork, PA, and Forbairt's own Manufacturing Consultancy Service.

Moynihan, Malachy (1994): "Strategic Alliances and Sub-Contracting", presentation at the annual conference of IPICS - Irish Production and Inventory Control Society. (Moynihan is responsible for sub-contract procurement at Apple in Cork.)

Moynihan describes Apple's suppliers as "one-stop shops" capable of supporting once-off projects. Apple initially uses suppliers for their core competency, but as the relationship develops, the supplier undertakes more and more of the operation. The plastic moulding company, Rennicks, for example, was at first used only to mould plastic components. By 1994, they were supplying to Apple "a complete assembly, plastics, sheet metal shields, inserts and heatstaking". Apple's strategy is to have "suppliers purchasing many sub-assemblies, drives, power supplies etc., assembling the product and shipping a finished product to Apple for localisation... Turnkey assembly is one area where this technique is already well developed. Companies like BG Turnkey and Walsh Western produce all our kits (all material shipped with each CPU, including manuals, software, keyboards, cables and warranty information, etc.) working with Apple approved suppliers to directly procure the material. The move here is towards even more autonomy for the turnkey where Apple will specify the overall requirements leaving supplier selection, pricing, quality and management to the turnkey." Another example is in relation to keyboards, where both Alps and Mitsumi in Cork work closely with Apple to ensure JIT delivery of keyboards in over 30 different languages.

Murphy, Maria (1995): *Strategies for Success: Servicing the Needs of Small to Medium Sized Enterprises*, FÁS Planning and Research Division.

This booklet describes two models of assisting SMEs. In the **first**, with the assistance of EU funding, Letterkenny and Londonderry Chambers of Commerce have formed ECOM EEIG (European Chamber of Commerce, European Economic Interest Grouping), a cross-border company governed by EU law. ECOM EEIG's main activities revolve around cross-border SIGs (special interest groups): clothing and textiles, food and drink, information technology and communications, craft and giftware, and legal services. The food and drink SIG, for example, consists of eight local companies, and representatives from the various development agencies. It has identified problems of/barriers to exporting food products from the north west, visited an international food fair in Paris and is organising a marketing umbrella for food companies in the area.

The **second** involves FÁS's "Services to Business" Division. Ten companies in the same region are chosen. A panel of experts, with various functional specialisms, is made available to the companies, each company having a total of up to 19 days of

access to the panel over a year. The scheme is being piloted in three regions. Firms with under 50 employees, and less than £3m turnover, which have been identified by FÁS as having management development needs, are selected for the programme. Each “cluster’s” programme will be unique, with a great deal of flexibility so that the needs of each of the company’s individually can be met. One of the pilot “clusters”, for example, has cooperated in a programme to learn about “learning firms”.

Murphy, David and Brian Leavy (1994): "Strategic Partnerships", paper at the 1994 IPICS conference.

Murphy is a manager at Amdahl. This paper describes Amdahl's introduction of a strategic partnership system, in which a few suppliers became involved in all stages of a product, from well in advance of the first product delivery. Amdahl's selection and development of suppliers are similar to other such cases. A comparison between Fynes and Ennis (1994) and Murphy and Leavy (1994) suggests that an important difference between Amdahl and Microsoft is in the former's insistence that suppliers "should not focus too much on any one major customer". A spread of customers helps suppliers to "maintain a high level of expertise through exposure to other technologies" and over-dependency has the potential to damage both partners (Murphy and Leavy, 1994).

O'Higgins, Brian (1990): “Designing for Manufacture” in *Integrated Manufacturing in the Nineties: “Producing for Profit”* Proceedings of the 7th National Conference of the Irish Production and Inventory Control Society, pp.185-191.

As CAD (computer aided design) manager at Northern Telecom in Galway, O'Higgins was responsible for the planning and implementation of CAD facilities and tools for use by the Design Engineering group and ensuring their effective integration with Manufacturing. In this paper he explains how design and manufacture can be more closely integrated. He summarises the NT implementation as follows: there is a uniform design process, which is almost totally automated; the same CAD tools are used in all NT design locations; there is a corporate component database, controlled centrally but accessible throughout the corporation.

