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Career pathways for industrial supervisors in the United Kingdom

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By Alan Brown, Institute of Employment Research, University of Warwick

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Editor's Foreword

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Abstract

Traditionally in the United Kingdom no formal qualification was required to be a supervisor, but recently there have been major changes to the roles, functions and qualifications of supervisors. New forms of work organisation have led to opportunities either to enhance the role for first line supervision or else abolish it entirely. Also companies may choose to opt for either 'managerial' or 'socially skilled' supervisors, and graduates have increasingly been considered for supervisory positions. However, whatever route people follow in becoming supervisors, they increasingly need to be able to continue 'learning while working' as they carry out a role which is evolving rapidly in many workplaces.

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1. UK system: introduction and national context outlining traditional education, training and career pathways of industrial supervisors

1.1 UK has an open relatively lightly regulated VET system

The major contrast between career pathways of industrial supervisors in Germany and the UK is that in the former the emphasis is upon anticipatory education and training, particularly in relation to the attainment of 'Meister' qualifications. This compares to the more open and less regulated approach in the UK, where individuals are much more likely to be recruited into positions for which they have not been previously been formally trained. Hence it is important that the understandings of career pathways for industrial supervisors are contextualised and interpreted in the light of the development and patterning of particular VET cultures, policies and practices.

In the UK no formal qualification is required to become a supervisor. It tends to be the case that a worker will be promoted to supervisor on the basis of ability to do a specific job and potential as a supervisor. It is not considered necessary for the supervisor to be qualified in the full range of craft skills that s/he is supervising. As far as training of supervisors is concerned, arrangements are much more flexible, and it is up to the employer, manager or even the individual to decide on the appropriate training. The formal training on offer for a long period of time tended to concentrate on developing generic skills to do with human relations and leadership. This contrasted to, for example Germany, where the emphasis is much more on improving the technical competence of supervisors and developing their expertise to provide technical training (NEDC, 1991).

1.1.1 Co-existence of NVQs and traditional vocational qualifications

Even the development of NVQs has made relatively little impact on the openness of the UK system. This was because of the failure of NVQs to have significant take-up in many occupational sectors, coupled with concerns about the unreliability of the relatively expensive assessment methods (Wolf, 1995) and doubts over the acceptability of the standards development process (CBI, 1994). This led to a major review of the NVQ system (Beaumont, 1996), and although changes to the NVQ system were recommended, considerable impetus was lost in the attempt to restructure completely the previous system of vocational qualifications. Indeed as Robinson (1996) has pointed out NVQs still compete with numerous traditional qualifications, offered by national awarding bodies, commercial institutions and professional bodies: with the number of people obtaining traditional qualifications far outstripping those obtaining NVQs. Where the traditional qualifications are widely accepted by firms, they are also popular with individuals as they have a greater labour market utility.

1.1.2 Extent to which skills, knowledge and experience are recognised in formal qualifications or just within organisations

An important starting point for any analysis of skill formation is the need to acknowledge that the full range of skills, knowledge, understanding, personal attributes, attitudes and so on required to perform effectively as an 'experienced skilled worker' is far in excess of those required to complete initial training. Hence an important issue becomes the extent to which these additional qualifications (owned by individuals) should be systematised and formally

recognised within a framework of formal qualifications. This in turn could be linked with concepts of organisational and qualificational space: for example, in England and Wales in many organisational settings there has been a tendency to leave much learning within the organisational space, and outside the remit of the qualificational space. This had traditionally been the case for many supervisors whose major learning experiences, before and after becoming supervisors, was often through learning while working.

The interplay of organisational and qualificational space at a systems level has changed considerably with the development of National Vocational Qualifications (NVQs). The coverage by level and sector is quite extensive, such that much skill specification has moved from the organisational to the qualificational space, at least in theory. In practice, the very low take-up of NVQs in many areas, the almost complete collapse of firm-based initial training (in the 1970s, 80s and early 90s) has meant that the organisational space has, de facto, increased significantly in many industrial sectors. Although, on the other hand, the increasing participation in post-compulsory education has meant that the specification of skills in (pre)vocational education and vocational higher education has lead to an expansion of qualificational space from a different direction.

This also means that it is difficult to judge relative skill levels between countries by looking at the extent to which individuals possess intermediate level qualifications because of differences in coverage of formal qualifications. Hence it is an empirical question as to what extent the content of a formal qualification (in the qualificational space) in one country is or is not within the qualificational space of another country, and this is in turn influenced by the overall topography of qualificational space in that country. This means that formal qualifications may need to be related to a contextual understanding of the education and training system and qualifications more generally, rather than a notional equivalence being ascribed to qualifications in different countries being specifically linked to initial training, more narrowly defined. Similarly the formal qualifications in any single sector need to be situated in the particular context of that sector: for example, in relation to the degree of standardisation of training provision; the extent to which skills are learned on the job; how education and training provision is stratified; the nature of progression pathways; labour market value and recognition of different qualifications; whether experience is valued more highly than formal qualifications; balance between different types of learning; and so on. This is one reason why we chose to examine these issues through case studies.

1.1.3 Relative lack of regulation in access to employment

One of the critical characteristics of the VET system in England and Wales is that access to most types of employment is more or less unregulated in terms of preconditions for job access (Tessaring, 1998). This is coupled with weak recognition and respect for qualifications generally, such that it is quite difficult for those completing particular VET programmes to be clear about their subsequent progression. This is in sharp contrast with the position in systems that continue to be organised much more strongly around occupational labour markets, with more clearly defined entry level jobs and career paths, which are themselves clearly related to attainment and recognition of particular vocational qualifications (Marsden and Ryan, 1990). The situation in England and Wales is therefore highly flexible (or, depending upon your perspective, disorganised), in that in many jobs it is possible to enter without particular qualifications, and to continue working without necessarily becoming formally qualified subsequently either.

The English system of education, training and employment for those in work has traditionally put relatively little emphasis upon formal qualifications. This was particularly the case for people, such as supervisors, who were internally promoted. Similarly much learning while working and even in more formal training events is not externally recognised, with recording of participation and achievement often occurring mainly within the company. Where external recognition is granted, this may be in relation to quite short training courses, for example on health and safety.

1.2 Development and utilisation of intermediate skills in industry

The development and utilisation of intermediate skills in industry in the UK presents a complex, multi-faceted picture, particularly at supervisory level, and there have been radical changes to the roles, functions and qualifications of industrial supervisors. However, these changes do not represent a uniform trend, rather they may be contradictory, given the extent to which they are bound up with organisational restructuring and changing patterns of work organisation. Even under the traditional system there had been a variety of practice, although the dominant functions appeared to be progress-chasing and fire-fighting. Historically then the term 'supervisor' had covered a variety of roles and responsibilities. The CBI report (1992b) described how the supervisor could have been at any point along the continuum from 'foreman' at one end through to 'first-line manager' at the other. Traditionally, however, in most industrial contexts, supervisors were more likely to be perceived as at the 'foreman' end of the supervisory spectrum. They were often described as being 'progress chasers'. This narrow role was identified as being a problem, since it was symptomatic of a short-term unimaginative perspective, focused more on the next half-hour rather than with any concern for the next half-decade.

