Becoming skilled during a time of transition: observations from Europe

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1. Introduction

In this paper I highlight some of the characteristics associated with becoming an experienced skilled worker in Europe during a time of transition. What range of skills, attributes and opportunities are now required of young people to maintain a skilled `career', during a time of great technological, organisational and political change? The traditional model of a typical progressive career, based upon possession of a particular set of occupational skills, has been largely undermined. Policy-makers have recognised the dislocation of expectations of progressive careers presents a major challenge to all developed societies.

Indeed the lack of any widely accepted model of how to handle continuing waves of transition has increased the nervousness of policy-makers, in countries as diverse as England, Germany, Japan, Singapore and the United States, as to the adequacy of their education and training systems. Their nervousness focuses upon two concerns. The first is whether their current education, training and employment structures are equipping young people with the ability to adjust to changes in organisational structures, work processes and technological innovation. The second concern is whether other countries or trading blocs are deriving a competitive advantage from their approach: for example, witness the US government's interest in the German apprenticeship system.

One consequence of such concerns is that there is increasing interest in comparative education and training. It is in this spirit that I offer an American conference some observations from Europe on the processes of becoming skilled. That is the main aim, but I do have two further objectives in presenting this paper. One is to raise an issue for discussion whether the education-based US system would make a more appropriate comparator for England than the firm-based German model for skill formation. The final objective is to discover whether any US researchers are interested inn collaborating in comparative research on the construction and exemplification of a number of `ideal types' of successful transitions through to experienced skilled worker status.

2. Context for this paper

It is not possible within a single paper to range over all the ground covered in ten years of comparative research on skill formation processes. So for this paper I have been selective in seeking to highlight a number of themes which are illustrative of the general approach taken in the research. The factors that influence the processes of becoming skilled can be grouped into four levels:

- systemic level: the nature of the institutional pathways for becoming skilled within the education, training and employment system as a whole;

- local contexts: the particular local labour market, organisational and occupational contexts operating at a given time;

- quality of support from other people: significance of coaching, tutoring and recognition by others;

- characteristics of the individuals: skills, attributes and motivation and commitment of the individual.

After giving the background to the research and outlining the model of occupational identity formation which underpins the research, I will give examples of significant influences at each of the four levels. The final section of the paper will then deal with an issue which cuts across a number of levels - how to promote effective work-based learning in support of continuing skill development.

3. Background to the research

The comparative research on skill formation processes in England and Germany (and later in the Netherlands) started in 1987. The main focus of this strand of the research was upon the development of young adults (from age 16 to 18) through to experienced skilled worker status in eight different occupational areas in the broadly matched labour markets of Swindon, Paderborn and Eindhoven. The eight occupational areas (engineering, electrical, heating and ventilation, pharmacy dispensing, hairdressing, nursing, banking and insurance) were chosen to cover a mix of firms, labour market sectors and stereotypical male, female and mixed occupational routes.

The skill formation processes in the different occupational areas were tracked using an innovative methodology of progressive close matching, whereby closely matched triplets of young people were selected for interviewing on the processes, content and meaning of becoming skilled. Altogether about fifty young people were tracked through to experienced skilled worker status in the three countries.

Detailed analysis of the results of this strand of the research was deliberately delayed until the young people had reached experienced skilled worker status. Any earlier analysis would have been bedevilled by problems associated with differing speeds of transition: for example, by age 19 some young English workers were considered to be fully skilled, whereas some young Germans were only just starting their skilled training. Other strands of our comparative research though have been reported: see, for example, Bynner and Roberts (1991) on transitions into employment; Evans and Heinz (1994) on general processes of identity formation in young adults; van der Aa (1994) on first steps towards a comparative analysis of skill formation processes in the three countries; and Brown and Behrens (1995) on the processes of labour market marginalisation in England and Germany. Brown and Behrens (1994) also investigate the extent to which vocational education and training in engineering and insurance in England and Germany promotes the development of flexibility in individuals.

4. A model of occupational identity formation

The model of occupational identity formation used in the research had the following characteristics. It had to:

- be a dynamic representation, allowing for change and development over time;
- have a strong social dimension, whereby an individual learns, works and interacts with others;
- allow the individual to be a significant actor in the construction of her or his own occupational identity;
- recognise the existence of general and particular 'communities of practice' associated with particular occupations and organisations, and acknowledge that these can operate at a number of levels.