Smyth, Joe (1990): "Partners in Business" in *Integrated Manufacturing in the Nineties: "Producing for Profit"* Proceedings of the 7th National Conference of the Irish Production and Inventory Control Society, pp.121-125.

In this conference paper Smyth describes a Total Quality/JIT programme introduced into the Irish operations of Thermo King in the period 1982 to 1989. TQM was introduced first. The key to its success was employee involvement, organised around "improvement teams". JIT was introduced in 1986, having "a profound impact not only the factory floor but in every part of our business from engineering and design to marketing, sale and purchasing". Among the results have been reductions in absenteeism, in manufacturing rejects and in inventories. From 1987 Thermo King began to work with suppliers to assist them to introduce TQM. At the same time the company's customers were introducing JIT. Thermo King responded by changing from batch production to "pull-through production", using a Kanban system "in which quality parts are made purchased as required by the using operation". This, ultimately, required Thermo King's suppliers to introduce JIT as well. Smyth expected further improvements to be achieved through EDI.

Williams, Karen, Pat O'Donnell, Seamus McEvoy, Joe O'Brien and Pat Sugrue (1995): *Towards a model for the development of an integrated sub-supply base in the Irish Electronics Industry*, Final Year Project, UCC MBA (supervised by Prof. Paul Coughlan and Dr. James Walsh).

This study begins with the importance of the electronics industry to Ireland (34% of manufactured exports in 1993) and the relatively low contribution of Irish suppliers to that industry ("Irish indigenous suppliers account for less than 20% of the raw material spend by electronic Original Equipment Manufacturers in Ireland"). It identifies such problems as a general weakness in product development capabilities and argues that "[t]raditional inter-firm jealousies and adversarial relationships [that] need to be set aside as it is only by close co-operation and full transparency on costs and profits that maximum benefit... can be derived". The authors propose that this be done through a new "Supplier Management Model" of integrated supply, which would require participation by suppliers, OEMs and the development agencies.

Quality

Buckley, Finian, Anne Sinnott and Kathy Monks (1995): "Implementing Quality Initiatives in Irish Organisations: Some hidden outcomes", unpublished typescript, Dublin City University Business School.

Based on a 1995 survey of Q Mark companies, the paper examines, among other things, the extent to which the quality concern pervades the companies surveyed. "There is little evidence of any acceptance that unions may have a role to play in the development, maintenance or evaluation of quality programmes and less than half the unionised companies involved unions in the implementation of quality programmes." On the other hand, the quality initiatives had been accompanied by increasing sophistication in recruitment and selection, induction, performance appraisal and the use of employee involvement initiatives in half the companies. Performance related pay systems had changed in 16 per cent of companies. Improved communication as a result of the quality initiatives was reported by most respondents, 81%. This improvement was evident at and between all levels in the responding organisations.

Chrystal, Ann (1990): "Making World Class Manufacturing a Way of Life" in *Integrated Manufacturing in Nineties: "Producing for Profit"*, Proceedings of the 7th National Conference of the Irish Production and Inventory Control Society, pp.43-58.

In this conference paper, Chrystal begins with a description of how over the period 1986-1989, Abbott Sligo adopted a WCM "philosophy". This began with JIT in 1986; rationalisation, multiskilling and reorganization of grades took place in 1987; reorganization of production towards product specific, multiskilled teams in 1988; and the introduction of manufacturing resource planning (MRPII) in 1989. The rest of the paper focuses on Abott's approach to TQM - which she describes as another key element of WCM - and its TQM programme begun in 1988. TQM in theory and its practice at Abott Sligo are described, including some of the problems, responses to those problems and results of the programme. The programme included the selection and certificatio of quality suppliers to Abbott, and the results included reduction in rework levels and in the percentage of rejects.

Roche, John G., Noel Gannon and Kieran Taheny (1993): "Some Results from a Provincial Quality Survey", paper at the Tenth Conference of the Irish Manufacturing Committee, on Innovation and Product Development, UCG, September.