1.2.1 Traditional supervisory roles

'Traditional' supervisors' roles could encompass great variation in their duties and responsibilities. Supervisors have been identified with a range of possible functions: technical, managerial; instructional (or pedagogic). As they are likely to have acquired their position through a process of development in which their competencies have been affirmed, they could sometimes be seen as role models and socialisation agents within the organisation. The German model balances the pedagogical, technical, managerial, and social dimensions. British developments have in the past tended to emphasise technical and/or managerial aspects of the 'supervisor's role'. Such broad generalities mask important differences, particularly in the British context where diversity now abounds, particularly in relation to the training function. However, in the recent past one of the striking aspects of the traditional role of the industrial supervisor was its relative lack of engagement with the training function.

For example, research into training practices typical in the 1980s (Evans et al, 1989) had identified three types of trainers: 'worker trainers', 'supervisory trainers' and 'managers of training'. Supervisors with a training role tended to have an industry-specific background and had moved up as they developed their occupational skills to take on responsibility for staff and ultimately for training staff. Their age profile was varied - from those recently promoted to those who had a long personal history in line management. Younger personnel in their 20s and 30s often appeared to be in a transitional career phase, combining skill-specific and managerial responsibilities with their training role, as a key element of this transitional identity. It reflected a basic recognition of their

expertise and an indicator of their increasing seniority. Few had any qualifications in training, but they had often acquired qualifications in various aspects of management, including part-time degrees, diplomas or industry certificates. Sometimes these included a module or section on training skills (Evans et al, 1989).

Older supervisors sometimes had overview responsibilities for training in large departments, but little contact with trainees directly. Management of training programmes was viewed as an administrative function rather than a training function. Most expressed the wish for career development in occupational areas, if they had recognised qualifications, rather than in training where typically they did not. By and large, both younger and older age groups of in-company supervisory trainers were shown to have career aspirations within the company or industry but neither group saw their role developing into a full time training one. Their role in training was an important element in their career evolution, but for many a temporary one, marking the move from skilled worker to manager or 'consultant'. The acquisition of training responsibilities was a step up to a more senior role and part of the development phase that they hoped would lead to more senior company managerial positions (Evans et al, 1989).

Training was therefore seldom seen as a core function by 'old style' supervisors. This was in full accord with employers' cultural and historical resistance to investment in training that characterised British industry in the recent past (Brown and Evans, 1994). This contrasts with the present where some companies now take a more active interest in training. For example, supervisors can now have explicit training responsibilities, but training functions could also be undertaken by staff styled as mentors, cell leaders, coaches, or key operators, with different duties emphasised. The role and the amount of responsibility for training others could vary according to the type and size of company, management style, and whether the industry was traditional or modern.

Supervisory styles more generally varied not only between different branches of industry, but also according to the management styles of the individual companies within those industries. Indeed, the range of skills required of supervisors has always varied between different contexts, depending upon a range of factors such as industry, size of company, management structures, recruitment policies, supply and demand for different types of labour, skill structures and patterns of work organisation. On the whole, however, the fact that, historically, industrial supervisors in the UK have had such a weak role, being neither part of management nor part of the shop-floor, has meant that any fundamental change in work organisation was likely to affect their status. Thus when change is forced upon a company in order to survive or to become more competitive in the world market it could, in some cases, rethink its entire operation, including the supervisory role. The nature of the change could be open, as change to new working practices could enhance the supervisor's role, reduce it or in some cases remove it.

Overall then, the last ten years have seen the supervisors' weak indeterminate position being resolved in many contexts, often as part of or, as a consequence of, changing patterns of work organisation. The traditional depiction of the UK industrial supervisor was that they performed a weak role, relatively poorly paid, lacking status, and often under-qualified in terms of technical, supervisory and training skills, knowledge and understanding. In the particular context of this comparative project it is noteworthy that the maintenance of the traditional role, function and duties of the supervisor was often not really an option. The traditional supervisors simply did not have the breadth of knowledge of the production process, nor a

sufficiently developed technical knowledge base, to be comparable in any meaningful sense with the German Meister (Russell, 1991).

The resolution of the previous lack of role clarity has though not taken a uniform direction, and any contemporary map of supervisory roles, functions, qualifications and so on would show a much more differentiated picture. It was in the early 1990s, partly in response to the collapse of intermediate level education and training, that a consensus started to build up that the role of the supervisor needed to change. It is to these events we now turn.

1.2.2 Collapse of intermediate level education and training

There was a collapse of firm-based intermediate level education and training in many sectors up to the early 1990s. The problems caused by 'poaching' were one important reason for the decline of apprenticeships (Marsden, 1995). There were comparatively few people with both technical mastery and explicit responsibility for education and training. This contributed more generally to the absence of a 'training culture', whereby responsibility for, and commitment to, education and training was widely distributed throughout the workforce (Brown and Evans, 1994). The Modern Apprenticeship was explicitly designed as a State-funded way to rebuild initial skills formation processes at this level, but it will clearly be some time before the former Modern Apprentices have gained sufficient experience to be considered for supervisory positions.

1.2.3 Need for new style supervisors

The collapse of firm-based intermediate level skills constrained the ability of companies to get into a position whereby they had people who could support not only the development of **particular** occupational skills and knowledge in others, but also the capacity to develop any competencies to be met within the confines of foreseeable change. Such development requires active support in the workplace, and the system to facilitate it needs to be more formalised: ad hoc approaches will not suffice. Employers' organisations started to recognise the problems and in 1992 the CBI Report 'People, Profit and Supervision' argued for the value of the 'new style' supervisor as a key agent for change, operating at the 'crossroads of a company', with a major role in the training of people (CBI, 1992a, p8). Those individuals who possessed substantive skills, and had the capacity to pass these on to others, were seen as pivotal in broadening and deepening human resources development throughout organisations.

In this scenario, training was expected to have an impact upon productivity and profits, and this was expected to involve a major shift in role for supervisors. However, the CBI survey found supervisors were very sceptical about the value of traditional training structures, as 90% of supervisors felt training did not help to increase productivity and 60% found training had no value in improving their section's performance. The CBI argued that such attitudes and structures should be consigned to the past and that the Management Charter Initiative standard for supervisors emphasised that a supervisor should 'contribute to the training and development of teams, individuals and oneself to enhance performance' (CBI, 1992a, p124).

As was shown above, most of the 'old style' supervisors did not take their training responsibilities too seriously (Evans et al, 1989), and it is against this background that proposals for 'new style' supervisors should be seen. According to the CBI (1992b), a 'properly trained' supervisor should be able to:

- lead team building
- coach employees to get vocational qualifications
- assess employees in the workplace for vocational qualifications
- balance the day to day operational demands of the workplace with opportunities for employees to train and develop on the job.

In this, supervisors themselves require support from managers, whose 'training role' is also defined in terms of coaching, creating learning opportunities and assessing competence.