The model proposed also had to meet two key challenges. First, does it help with the organisation of ideas about and understanding of our research data. The longitudinal tracking of individuals in eight occupational areas in three countries had generated a mass of data on influences on their development through to 'experienced worker status'. Second, the model would need not only an internal coherence, but also it would need to engage with other theoretical propositions, if it were to seek to offer a more general and comprehensive explanation.

A diagrammatic representation of the model is outlined in Figure 1.

Figure 1: Model of occupational identity formation

What is difficult to convey in two dimensions is the dynamic, developmental nature of the model. The sets of activities at work and communities of practice and the identities they support are all changing. It is also important to remember that not all aspects of these activities, practices and identities are passively received by those engaging in them while in the process of becoming skilled. Rather the 'about to be qualified' and 'newly qualified' may play an important role in changing aspects of those activities, practices and identities. Indeed an understanding of such dynamism is required if a fundamental tension about occupational identity formation processes is to be recognised: that is, there is both continuity and change in how these processes work out over time.

The process of becoming skilled is a social activity, in which a number of others have an interest besides the individual directly concerned. While acknowledgement of formal status as a skilled worker may come through completion of an apprenticeship or similar status, both the individuals themselves and others may be wary of conferring the epithet 'fully skilled' at this time. That is, more likely to come when the individual and others recognise that he or she is an 'experienced skilled worker'. Indeed there will often be a negotiation of meaning, whereby you are only an experienced skilled worker when you yourself and others recognise you as such.

One clear sign of recognition comes when others (for example, clients, peers or trainees) turn to the individual for advice, because they acknowledge the individual possesses valued skill, knowledge, expertise or experience which is acquired over time. External recognition can also come from management, through job grading and/or the type of work allocated to the individual, or through the type of work he or she can get in the external labour market.

Acquisition of experienced skilled worker status is contested in the sense that it is not clear at what precise point of time an individual reaches this status and because it depends on judgements of a number of people, who may be using different criteria in forming their judgements. However, besides external recognition an individual also has to recognise the value of her or his own skills. That is, he or she has to have a sense of self worth and recognition of and a belief that he or she owns significant skills.

5. Systemic influences on the processes of becoming skilled

One of the major policy concerns of vocational education and training, at both a European and national level, has been how to promote equivalence between general education and vocational tracks. In this respect in the past the German dual system has been widely lauded as an example of where the vocational track is widely valued on its own account, and not mainly the preserve of those unable to make the grade in the academic track. However, even in Germany the status of the vocational track is under threat as a consequence of organisational and technological change. This makes the **attempt to maintain the high status of the vocational track in Germany** a useful theme to examine more closely.

The relative position of the vocational track, as against the academic route, has traditionally been much stronger in Germany than in other countries (Lane 1988; Cantor 1989). Indeed, even with very little cross-transfer into, for example, universities, not only was apprenticeship training highly regarded, but there were (for young men at least) plenty of opportunities for progression in employment and to obtain further technical or supervisory qualifications (Sauter

1995). However, with the academic route becoming more popular, and apprenticeships becoming less attractive, to young people, then there are dangers that the status of the vocational track could suffer a spiral of decline.

Indeed, the collapse of the virtual guarantee of progression into well paid, skilled permanent employment, with prospects of further progression, for a sizeable proportion of the (male) apprentice cohort has meant that links back to the academic track have assumed considerable significance. In 1992, 15% of apprentices overall, and over a quarter of those with business apprenticeships in industry and commerce, already possessed qualifications which guaranteed them HE entry (BMB+F 1994). However, for most of the rest on the vocational track, progression was more or less restricted to vocational education. Further this progression was more or less predicated upon a corresponding rise in employment status and responsibilities. Indeed Reuling (1995) argues that the combination of training for an occupation and training through an occupation is a strength of the German system. If the link with progression in employment is broken, then that makes highly specialised vocational education a riskier proposition. It was precisely the **combination** of experience and formal qualification that had such value in the labour market.

For the last few years there have been some pilot projects seeking to develop more work-based routes to gain entry to higher education. However, the need for construction of such bridges has become urgent to try to halt the downward slide in the status of the vocational track. The Federal Minister of Education and Science sees that such bridges are now vital: "equal standing for vocational training and general education also signifies that access to higher-level education and training tracks is equally open to both sectors" (Laermann 1995, p12). This also acts to re-emphasise the significance of the general education component of vocational training: it must "aim to develop general knowledge and a comprehensive range of personal and social skills alongside its focus on occupation-specific competence" (ibid. p12).