From 153 Connacht respondents (53% response rate), the authors learnt that: 37% had one or more quality registration (ISO9000 or Q-Mark); and that marketing ("marketing tool", "company image") was by far the most important reason for seeking registration, followed by quality improvement. The authors conclude that, compared "to 1980, quality is more clearly recognised a key component of competitiveness... But registration is no longer closely tied to improved product quality. Registered firms obviously recognise the marketing dimension of registration but do not rate registration highly when selecting suppliers."

Customer Service

Sinnott, E. Ann (1994): *Customer Service in Selected Irish Organisations: Theory and Practice*, unpublished PhD dissertation, UCG.

Sinnott examines customer service through analysis of 98 respondents to a survey of Q Mark companies. Her study provides an interesting profile of the quality oriented company. She finds, among other things, that 20% of the respondents materially reward employees for customer service success; the average number of suppliers to the respondents was 164; most firms have reduced the number of their suppliers over the last five years; price is an important criterion for approving suppliers for only 30% of respondents; "86% have required suppliers to be both more reliable in delivery and more flexible and responsive in both deliveries and deadlines in the past three years"; "as companies develop towards the 'best' customer service category, an increasing proportion will adopt TQM"; 45% use JIT, and most of these have reduced their number of suppliers in the last three years. For most of the respondents it would not be difficult for their customers to find alternative sources. To improve links with customers, 24% have "interlocking computer systems" with major customers; another 30% use one or more of electronic notice boards, E-Mail, and computerised invoicing and processing; 46% use EDI, but mostly at the early stages; 66% of respondents budget for innovation; 65% have targets for percentage of turnover to be achieved by new products/services; customer service is associated with innovation, but there is more evidence of individuals having responsibility for innovation than of everyone, at all levels, in all functions, pursuing innovation. Training is important at both management and non-management levels in most of the respondent companies, with expenditure on training - and on customer service training in particular - much higher than the Irish average. Most respondents also use a variety of "motivational tools", including autonomous work groups (16%),

profit sharing (23%), quality circles (23%), job enrichment (25%), bonus schemes (40%), financial disclosure (41%), job rotation (45%), performance appraisal (70%).

Skills and Training

Casey, Tom (1994): "Skill Transfer Mechanisms to and in a Less Favoured Region", in R.D. Petts and H.J. Schmehr, eds. *Competitiveness, Growth and Job Creation - What contribution can education and training make? Reports from the 1994 Cumberland Lodge Conference*, Target.

The author begins by describing skill transfer to Less Favoured Regions as an important part of cohesion policy. He then describes a number of specific projects under three headings: Skill transfer to Irish institutions; Skill transfers to Irish based companies; and Skill transfer to an Irish indigenous SME.

Skill transfer to Irish institutions: There are descriptions of a number of cases, such as the training of Irish training instructors in tree surgery skills in the UK, the training of Irish food analysts in the Netherlands, and an EC funded project "Robotics in Irish SMEs" to encourage Irish SMEs to introduce robots (the Irish institution was EOLAS: The Irish Science and Technology Agency and IPA Fraunhofer in Stuttgart was to be the source of the skill/technology transfer). This last is particularly interesting, as none of the Irish SMEs actually introduced robots. "The main skill transfer had been from the IPA to the EOLAS engineers who accompanied them in their work."

Skills transfer to Irish based companies: The ways in which three subsidiaries of multinationals obtained skills are described. Two of them are US electronics/computing companies, Intel and Amdahl, both of which were introducing new production and organisation methods, Intel *ab initio* and Amdahl into an existing operation. Of these changes, "Most notable are the shift from component to systems suppliers and the flattening of the management structures". The changes had implications for the kinds of skills required. Management must deal less with "compliance issues" and more with "co-ordination and motivation issues". "The reduction in the layers of management has passed responsibility down the line as well as requiring a greater flexibility and versatility from staff... Externally, the emphasis on longer term and more stable relationships with larger and more sophisticated systems suppliers is bringing the skills of 'partnership' management and development to the fore." This also transfers skill requirements, such as in

design, testing and manufacturing of components, and coordination of assembly and delivery to the systems supplier.