The National Economic Development Council (NEDC) produced a report which focused on the Supervisor in the Engineering Industry (NEDC, 1991), and the applications of this in large companies can already be seen. They argued that there was a vicious circle that prevented the shift from supervisors as 'progress chasers' to supervisors as key workers at the first level of management: "too many employers remain to be convinced of the advantages of wholesale change, while talented people are not attracted into jobs that lack status, responsibility, authority and adequate rewards" (NEDC 1991, p 10). NEDC argued that a coherent approach to change in supervisory management was necessary, and set out 'four pillars of competence derived from existing best practice and from companies with 'international benchmarks':

1. Technical leadership (based upon substantive technical knowledge)
2. Managing processes and systems
3. Management of people
4. Training and Development (identifying and meeting training and development needs).

NEDC proposed a unified approach for the Engineering Industry, based on standards set for each of the four pillars and approved by the National Council for Vocational Qualifications. They advocated the use of a single job title to promote identity and recognition of value of the role, for example Master Engineering Supervisor. NEDC acknowledged that this suggested model and others need to be reviewed, using 'known domestic and international best practice' and involving an examination of existing systems (NEDC, 1991). Although it could be argued that such a review would have needed to go beyond the comparative 'best practices' of the time to identify the factors which were significant, economically and culturally, in making it likely that such initiatives would succeed if transferred to UK settings (Brown et al, 1994).

In the context of this project therefore it is important to emphasise that traditional British supervisors were comparatively poorly qualified (Steedman and Wagner, 1989; Steedman, Mason and Wagner, 1991). For example, Mason and van Ark (1993) found that the qualification levels of Dutch workers were generally much higher than those of their British counterparts, with the advantage in production workers' skills being reinforced by higher levels of supervisory qualification, focused heavily on technical competence. In engineering, for example, the role of MTS qualified supervisors emphasises technical abilities such as the "ability to discuss potential improvements in shop floor processes and methods with production engineers and managers, and to liase effectively with technical support staff" (Mason and van Ark, 1993). It is important to reiterate that, by 1992, there was almost universal agreement that the traditional supervisory role needed to be fundamentally re-examined. Even the supervisors themselves were not in favour of the status quo. The questions of the positions of staff with supervisory responsibilities within the organisational structure and who should fill such positions though were much more open-ended.

Companies such as Nissan made a conscious effort to upgrade the role of the supervisor and to give them more responsibility, more closely fitting a 'technical - managerial' mould, rather than the 'technical-training' supervisory mould of the German system (Brown et al, 1994). These ideas reflected new management strategies and an emphasis upon teamwork, but the new approach to supervisory roles and functions were clearly intended as a departure from the traditional weak supervisory role common in much of British industry at the time (Wickens, 1987).

1.2.4 Intermediate skills mix: relationship between skilled, supervisory, technical and managerial functions

The increasing concerns in the early 1990s about the role of the supervisor were, however, part of much wider debates about the organisation of work. One strand of these debates saw the inter-relationship between supervisory and technical skills as pivotal, as both are required individually and in combination in order to achieve high quality in processes and products. On the other hand, supervisors also interface with management, and can act as a communication channel and play a facilitating role in the delivery and implementation of organisational policies. In those industrial contexts, where there has increased delegation of responsibility for decision-making, the introduction of team working and flatter organisational structures, industrial supervisors exercise considerably more responsibility than they did in the recent past (Rolfe et al, 1994).

Nationally the rapid expansion of higher education has led to a plentiful supply of graduates, and companies have increasingly used graduates to fill posts requiring intermediate skills. While this has in some cases created additional flexibility for companies, it has also acted to cap the possibilities of advancement beyond the supervisory level for most non-graduates (Rolfe et al, 1994). Steedman (1990) too pointed to the drawing down of engineering graduates to more junior positions because of the inadequacy of skills at intermediate level. For our project, however, it is interesting to note that this means that if these graduates are subsequently promoted to supervisory level, they are essentially a hybrid category, as they have experience as graduates and of working as skilled workers or technicians.

Changes in the skill mix could also differ within and between industries, such that "in some industries intermediate employees were found increasingly to require managerial skills, including planning, quality assurance and financial control as well as the 'technical' skills associated with a particular skill area" (Rolfe et al, 1994, p29). Additionally, the moves towards flexibility and team working differed in emphasis between the engineering and chemicals industries: "in engineering the requirements were for flexibility gained through understanding of the whole range of company operations; in chemicals the flexibility was required between process operators and maintenance engineers" (Rolfe et al, 1994, p44).

Not only have the skill requirements of industrial supervisors increased sharply in recent years, but this has also been accompanied by a significant up-skilling of those people they supervise, although from a comparatively low base in comparison with other European countries (Mason and Van Ark, 1993; Steedman and Wagner, 1989). There was increased demand for intermediate skills, with "the most radical changes having taken place in chemicals, through the combination of new organisational forms, up-skilling and multi-skilling in combination with new technology" (Rolfe et al, 1994, p xv).

Indeed, as the skill levels and job descriptions of other craft and technician workers broaden, then the identification of 'supervisors' as a separate stratum becomes problematic in some contexts. For

example, previously in engineering "supervisors, while recruited from craftsmen, were primarily engaged in management tasks, while craftsmen and technicians practised technical skills. As in the chemicals industry, however, the nature of the distinction between the two groups was being challenged by new forms of work organisation, resulting in a diffusion of supervisory responsibilities" (Rolfe et al, 1994, p14).

New patterns of work organisation, including the devolution of responsibilities in 'flatter' organisations, mean that many responsibilities may be shared among a team, rather than all devolving to the team leader, even where they relate directly to production, not just in relation to various support functions. Additionally, within engineering the reorganisation of departments into integrated teams has meant that team members may have widely differing skill levels: including semi-skilled, intermediate and graduate. This means that the team leader, with intermediate skills, may have responsibility for team members with considerably more technical expertise than he or she possesses. The skill mix of such teams being much higher and more varied than for those centred on production line teams or in more traditional forms of industrial work organisation.

The study of the distribution of intermediate skills by Rolfe et al (1994) showed that there were wide variations within industries: for example, "in chemicals processing and in the engineering industry the proportion of employees at intermediate level depended principally on the complexity of products and manufacturing processes, the presence of large numbers of semi-skilled employees carrying out assembly, packaging or loading work, and the use of new technology" (p21). Although team working was found in the most advanced plants in both industries and this was associated with wider responsibilities for craft and technical employees. In such circumstances, the role of supervisors was seen as critical for the success of team working. There was also an expectation within engineering and chemicals companies that these patterns of work organisation and management would increasingly spread across the two industries (Rolfe et al, 1994). These issues are examined in greater detail in the case studies.