The issue of gendered occupational choice processes may or may not be defined as a major problem in itself. However, the gendered inequalities in progression opportunities, consequent upon such choices, should be regarded as problematic. Ironically, attempts to address recent concerns about reducing progression opportunities for young men may 'free up' progression opportunities for young women, who find themselves in occupational cul-de-sacs. In particular, those young women, who have substantive records of educational achievement within initial education and (full-time) vocational education, together with experience of work, could benefit from measures to extend access to higher education and/or open up continuing education and training, whereby spells of employment and education are interspersed. Whether inequalities would still be extant at subsequent levels is beyond the scope of this paper, but at least there would be the opportunity to redress a major weakness of the current vocational education and training system: the way young women's aspirations, opportunities and long-term prospects spiral downwards over time (Krüger 1990).

The debate about the relative importance of occupational and internal labour markets appears finely balanced. The idea of a 'Beruf' (occupation) as a defining characteristic for the career of an individual is under threat, from arguments about the gathering pace of technological change, organisational change and so on. However, while these changes destabilise occupational labour markets, they play even greater havoc to the idea of progression through a structured internal

labour market. Lutz (1994) puts forward a plausible case that the principle of 'Berufe' may therefore undergo a resurgence. In practice though, even if the principle is revitalised, Beruf will have in some respects a different meaning in future than it did in the past. This also gives some indication of how the competing claims for the significance of occupational and internal labour markets could be resolved. If neither operate in the same way in the late 1990s, as they did in the early 1980s, then the way is open to argue that it is the way individuals handle the transitions between the two that will be critical in future. That is, an individual will have to be able to translate 'bundles' of skills, knowledge and understanding between contexts: a process which will be greatly helped if the 'bundles' have a recognised value on the labour market. The level of aggregation of these 'bundles' for some purposes is likely to be less than a current 'Beruf', not least so as to enable a more flexible means of putting together the different components of a 'Beruf'. There could be different mixes in the way skills are acquired and how learning is targeted (Drexel 1995) and this could have implications for the linkage and interaction of the internal and occupational labour markets.

The firm-based vocational track has become less popular, compared to education-based academic or academic-vocational routes. The uncertainty over progression prospects for those on the vocational track being a particular concern. Only through strengthening work-based routes to higher education and higher level education and training will it be possible to maintain the relative status of the vocational track vis a vis general education, although formal equivalence may remain an aspiration rather than an achievable goal.

The traditional group who filled lower-middle technical and supervisory functions were promoted skilled workers, who had achieved further technical or supervisory qualifications. This group is under pressure from two directions. First, the number of such positions is being reduced, as many of their functions are being devolved to teams of skilled workers. Second, increasing numbers of promoted posts are being filled by people with higher level education and training. This means that progression prospects, of the traditional kind, from the vocational track will become more circumscribed. The attainment of intermediate-level qualifications may have less value within relatively large organisations. This again will act to make access to higher level education and training even more important. In effect, the work-based vocational track cannot survive as a significant progression route, unless it engages much more with other educational opportunities, rather than being predominantly employment-based. A mix of different ways of acquiring skills, drawing on combinations of education-based learning and learning in the workplace, over time (Drexel 1995) being one suggestion as to how it would be possible to maintain the possibility of horizontal as well as vertical mobility.

The defining image of the dual system as firm-based training, with part-time vocational education, leading not just to the guarantee of permanent skilled employment, but also carrying the possibility of further firm-based progression to technical or supervisory positions, is increasingly difficult to sustain. That the image translated into reality mostly only in specific contexts (particularly 'male' traineeships in large companies) should not detract from the potency of image. Changes to employment structures and patterns of work organisations in companies, however, mean that all aspects of the previously smooth upward transition are now problematic. The vocational track in Germany will need to be reformed, and it is possible to identify a number of likely trends:

– the primacy of the largely firm-based route to skilled status will be increasingly challenged: experience of and learning at work will remain important, but education-based 'blocks' of study will become much more significant;
– the importance of continuing general educational development for young people within vocational education and training will be re-emphasised;
– greater attention will be given to creating 'second chance' opportunities to obtain recognised vocational qualifications for those over 20, who did not initially complete an apprenticeship;
– there will be further debate about how to meet the aspirations of those on vocational tracks who come from 'disadvantaged backgrounds': the introduction of less demanding two year apprenticeships or of a system allowing credit towards a full vocational qualification to be accumulated over an extended period of time being two possible options;
– one response to the increased instability in both occupational and internal labour markets will be to look for different mixes in the way skills are acquired and how learning can be targeted such that there is greater linkage and interaction between what is required in internal and occupational labour markets. The level of aggregation of some of the resulting 'bundles' of skills, knowledge and understanding are likely to be less than that required currently for a complete 'Beruf';
– access to higher education and higher level education and training through work-based routes will be made easier. This applies to both those with initial skilled and intermediate-level qualifications;
– there will be more flexibility in how people can mix different ways of acquiring skills, drawing on combinations of education-based learning and learning in the workplace, over time;
– even if it is not an explicit policy objective, one by-product of introducing more flexibility, and encouragement of vertical and horizontal mobility, into the vocational education and training system as a whole, will be to open up opportunities for progression to often well-qualified young women who find themselves in occupational cul-de-sacs, with poor long-term prospects.

6. Local contextual influences on the processes of becoming skilled

It is important to acknowledge that the local labour market can be influential in the way it facilitates and/or constrains the opportunities individuals have for becoming skilled (Bynner and Roberts 1991). In a similar vein, the particular institutions, organisations and groups an individual comes into contact with during the process of becoming skilled can be significant. One way of looking at these influences is to make use of the idea of **entry into a community of practice.**

The ideas that:

– learning is a relational social process;
– that processes of becoming skilled take place within a broader process of identity formation;
– and that recognition of significant achievement (and attainment of the status of experienced practitioner) is itself a socially mediated (or contested) process, dependent on the recognition of others and a sense of self-worth

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all fit with the idea that a dominant theme in occupational identity formation is entry into a community of practice. That is, individuals are developing occupational identities that need to be related to particular socially situated, contextually embedded practice. The following gives examples of this drawn from the research. That individuals who became formally skilled were in the process of entering an occupational community of practice was most evident in Germany, where the whole initial vocational education and training system is driven by the principal of 'Beruf' (Reuling forthcoming). However, within school-based initial vocational education and training the de facto community of practice within which the individual spends most time is the school, college or training institution. As a consequence, individuals may feel that they are still a considerable way from acquiring the full occupational identity in such circumstances, even if they are technically well-equipped to carry out the required work tasks. Certainly both the German and Dutch workers who had completed full-time vocational education felt as if they were 'pharmacy dispensing assistants in waiting' until they had demonstrated to themselves that they could do the work in practice.

That individual institutions had their own distinctive communities of practice could be gauged from the way they structured their work activities and in their attitudes to training. In the Netherlands, a training manager at one bank emphasised that their development, organisational structure and customer base were all sufficiently distinctive, such that someone training and working in their bank for several years would typically end up with a different skill mix from their equivalents in other banks.

One of the English insurance companies made it clear to its employees that it was looking for commitment to the organisation, and that this was more important than achieving occupational qualifications. This attitude was evidence by a refusal to allow a young person to continue with their day release vocational education, when their status changed from a trainee to an employee. One German engineering employer stressed to prospective apprentices that they would get a very different, and much more practical, training from that on offer at the other major employer in the town.

Particular workgroups may have their own distinctive community of practice too. This is perhaps likely to be strongest where a specialist group is set up within a larger organisation, with people from a mix of occupational backgrounds, a different set of work activities and a different pattern of inter-relationships with other work groups. Such groups may consciously define themselves as 'special'. Both in engineering and insurance, some young workers reported that specialist units, concerned with future development, had their own distinctive ways of working.