Intel obtained the required levels of skills by recruitment of experienced personnel, and by intensive, structured, on-the-job training for personnel at all levels in Intel facilities abroad.

In relation to Amdahl, the author emphasises the skills being developed in among suppliers, particularly “process independent” (JIT, MRP, etc.) and “social” (communications, group work, etc.) skills.

A third multinational is introduced for comparison. Cadbury attempted to acquire skills by employing “relatively young technical graduates who were expected to develop and then diffuse skills into the manufacturing base of the company. While this has occurred to some extent, constraints due to traditional, highly demarcated organisation patterns has slowed the process.”

Skill transfer to an indigenous SME: Avenue Mouldmaking supplies Irish subsidiaries of a number of major multinationals. “Senior management from Avenue work closely with these companies, sometimes in formal problem solving groups.” This brings them in contact “with some of the most highly developed TQM and WCM systems of Europe and the US.” As a result, rather than from a single champion, pressure for change in these directions within Avenue come from senior management in general. In addition, skills transferred from Avenue’s customers include: advanced budgeting systems; improvements in technical areas of mould-making; improvements in use of materials and production. Some of this skill transfer is explicitly undertaken by the customer, as “the node of a network of firms”, obtaining the best information from suppliers and recycling it to other suppliers.

Among the author’s conclusions from these cases are that: transfers to groups may be more effective than to individuals; and cooperation and coordination among groups of firms (Amdahl with its suppliers, Avenue with its customers) may be more effective than skill acquisition by, or transfer to, a company in isolation.

NESC (1993): *Education and Training Policies for Economic and Social Development*, Report No.95.

The report emphasised that management education and development was a pre-requisite for improved training, or for increased reliance on skills as competitive attributes. It concluded that “the current labour force has low levels of qualification and is weak in management skills. It is thus not well prepared for the sweeping changes in the economic environment which have been facing us over the past decade” (p.224).

Management Accounting

Woodcock, M.M. (1994): *Irish Management Accounting Systems in the New Manufacturing Environment - An Investigation into the Gap between Theory and Practice*, Unpublished MBS dissertation, DCU.

In the first part of this dissertation Woodcock carefully examines the theoretical implications for management accounting systems of advanced manufacturing technologies (AMTs). He includes in AMTs computer aided design, computer aided manufacture, flexible manufacturing systems and computer integrated manufacture. Associated “management innovations” are material requirements planning, TQM and JIT. AMTs and associated management innovations reduce direct and increase overhead costs. Traditional management accounting systems are based primarily on direct costs. They were designed for financial reporting purposes such as the valuation of inventories. The reduction or removal of inventories is, however, the aim of JIT. A more important requirement of firms now - and arguably in the past as well - is accurate product costing information. Woodcock lists nine new management accounting techniques in response to AMT and management innovations. Among these are activity based costing (ABC), backflush costing, throughput accounting and target costing.

The second part of the dissertation reports on original research, based on a survey; 50 of the top 200 manufacturing firms in Ireland were surveyed, with a response rate of 54 per cent. Over half the firms had some form of AMT or management innovation. The most common were computer aided design (13 of the 27 respondents, or 48%) and JIT (12 firms or 44%). Far fewer firms had introduced new management accounting techniques than AMTs or management innovation. ABC (5 firms or 19%) was the most common of these, followed by “revision of traditional variance analysis” (3 firms or 11%). A further 12 firms (44%) intended to introduce one of these two techniques over the two years following the survey. Nevertheless, the author concludes that there is a lower level of change in

management accounting than would be appropriate for the extent to which AMT and associated organizational innovations have occurred: “a gap exists between the perceived theoretical influence and the actual influence of AMTs and management innovations on the MAS [management accounting systems] of Irish manufacturing companies” (p.45). This is reflected in the fact that only 6 of the firms (22%) “have revised or plan to revise their traditional method of variance analysis”. Twice as many have already introduced JIT and “the traditional system of variance analysis is inappropriate in a JIT environment” (p.45).