1.3 Supervisor training and qualifications

1.3.1 Supervisor training

The focus upon the role of the supervisor and changing patterns of work organisation may have been two of the reasons behind a surge in enrolments for supervisory training in the early 1990s, although this was from an historically low base. Rolfe et al (1994) identify that "nationally there has been a rapid increase in enrolments and qualifications in supervision ... in engineering some companies were providing certificated training for at least a proportion of their supervisors, but even in these companies many supervisors were appointed solely on the basis of their demonstrated abilities, ... [while] … chemicals companies provided a variety of internal, non-certificated training courses covering various aspects of supervision" (p xi-xii).

However, despite more recent interest in supervisory training, in Britain, it continued to be possible to be promoted to or appointed as a supervisor without passing any formal supervisory training (Rolfe et al, 1994). Indeed though many industrial supervisors were traditionally without formal supervisory training or qualifications, there was no guarantee that they would be able to fall back upon formalised technical training either. The culture of learning while working, and making do without a strong technical knowledge base, meant that any major shift in patterns of working highlighted the extent to which supervisory practice was grounded in very particular organisational contexts and ways of working. This was why when some companies changed their patterns of

working they sometimes decided to reduce the responsibility of supervisors (IDS, 1991) or even abolish the role altogether (Wright and Edwards, 1998). In these circumstances, the abolition of the traditional (poorly qualified) supervisory role was a bonus, rather than an unfortunate consequence of changes in the organisation of work.

1.3.2 Supervisory qualifications

There is not a single unified training 'system' for those workers with supervisory and training responsibilities in the UK at present, although there are some supervisory qualifications such as those offered by the National Examining Board for Supervisory Management (NEBSM) and the Institute of Supervisory Management (ISM). The numbers taking supervisory qualifications had traditionally been very low in relation to the numbers of workers occupying this role, although recently there has been an extremely rapid growth in enrolments for supervisory qualifications, with "NEBSM enrolments increasing three-fold between 1987 and 1993" (Rolfe et al, 1994, p2). Although this increase was from a very low base: "in the engineering industry, some movement towards certification of supervisors was apparent, although it was still far from general. Some companies were requiring potential supervisors to take formal courses leading to a qualification awarded by the National Examining Board for Supervisory Management (NEBSM). A more widespread practice, however, was for the company to have its own internal [uncertificated] training programme for some (though not all) supervisors ... . It was also the case, in all engineering companies, that people of manifest ability would be appointed as supervisors without passing through any formal supervisory training. The chemicals companies relied to an even greater extent than the engineering companies on in-house training in supervisory skills" (Rolfe et al, 1994, p16).

The focus of the supervisory qualifications available from NEBSM is squarely upon the development of abilities linked to human relations and leadership; they are not geared either to improvement of technical competence or directly to equipping supervisors to train others technically. In this respect NEDC argued they differ from supervisory training programmes offered in countries where the training is "more task-centred and concerned with technology and systems" (NEDC, 1991). (The implicit assumption being that the more general training programmes, by being less task-centred, are also less effective.)

As part of the general shift to competence-based qualifications over the last decade new standards for management and supervisory qualifications were developed as part of the Management Charter initiative (MCI). The MCI standards therefore dovetailed with the NVQ model, with an emphasis upon outcomes and highly detailed specifications of competence (Jessup, 1989). The emphasis was upon demonstration of competence in all elements of the requisite units of an NVQ for the candidate to achieve that award. Competence in the workplace has to be assessed by a work-based assessor who can either be an employee, who has been trained as an assessor, **or** which is more likely if the company is small, an external assessor who is paid to carry out the appropriate assessment. For NVQ levels 3 and 4 (supervision and management) industry lead bodies that set the standards for their industry could use generic standards, for example those developed by the Management Charter Initiative and customise them for their own industry.

Besides the influence upon their own qualifications the National Vocational Qualifications framework had implications for the duties of supervisors. This was because NVQ assessment was to be undertaken wherever possible in the workplace. This meant that employees themselves (most likely those at supervisory level) had to undergo training to carry out this requirement. This requirement itself was also a key part of the MCI supervisory and management level standards,

which could lead to recognised supervisory and management qualifications at NVQ levels 3 and 4. The supervisory standards specified the areas in which the supervisor should achieve competence. These areas included:

- maintaining services and operations to meet quality standards,
- contributing to: the planning, monitoring and control of resources and the provision of personnel,
- the development of teams, individuals and self,
- the planning, organisation and evaluation of work,
- creating, maintaining and enhancing productive working relationships,
- providing information and advice for action towards meeting organisational objectives.

As with NVQs at other levels, the ability to carry out these functions is assessed practically in the workplace and through production of appropriate evidence collected by the candidate. The standards are wide ranging and comprehensive, and an individual who achieved competence in all these areas should be regarded as a competent supervisor at the 'first-line manager' end of the management spectrum. In practice, the implementation and assessment of NVQs was fundamentally flawed (Wolf, 1995), and many institutions offering traditional management diplomas reverted to these qualifications because of this. Similarly, where institutions offered dual certification of post-graduate diploma and NVQ4, many students did not bother with the latter qualification. The traditional qualifications had in all cases incorporated some competence-based assessment, but invariably they did this in a much more consistent and less bureaucratic way than was required of NVQs up to the latter half of the 1990s. They tended to use more aggregated methods of assessment, rather than the atomistic approach typical of NVQs up to that time.

1.3.3 Supervisors' attitudes towards qualifications

Overall it might be possible to classify the attitudes towards qualifications of prospective, current and former supervisors in five ways. The first group may feel that they do not need formal supervisory qualifications, and that learning on the job with occasional specific training interventions is sufficient. The highest level of qualification of this group may be Level 3 craft qualifications. The second group may take work-based supervisory NVQs, either once they have been appointed as supervisors or else as a means of obtaining a recognised qualification as experienced practitioners. The third group may be those with aspirations to become supervisors who take other qualifications in an attempt to realise their goal. [For example, employees in the public sector often enrol in higher education to take a Diploma in Management Studies for this reason.] The fourth group may be technical graduates, some of who may have undertaken work placements as part of their degree, who become supervisors relatively early in their career. The final group includes those current or prospective supervisors, who take a part-time graduate or postgraduate qualification, for which they get substantive academic credit for learning at work. Unpacking the different attitudes towards qualifications will therefore be a significant challenge in the case studies oriented towards examining the career pathways of industrial supervisors in the chemical and engineering industries.

1.3.4 Problems in the quantitative identification of supervisors as a distinct group

With all the changes highlighted in the above sections, it would be revealing if we could track down quantitative changes to supervisors' qualifications, prior background and so on.

Unfortunately, one significant problem with trying to track movement of people into and out of supervisory positions is that international standards on occupational classification [ISCO 88 (COM)] do not recognise supervisors as a separate occupational category. The response of European countries to this has differed. Some countries, such as the UK, place supervisors in the same occupational category as the workers they supervise, with the result that supervisors can appear at different levels within the same occupational classification. Alternatively, supervisors can be placed with technical occupations, where technical qualifications are required for competent performance of supervisory functions, as in Germany.