The commentary given above fits well with the ideas put forward by Lave (1991) in 'Situated Learning in Communities of Practice'. Her general ideas [of:

- changing knowledgeable skill being subsumed in the process of changing identity in and through membership of a community of practice;
- situated social practice emphasising interdependency of agent and world;
- activity, meaning, cognition, learning and knowing being underpinned by inherent processes of social negotiation of meaning within a socially and culturally structured world;
- the way newcomers become old-timers as they develop a changing understanding of 'practice' through participation in an ongoing community of practice;

- the changing relationships of newcomers to ongoing activities and other participants]

There may be a danger that the idea of a community of practice is elevated to a position whereby the individual is seen as 'becoming' a practitioner, rather than just learning the practice, but it is still a matter of taking on identities and roles, which are pre-existent. Whereas individuals may take a pro-active role in becoming a full participant in a changed community of practice, which has been partly changed by their efforts. Hence there is scope for individual agency to act upon the structures and processes in such a way so that a new community of practice develops.

7. The significance of the recognition of others and the quality of support in processes of becoming skilled

The reaction of others can have direct or indirect effects on perceptions that the individual and/or others have on the developing identity of a skilled worker. This is perhaps most marked when the work activities are themselves changing rapidly. Before turning to positive examples of support, it is perhaps worth looking at a case where others were seeking to undermine the emerging identity of a young skilled worker.

One nurse made the point forcefully that the way she engaged with her work was disapproved of by some more senior nursing staff. This was not because of any failure to perform competently, but rather because it did not 'fit' with the way they engaged with their work, currently and in the past. At the heart of this was a feeling of the senior nursing staff that the relatively newly qualified nurse was too 'pushy': confident in her own judgements, ready to voice her opinion and not afraid to challenge the decisions of more senior colleagues. They did not feel that she accorded either doctors or themselves the respect that was their due.

This 'battle' between 'old' and 'new' ways of working, and ways of engaging with work, is common at all times, but is given greater impetus when there is major organisational and/or technological change in a workplace. This 'battle' may be given added spice, if the proponents of the different views represent an 'old guard' and a 'new guard', trained in different ways and with differing sets of skills and attitudes.

The conflicts mentioned above can lead to a 'labelling' process whereby significant others, and perhaps even the individual herself or himself, regard the individual as a 'rebel'. In the above example, relations had deteriorated to such an extent that some of the senior staff complained not only about the junior's emerging occupational identity as inappropriate, but also attacked her identity as a person. Her style of dress, personal appearance and (presumed) morals were all regarded as a 'disgrace': they made it clear that they thought she was the wrong type of person (to fit with their assumptions of what was required) to be a nurse.

The above is an extreme example, but it does indicate that an individual cannot necessarily control something as fundamental as their identity at work. How they are perceived by other workgroup members, managers, other workers, trainees, clients and so on can all be influential in the formation of an occupational identity and an identity at work. The judgements of others may not necessarily be consistent and, even if they were, people may ascribe different values to particular characteristic. Thus a thorough painstaking approach to work may be appreciated by

trainees and some clients ('conscientious; professional'), but be seen as irritating by managers and other clients ('too slow').

The salience of the interaction between an individual and others in working, learning and other relationships is self-evident in any process of identity formation. The formation, development, maintenance and change of an occupational identity, and/or identities at work, are influenced by the nature of the relationships around which they are constructed. Thus the recognition of others is significant in signalling to individuals the progress they are making towards their goal of becoming experienced skilled workers. In this respect, the support of a coach at work can help speed progress towards that goal. However, to be effective a coach needs to know how to offer support in a constructive manner. While lip-service is often paid to the importance of coaching, this is not always accompanied by a commitment to develop supporting skills in prospective coaches. Practice in Europe was very variable in this respect:

- in Germany, coaching or supporting expertise is bedded in the structures of work, and is part of a system-wide 'training culture.' For example, in a German engineering company it was expected that formally skilled workers still required the explicit "support, encouragement and advice from their peers" to reach the standard expected of experienced skilled workers in that company.
- in Holland, in the absence of system-wide support for the development of coaching expertise, one strand of the attempt by individual companies to promote a culture conducive to learning may be to link advancement within the company to an individual's progression in learning, including recognition of how successful they are in supporting the learning of others;
- one common feature of exemplary practice in both countries is the reliance upon working coaches: that is, workers, working alongside or close to others, to assist the development of other workers. From this three criteria could be formulated to test whether the use of 'working coaches' in companies is likely to be effective:

    i. there has to be a mechanism that allows a prospective coach to develop the skills of guidance, facilitation and support;
    ii. coaches themselves have to exemplify a continuing commitment to learning;
    iii. the development of their expertise as a coach needs to be reflected in career advancement and progression.