SUMMARY AND CONCLUSION

There is certainly evidence of change, and of progress:

- i) Forbairt’s WCM programme contributing to the transformation of a number of firms, both indigenous and foreign owned;
- ii) FAS’s training programme on ‘learning firms’ for SMEs; spontaneous - though public authority assisted - initiatives like that of the PCB manufacturers in the Shannon region;
- iii) SIPTU’s efforts under the ADAPT programme;
- iv) a number of individual “cases” of subsidiaries of multinationals - like Intel and Amdahl - introducing WCM and transferring related information and skills to their suppliers;
- v) commercial state companies like Bord na Mona radically reorganising aspects of their work practices; and
- vi) a small number of number of indigenous firms, like Dublin Fine Meats, in the absence of any particular relationship with subsidiaries of multinationals, undergoing complete transformation in the direction towards WCM;

are all indicative of this kind of change at a number of levels. Within and between firms, with the support of a number of public agencies, and the commitment and enthusiasm of the trade union movement, at least at the central level, new forms of work organisation are becoming more common. In comparative terms, the work of the European Foundation suggests that if Ireland’s position is still roughly that of the late 1980s, it is in these respects at least ahead of the European average.

Among the information emerging from the literature and discussions on WCM there are also less positive aspects:

- i) SIPTU Research Department's survey shows that some companies use WCM-type measures adversarially;
- ii) many workers and their representatives at the local level - even where the company may be attempting to introduce WCM in good faith - perceive the changes adversarially;
- iii) atypical work is increasing. In some cases this may be agreed both in the interests of the company and employees for greater employment flexibility. However it can also undermine the solidarity and therefore confidence of workers at the local level;
- iv) some companies 'cherry pick' aspects of WCM - that is, they selectively introduce those that are easiest to introduce, with short term goals, often in situations of crisis, with no intention of developing further. This is in contrast to the 'sipping and tasting' by other companies, which refers to learning, by introducing specific, less systemic changes, as to whether more complete change would be appropriate⁷;
- v) Forbairt's WCM programme may actually have reached all appropriate engineering firms already. Some food companies have more recently expressed an interest, but there is a question as to how relevant WCM is to them given that their manufacturing is through processing;
- vi) although many indigenous suppliers to subsidiaries of multinationals have become "preferred suppliers", and part of a tight buyer-supplier network, many of them have not themselves become WCM companies. For example, they may be JIT suppliers, but they may not be JIT manufacturers. What this means is that the warehousing costs are transferred from the buyer to the supplier;

⁷ This latter - 'sipping and tasting' - is closer to what Hayes and Pisano (1994) call the development of "strategic flexibility".

- vii) while there is much evidence of vertical strategic alliances, there are very few examples of horizontal - e.g. supplier-supplier - alliances;⁸
- viii) in many cases there is change only in the “peripherals” of the firm, its image, superficial aspects of customer service for example. The problems at the “core” in such cases remain, such as badly organised production, bad industrial relations, etc.;
- ix) there is some evidence of lack of involvement by trade unions in quality initiatives;
- x) at the macro level, industrial relations institutions continue, by and large to reflect the adversarial model; and,
- xi) the rate of change is different in different areas. For example management accounting systems are being revised at a slower rate than would be appropriate for the rate of change in production and organisational technologies.

There are contradictory results from this survey of literature. This may be inevitable, as there has been both success and failure; there are both areas appropriate for change, and others where such change, if it is to come, will be accepted more gradually. It may be that a broadly based, detailed survey asking the questions underlying the key issue in this study, is the only way to obtain a consistent picture of the extent to which WCM and WCM-type initiatives have been implemented in Ireland.

⁸ See also O’Sullivan (1995): “there has historically been hardly any long-term cooperation between Irish small firms in the provision of purchasing, marketing, financial services or through supply linkages”.

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