In the UK the Standard Occupational Classification (SOC) would therefore in many cases submerge supervisors into much broader groupings. Additionally, however, "estimates of the proportion of managers in the UK occupational structure are, on average, 8-9 percentage points higher than for most other European Union countries. It seems most unlikely that this could reflect structural differences in work organisation between the UK and the rest of Europe" (Elias et al, 1998, pp 6-7). Preliminary investigations showed that there were significant definitional problems (Elias et al, 1998), with one implication being that the 'managing' category in the UK extends much lower down the occupational classification structure (that is, some 'junior managers' may be regarded as supervisors or technical specialists in other countries).

In summary then the lack of a single formal position for supervisors within the Standard Occupational Classification has meant that those performing supervisory functions are in practice widely distributed across levels and categories when they are classified. Indeed supervisors under the SOC appear to be being stretched in opposite directions, with some being classified together with 'junior managers', while others, who supervise semi-skilled workers, are classified with that group.

Even though supervisors are not identified within the formal structure of SOC, attempts are made to identify them as a separate category in censuses and surveys. However, even here different approaches are taken, with the 1991 National Census of Population seeking to identify supervisors from responses to questions about job title and job description, whereas in social surveys, such as the Labour Force Survey, supervisory status is determined from a separate question on whether or not a survey respondent has such responsibilities (Elias et al, 1998). The intended analytical treatment of supervisors stems from a "requirement of the social classification to identify supervisors as a separate category, defined in terms of the different employment relations and conditions associated with these jobs compared with their 'non-supervisory' counterparts" (Elias et al, 1998, p7), but in practice this has been difficult to operationalise in a consistent manner. Recent moves by many companies to standardise employment conditions across different groups, and changing patterns of work organisation, including multi-disciplinary team working, have complicated the picture further.

In the absence of distinctive employment conditions, might the typical level of qualifications of job-holders act as an indicator of occupational level? However, here too, in some contexts, 'occupational upgrading' may occur, where job-holders become progressively better qualified than their predecessors. This could be a particular issue if increasing numbers of graduates start to fill supervisory positions in particular contexts: at what stage do these jobs become recognised as 'graduate jobs'? There might also be a distinction to be made between the qualification levels of those currently performing the role and the qualifications expected of new entrants.

1.3.5 Occupational mobility and career pathways for those with intermediate skills

Although the focus of our research is upon industrial supervisors, the study of their career progression is intimately bound up with the occupational mobility of those workers with intermediate skills on the one hand, and with the starting positions of graduate level entrants on the other. This section will look at the nature of the quantitative evidence of occupational mobility of those with intermediate skills (Elias and Bynner, 1997a, 1997b) , before turning to more qualitative evidence of career progression of industrial supervisors.

Male intermediate jobs, especially for those in technical or supervisory (intermediate non-craft) positions, could lead on to more highly skilled jobs, although as Elias and Bynner (1997b) point out, such upwardly mobile individuals were characterised by high level educational experience and modern management skills profiles. For women, very few are in intermediate craft jobs. Elias and Bynner (1997a) was to examine occupational mobility within the intermediate group between 1981 and 1991, using NCDS data. 79% of the male cohort (of 1052) remained in the same occupational group (21% as supervisors, junior managers or associate professional or technical; 55% craft or related; 3% technical sales), with 8% moving down from supervisory to craft, and 3% moving up from craft to supervisory jobs. Overall then, quantitative analysis of mobility for intermediate groups (including supervisors) showed that, for males, there was considerable mobility, both upwards and downwards, even for those in employment at each of the relevant census dates.

Male intermediate jobs, especially for those in technical or supervisory (intermediate non-craft) positions, could lead on to more highly skilled jobs, although as Elias and Bynner (1997b) point out, such upwardly mobile individuals were characterised by high level educational experience and modern management skills profiles. This would seem to indicate that successful performance in both organisational space and qualificational space is characteristic of upwardly mobile men. That is, if men already have high level academic (for example, graduate) qualifications, then performance in the organisational space does not necessarily have to be supplemented by further formal additional qualifications. On the other hand, such qualifications would be much more desirable for those who achieved fewer formal qualifications during initial education and training.

2. The relationship between changing patterns of work organisation and changes in supervisory role

Changes to supervisory roles have to be seen in their organisational context and, in particular, related to changes in the overall patterns of work organisation. Where organisations have opted to introduce major changes to patterns of work organisation, it is interesting to note that some have chosen to strengthen the supervisory role while others have opted to abolish the role altogether. Each of these strategies will now be examined in more detail in the following sub-sections.

2.1 Possibilities for an enhanced role for first line supervision in new forms of work organisation

Brown and Lauder (1992) present one of a number of accounts of post-Fordist models of organisation, management and control in commercial companies. Their emphasis is upon flexible delivery of production and services, coupled with flatter and flexible organisational structures, which often make greater use of teamwork. There are, however, questions over the extent to which these strategies are implemented in practice, or if they are, how far they could be more accurately labelled Neo-Fordist (Avis et al, 1996), as they "are used within a system dominated by the top-down control of workers" (Hodkinson, 1998, p195). Leaving aside these doubts for one moment though it is possible to construct, at least in theory, a scenario where first line supervision becomes central to new forms of work organisation.

An ideal-typical model could be constructed as follows. There is a shift towards flatter hierarchical structures. For example, a traditional hierarchical structure with five levels (Head of Operations; Operational Manager; Product Centre Manager; Superintendent; Foreman) may be replaced by a new structure with just three levels (Head of Operations; Group Leader; Team Leader). In this model there would be an increasingly important role for first line supervision at Group Leader level, with in-company training organised at this level. Group Leaders could be responsible for identifying training needs, setting up training arrangements on the job, and evaluating effectiveness of training through monitoring standards of work. Within this frame there would be moves towards 'team' or 'group' working with the supervisor as group leader. Within departments or sections, workers are further divided into smaller working groups working with a team leader. In these cases training could be further devolved to the team leader. The criteria for appointing Group Leaders would be based on technical skill and leadership abilities, company commitment and managerial potential. The supervisory role would then be closely associated with motivation and monitoring of the performance, with the training of supervisors focused on managerial and personnel aspects (Brown et al, 1994).

Where this model was being actively implemented, companies were attaching great importance to supervisors and workers having a greater range of skills than previously. This was seen as a means to "increase productivity through greater skill intensiveness, to push more responsibility downwards, [and] to achieve greater flexibility, through more multi-skilling and team working" (Rolfe et al, 1994). With an enhanced responsibility for training, supervisors' relations with training managers become more important as they have to relate to the training structure of the company as well as to the managerial structure. Traditionally though, manufacturing sector training managers had seen their role as planning and organising training for young trainees and adult workers rather than training others, such as supervisors, to carry out training functions (Brown et al, 1994).

With the collapse of in-company craft training (Marsden, 1995), and the introduction of new patterns of work organisation, entire training structures had to be rethought. Group leaders could combine training responsibilities with those of management and supervision, with responsibility for creating a flexible manufacturing team and ensuring that skills training is undertaken whilst at the same time achieving a production plan and meeting the demand schedule. There is also a paradox in that the group leader role could be very demanding in setting up and bedding down the new system, but then after implementation most of the responsibility and decision-making power could be devolved to the semi-autonomous teams.

For example, the responsibility for training and development could be devolved with the team leaders playing a more proactive role.

One of the difficulties in deciding whether there is an enhanced role for first line supervision in new forms of work organisation is linked to the nature and extent of duties of team leaders. In some areas and forms of work organisation, team leaders may actually have a much wider set of responsibilities than 'old style' supervisors, including substantive responsibilities in the area of training. For example, the main training tasks and activities of team leaders could include:

- taking an overview of team training within the company goals;
- co-ordinating team training (in liaison with training managers);
- managing programmes of individual trainees assigned to the team;
- designing individual training programmes if required;
- delegating specific project or task training to other workers;
- undertaking direct training if required (Brown et al, 1994).

2.2 Possible abolition of the role for first line supervision in new forms of work organisation

Recent work by Wright and Edwards (Edwards and Wright, 1997; Wright and Edwards, 1998) focuses upon the effects of teamwork. They point to different patterns of team-working, even if they can be broadly "distinguished by a combination of: production organisation in self-directed teams; multi-skilling, job rotation and functional flexibility; information sharing through team briefing and works councils; and flattened job hierarchies" (Wright and Edwards, 1998, p. 59). Further, Ichniowski et al (1996) highlight how the lack of a legal framework promoting 'social partnership' and pressures for short-term returns in market-driven economies, such as those in Britain and North America, make workplace restructuring through team-work particularly difficult. This means that UK discussions of team-working do not necessarily involve use of the new production concepts which have been much debated in Germany and Scandinavia (Wright and Edwards, 1998). In particular, the absence of direct supervision of work-groups did not necessarily mean control was decentralised, as teams could still be operating within a structure of continuing management dominance (Geary, 1995), and work could still be fragmented and tightly controlled (Pollert, 1996).

As there are variations in the patterns of team working, so the nature and shape of supervision also differ. Thus team leaders may still have a supervisory function, including disciplinary power (Pollert, 1996), whereas in other cases they have no such role (Wright and Edwards, 1998). Cutcher-Gershenfeld and colleagues (1994) identified three different types of team: those linked to attempts to operate as socio-technical systems, involving worker autonomy and job rotation; those linked to lean production, where workers were consulted more and operated as teams, but still within a largely Taylorist production paradigm, as in assembly line production; and off-line teams. Wright and Edwards consider that "arguably, it is only the first which has any genuine team empowerment" (1998: p61). The consequences for the supervisory role can be profound. With socio-technical systems, the supervisor's role may be severely curtailed or even eliminated (Buchanan and McCalman, 1989; Wright and Edwards, 1998), whereas in the context of lean production the supervisor's role may be enhanced (for example, as with Nissan: Wickens, 1987). Similarly, there is no straightforward pattern as to what happens to the distribution of technical skills, as even where these are redefined and

upgraded this will occur in ways which reflect differing social contexts (Thompson et al, 1995). Thus, for example, in this country "team-working was a break with craft conditions. The picture of the UK is one of enhanced technical skills but a definition of skill needs according to managerial requirements and an effort to remove old craft ideas of skill" (Wright and Edwards, 1998, p 62).

In those cases where a move had been made away from a production-line type process to multi-skilled teamwork, the supervisor's role could effectively be eliminated, since individual workers were more in control of their own work and the structure was less hierarchical. In the supervisor's place one might find a 'coach', 'mentor', 'adviser', 'facilitator' or 'counsellor', who might adopt more of a facilitating role, perhaps using counselling and communications skills to support staff. The training (or instruction) function would still need to be provided, and if the supervisor had previously been responsible for this, the responsibility might pass to a team leader or roving instructor training several teams as required.

Workers may therefore welcome the extension of opportunities to develop and use a wider range of skills, but in some cases it was the abolition of the supervisory role that was seen as the catalyst for such a transformation in their prospects. For example, in a detailed study of the introduction of team working in an aluminium smelter there was "a positive employee response to team-work. Workers continually stressed that a 'real change' in work relations dated from the removal of supervisors" (Wright and Edwards, 1998, p87). This case study illustrates that team working can have profound effects upon the patterning of skills within an organisation and upon supervisory roles, including as here abolition of the role in relation to direct production. However, as Wright and Edwards themselves make clear it is unwise to generalise about particular skill distributions. This is for three principal reasons. First, the change to team-working may be part of a much broader 'bundle' of changes in work organisation, pay and organisational structures (MacDuffie, 1995). Second, the changes made were often in response to significant external shocks (Wright and Edwards, 1998). Third, supervisors may gain or lose duties at any of the boundaries they share with others: operatives, craft workers, technicians or junior managers. Thus the general statement by Rolfe et al (1994) that "the introduction of team working, and changes in organisation towards learner and flatter profiles, increased the amount of responsibility placed upon those in the intermediate positions" (p ix) needs to be investigated further. In particular, it needs to be unpacked in relation to the distribution of skills within the various groups occupying intermediate positions, not least because the options could be to strengthen the supervisory role or to abolish it in the face of "decentralisation of operations and functions which has increased the need for team leaders and first-line managers" (Rolfe et al, 1994, p4).

Additionally there could be wide differences in skill levels within teams: from those where all team members possessed a similar range of skills to cases in engineering where integrated teams, formed from a reorganisation of departments, included semi-skilled, craft and technician workers working alongside graduates. The nature of supervision could be very different in such cases. In most of the chemicals and engineering companies studied by Rolfe et al (1994) team working had raised the skill requirements of process operators in chemicals and of craft and technician workers in engineering.

The previous two sub-sections have emphasised the scope of human agency and organisational choice in the allocation of responsibilities between employees working at different levels when patterns of work organisation are extensively modified. This should alert us to the fact that

just as there is not a single template for the 'new' supervisor - indeed the identification of such people is made more difficult partly because a new range of job titles have often been introduced alongside the redistribution of supervisory roles and responsibilities.

2.3 Recruitment issues

There may be two distinct approaches taken to training, development and qualifications dependent upon whether the ideas were being applied to new or existing employees. If new recruits were joining a company with the intention of working at intermediate skill levels immediately or within a relatively short period, then the company may wish that they upgrade their technical skills, whether this was through on-the-job learning, more formal learning while working programmes or some form of off-the-job training. If such learning resulted in formal recognition of additional qualifications, this could be regarded as signalling that the employee was ready to perform fairly close to or at experienced skilled worker levels.

On the other hand, if the company was seeking to develop additional qualifications for existing employees in an organised way, this was likely to be regarded as an attempt to implement an upskilling strategy, associated with the more effective use of human resources. This could be a response to technological and organisational change, and/or as part of an attempt to raise the quality of products or processes, in an attempt to secure competitive advantage.

Whether a company gives precedence to younger graduates or more experienced but less (educationally) well qualified workers for intermediate level posts depends partly on the intellectual demands of the work. For example, Tessaring (1998) argues that "in view of the impacts of technology and innovation on human resources, priority is accorded to multiple skills, comprising education, training and experience, as well as the ability to communicate and work in relatively unstructured situations. The same processes of increased functional and extra-functional responsibilities, however, may lead to a depreciation of the traditional skilled worker at the intermediate level, since it requires both practical experience with machines and material and theoretical knowledge of the principles of the production process" (p36). Without achieving further substantive educational qualifications the likelihood of subsequent promotion is likely to become even more remote for many skilled workers with lower intermediate skills.

Increasingly, however, the opposition of experience and graduate level qualifications is becoming a false one. Graduates have previously been recruited at intermediate level and skilled workers are able to take work-based degrees, such that at supervisory level it is possible to recruit people who are experienced workers and graduates. Also, even where intermediate workers are recruited with high level (including possibly graduate) qualifications, the quality of their learning in work, or experience-led working, is critical for performance of technical functions, such as maintenance. Drake (1995) believes experience-led working includes use of "skills such as associative reasoning, complex sensory perception and a 'feeling' for technical equipment. In addition, an efficient reaction to technical or computer malfunctions requires a good capacity to synthesise as well as the ability to communicate with peers ... . These are competencies which are normally acquired only through long work experience" (Tessaring, 1998, p37). Although new forms of VET can make explicit attempts to speed the process of "experience making" through new forms of learning arrangements (Dybowski, 1997).

3. Inter-relationships between national VET systems and new recruitment policies for industrial supervisors

3.1 Introduction

The new recruitment policies for industrial supervisors put emphasis either upon managing processes and systems and management of people or else upon the management of people and training and development. This means that social skills are at a premium, and that while significance may be attributed to the possession of work process knowledge, technical leadership is not necessarily required. This argument is expanded in sub-section 3.2, where it will be made clear that this is one viable response to the limited supply of and weak demand for intermediate level skills. Another development of significance for the new recruitment policies relates to the expansion of higher education. These relationships will be discussed in greater detail in sub-section 3.3

3.2 Possible responses to the limited supply of and weak demand for intermediate level skills

The historically poor record of the comparative development of intermediate skills in the UK (Prais and Beadle, 1991) was mirrored by a parallel comparative gap in employers' demand for skills (Finegold, 1993). Public policy too had largely failed to affect movement to this 'low skill equilibrium' (Finegold and Soskice, 1988). Soskice (1993) thought that one reason for this policy failure was because employer organisations were too weak to prevent poaching of skilled workers. This had acted as a disincentive on companies to train and had contributed to the earlier decline of apprenticeships (Marsden, 1995). Wood (1999) identifies one consequence of the low capacity of companies to organise training collectively, coupled with a low demand for skilled labour in general, to be that "surviving firms will become progressively less reliant on product market strategies that rely on such skills" (p. 16).

There is evidence that, while the demand for vocationally specific skills remained weak, there was a marked increase in the demand for higher social skills (Gallie and White, 1993). The advantage to employers of relying on such skills is that it does not tie them to a particular type of labour, and particularly not to one that is in short supply. Indeed Soskice (1993) and Rajan et al (1997) both point out that these are the types of skills that are likely to be found in graduates, the numbers of which have been rising sharply. However, given that these types of skills may also be developed through team working, it may be that more employees have the opportunity to demonstrate their social skills at work, and hence may progress to roles as team or group leaders.

It is perhaps worth revisiting the four pillars of supervisory competence outlined by the NEDC in 1991. These were technical leadership; managing processes and systems; management of people; and training and development. Now the 'old style' supervisor was primarily involved with managing processes and people, often through progress chasing and fire fighting activities. They rarely became involved in training and development (Evans et al, 1989; Brown et al, 1994), and many critics commented upon their relatively poorly developed understanding of technical knowledge (Steedman et al, 1991; Rose and Wignanek, 1990).

'New style' supervisors in lean production (assembly line) settings, making use of team work, need particular strengths in managing processes and systems and in the management of people. Such supervisory roles show a clear continuity with the past, but the supervisors are now given greater responsibility (through the removal of layers of junior and middle management) and more attention is typically given to their communication abilities upon appointment (Wickens, 1987).

Group leaders with responsibility for semi-autonomous teams need particular strengths in the management of people and in training and development. The teams themselves have responsibility for managing processes and systems, while technical skills are either more widely distributed across teams or are supplied by specialists. This group is the one for whom 'social skills' are paramount, and certainly over time this is the level where you would expect graduates to predominate. However, you do not expect graduate entry to these posts. Graduates may have worked as team leaders or technical specialists previously. Alternatively they may have earned their degrees while working. Either way you would expect most post-holders at this level to be both graduates and to have had substantive work experience.

At the level of industrial supervisory skills therefore there are reasons to be sanguine that the supply of the requisite skills for either 'managerial' or 'socially skilled' supervisors will be sufficient. This is likely to be the case for four reasons. First, the shrinkage of the manufacturing base over the last twenty years and changing patterns of work organisation has meant that the number of supervisors required has shrunk considerably. Second, the supply of 'socially skilled' graduates has increased dramatically. Third, given the increase in team working and more people taking supervisory qualifications, the pool of potential 'socially skilled' or 'managerial' supervisors from among the experienced workers has also increased. Fourth, work-based learning routes for Modern Apprentices, graduates and other trainees have all been strengthened compared with ten years ago.

It should also be remembered that this analysis applies specifically to supervisory skills. It does not address issues around the supply and demand of intermediate level skills more generally. Indeed Wood (1999) argues that "the danger in Britain is that the quest to raise the supply of intermediate skills within the framework of *deregulated* labour will be self-defeating. If employment protection is weak, contractual flexibility high, and a ready supply of low-wage labour available, employers face few incentives to depart from strategies based on minimising labour costs rather maximising the long-term productivity of their workers" (p. 18, emphasis in the original).

In the light of this the supply of technical intermediate vocational skills is likely to remain problematic. Employers in turn are then unlikely to base their competitive strategies upon utilising this resource. The high skills visions and rhetoric of 'learning organisations' and 'high performance workplaces' (OECD, 1996; European Commission, 1997; OECD/Government of Canada, 1997) would see this as compromising future competitiveness and economic performance. However, as Regini (1995) suggests the model of a high skills/high value added strategy allied to a supportive VET system that can deliver a highly education and trained national workforce (as in Germany) is simply one of a number of viable models available to European firms and nation states.

Indeed only a minority of UK firms' choice of models of competitive advantage may utilise a high skills route. Indeed a review of UK firms' product market strategies would make it clear

that there is little evidence that these firms are dependent upon intermediate level technical vocational skills. This in turn means that in many cases supervisors do not need to provide the technical leadership associated with high skills visions. Like other workers, however, it will be important that they have a thorough grasp of contextualised work process knowledge (Attwell et al, 1997), although this may be developed through a process of experience, reflection and learning from experience over time. The key requirements for the majority of 'socially skilled' and managerial supervisors are that they have well developed social and communication skills and that they have an appreciation of the value of work process knowledge. The supervisor promoted from an experienced worker role may personally have a thorough understanding of the contextualised work process knowledge relevant to that company. If a graduate is employed in this role then there are two choices. The first is that graduates spend time in a support or more junior role acquiring that work process knowledge prior to promotion. Alternatively, it may be that the distribution of such knowledge between team members make it less important that the supervisor too has personal experience of using that knowledge. In this case, though, the supervisor has still to value possession, and support the development, of that knowledge.

Overall then, it would appear that the national VET system and the new recruitment policies for industrial supervisors are broadly in balance. That balance, however, remains consistent with an industrial sector that remains largely locked within a low skill equilibrium, but with 'pockets' of practice where the companies do pursue a high skills approach.

3.3 Recruitment of graduates to supervisory positions

The expansion of higher education is the educational policy area where there has been conspicuous success. Almost 40% of each cohort now enter HE, compared with 12% just over thirty years ago. The lack of regulation over preconditions for job entry means that only in some particular occupational areas, and/or where individual commitment to a specific direction is high, does it make sense for an individual with relatively high educational attainment to leave general education tracks. This has contributed to the development of a 'mass' HE system and has meant that the supply of graduates far outstrips the number of opportunities to get what were formerly defined as 'graduate jobs'. This has had three significant consequences.

First, graduates are increasingly likely to start in a wide range of jobs, and are often prepared to move between jobs to build up experience in the first few years after graduation. By this means, they move progressively towards a job that is broadly commensurate with their qualifications. Second, it does mean that employers can recruit academically well qualified people to fill positions in a way that adds value for the employer: for example, Mason (1996) found that graduates recruited to relatively junior positions in banks were more likely to see beyond confines of the immediate task and take opportunities, for instance, for cross-selling of products to customers. Third, Wilson (1995) argues that there is some evidence that when more highly qualified people are recruited the nature of the job to which they are recruited itself changes.

Indeed, Soskice (1993) argues that, in a UK context, it makes more sense for employers to recruit graduates, with generally more highly developed communication skills, willingness to learn and other 'key qualifications' but without any appropriate specifically vocational training, than to attempt to develop or secure individuals who had been through initial vocational

training. The argument is that graduates can then be given specific training and/or develop their skills through on-the-job training or programmes of learning while working.

The implications of this for the new recruitment policies for industrial supervisors are that there is a ready supply of graduates with most of the requisite communication and social skills for successful performance as supervisors. What they may lack is appropriate work-process knowledge in certain circumstances. this too, however, can be rectified through combinations of working and learning or else through initial appointment to more junior or specialist positions prior to appointment as supervisors. The type of supervisory posts most likely to recruit graduates in future are those in workplaces requiring high-level skills and who are looking for their supervisors to provide some technical leadership. Recent changes in HE align very well with these requirements.

One interesting development within vocational higher education and training programmes, including engineering, is the move towards problem-based learning. This has acted to give such programmes a distinct vocational emphasis, acknowledging that learning in education and practice settings had to be brought much closer together. This also means that initial training and continuous professional development programmes have been brought much closer together, giving graduates a much fuller understanding of work processes and practice. For example, initial training had in many cases been dramatically refocused in an innovative way, such that (graduate) entrants would be expected to possess a greater depth and breadth of knowledge and be more likely to be able to apply this knowledge and understanding in practice. On the other hand, innovation within programmes of continuous professional development have also acted to 'lift' such learning and development into formalised education and training provision, such that workers may receive graduate or postgraduate qualifications after following work-based programmes of study. This means that there has been a considerable reduction in the apparent opposition of employment of either a young graduate or else an experienced workers. Young graduates are increasingly likely to have a much fuller understanding of work knowledge and practice, and experienced workers are increasingly likely to be graduates, after having completed work-based degree programmes.

In any event formal education and training [and certification] contribute to only a small proportion of learning at work (Eraut et al, 1998). In particular, a developing understanding of situations, colleagues, the work unit and the organisation are examples where learning primarily occurs while working, rather than in a formal setting. Similarly, much learning that occurs at work depends upon utilisation of knowledge resources outside formal education and training settings. Thus new and experienced workers learn from colleagues in their immediate work group, other colleagues, and may utilise a rich variety of professional and personal networks (Eraut et al, 1998). Provided new graduates learn quickly while performing other jobs in the workplace they are likely to be in a relatively strong position to apply for supervisory vacancies when they arise, particularly in workplaces that put a high value on learning and development.

The challenges inherent in the work itself and the need for on-going mutual consultation with colleagues stimulate learning while working. This is often reinforced by organisational climates, which acknowledge the value of education and training and which support the existence of professional networks. Support for both formal and informal learning may be quite strong. The implications of this for additional qualifications are that there is scope for specialist qualifications, skills and new techniques. However, for graduates who have already

completed substantive initial education and training programmes, which emphasise knowledge development and the intertwining of learning and practice, such formal technical skills development is likely to be a relatively small part of their learning as a professional.

The above should not be interpreted as downplaying the significance of technical skills development per se, but rather can be used to understand why there is relatively little interest in formal external accreditation of such technical skills. The work of a highly skilled employee as a whole encompasses so very much more in terms of experience, learning and development than mastery of particular techniques that to be acknowledged by colleagues and others as an experienced professional, capable of high level performance in a wide variety of settings and contexts, will always carry great weight. In such circumstances, any major formal additional qualification will have to engage more fully with a variety of aspects of performance in current and possibly future roles.

This is the rationale behind offering work-based undergraduate and Masters qualifications, with an emphasis upon developing a deeper understanding of practice, coupled with a broader programme of learning and development. These programmes are not only open to graduates, they are also open to experienced skilled workers. Such work-based degree programmes can be regarded as 'locks' for innovation, whereby new types of more practice-oriented programmes are 'lifted' into the standardised education and training provision. With their emphasis upon management and supervision, as well as specialist practice, they can play a role in individual career development, whether the occupational mobility is horizontal, diagonal or vertical. Additionally, the qualification falls within the compass of mainstream higher education, and hence opens up opportunities for further education and training.

Many of the large employers with a commitment to learning, training and development have ‘tailored’ work-based degree programmes that enable employees to pursue substantive qualifications while continuing to work. Additionally, many HE institutions offer part-time programmes specifically designed for those in work. These programmes include technical skills development, management skills, communication skills as well as offering cognitive development, and include practice-based components. The programmes generally offer opportunities for accreditation of prior (work-based) learning, and will often be available in modular format, such that those at work do not necessarily have to complete a full programme. Many modules and programmes can also be delivered through distance learning or open learning formats. All this means that it is hard to envisage those in supervisory positions in high-skills workplaces not having substantive experience of HE in some form either prior to or shortly after their appointment as supervisors.

The above workplaces are still likely to be in a minority given the cultural and historical resistance to investment in training which has characterised much of British industry (Brown and Evans, 1994). Even this though is starting to work in graduates’ interests in certain SMEs, as graduates are increasingly being seen as the people most likely to be able to cope with learning through doing the job itself, with relatively little training or support (Rajan et al, 1997).

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