These criteria form a stiff test for companies and it may be difficult for them to leap to such an advanced form of support in one stage. Hence they may wish to 'prepare the ground' for the eventual deployment of working coaches through technical skills development and the promotion of helping and support skills. It is important then to make appropriate use of international comparisons. This means that the use of analysis of exemplary German and Dutch practice is not so it can be simply copied, but rather there is a need to isolate the underlying values that make that practice exemplary and then look for ways that those values can be expressed in other contexts. For example, the under-development of promotion of helping and support skills in England sometimes compromised attempts to move to new forms of work organisation. On the other hand, there were examples where underlying values were supportive of education, training and development. In such a context a company with a long-term orientation, and a focus on learning, may regard each worker as a potential 'working coach': so

besides each worker having a planned programme of continuous learning, which interweaves working and learning, each worker will also be encouraged to develop the skills necessary to support the learning of others.

8. Characteristics of individuals that contribute to successful transitions through to experienced skilled worker status

8.1 Individual engagement with (changing) activities at work

Individuals learn how to engage in the activities at work in the way they do. It was very striking the way that management in some companies (for example, in insurance in Swindon; in engineering in Paderborn) had very clear ideas of what they considered to be appropriate ways for their skilled workers, and those in the process of becoming skilled, to engage with their work. Individuals reacted very differently to such expectations. In the English insurance company, one of our respondents found the 'company way' oppressive. She reacted so strongly against the pattern of activities she was expected to undertake, and the way in which she was expected to undertake them, that for her these became defining characteristics of what she did **not** intend to become. She just could not engage with the work she was expected to do.

On the other hand, another respondent at the same company bought into the company imagery of a 'ladder of opportunity' for those demonstrating commitment to their work. He was promoted five or six times during his first five years with the company. He was given supervisory responsibilities and then asked to undertake a specialist role in computer analysis of future trends in a newly formed work unit. This specialist role required engagement with a set of activities that were not only new to him, but also new to the company.

Between these extremes of complete rejection and complete engagement, young skilled workers exhibited a wide range of attitudes and behaviours in the extent to which they engaged with the activities they performed at work. Thus, for example, two (German and Dutch) pharmacy dispensing assistants rapidly came to terms with the relative lack of challenge in their work: the work was thought to match quite well both with their prior education and training and their desire for work, which contained some interest, but was not too demanding.

By contrast, two other pharmacy dispensing assistants did not think the work engaged them sufficiently. One (English) pharmacy dispensing assistant sought initially to broaden the range of activities she engaged in within the shop, but outside the pharmacy itself. Subsequently she was promoted, and given supervisory and training responsibilities. The second (Dutch) pharmacy dispensing assistant looked for a more demanding job, and eventually secured employment in a hospital pharmacy, where she carried out a wider range of work activities and where the work was seen as generally more challenging.

8.2 Extent to which young people were proactive in the development of their own occupational identities

One major distinction between young people was the extent to which they saw themselves as active in constructing their own identity, and in how they perceived their developing occupational identity. Some young people (in hairdressing and insurance) rather passively

accepted their place at work: they saw themselves as likely to be doing broadly similar work with their current employer for the foreseeable future. They were not operating with any progressive notion of career, not did they have any great expectations of work. Their identity at work seemed bound up with being an 'ordinary' (rather than a 'special') worker: doing the job steadily, without entertaining thoughts of promotion or changing employers.

On the other hand, in the same occupational areas (hairdressing and insurance) there were examples of young people who were actively constructing dynamic identities, in which occupational success was an important factor. The (English) hairdresser had worked hard, taking part-time employment in a sports centre during her training and initially while working as a hairdresser. This was to give her the financial base to set herself up and establish herself as a mobile hairdresser. However, she also recognised that hairdressing alone would not be financially lucrative. Hence she built up expertise in a range of other complementary services (beauty therapy, aromatherapy and the like), such that she would be able to offer a fairly comprehensive range of beauty services to her clients. The flexible nature of her work, and the fact that as she was self-employed she was in control of her work, were also bound up with her broader identity. She was married and intended to have a family in the near future. She felt she could combine her work, expanding or reducing its extent as appropriate, with child-care responsibilities. Longer-term too, she felt the flexibility of the work would mean that she could effectively finance any training she might wish to undertake, if she wanted to move into a completely different occupational area.

One of the (German) insurance workers was similarly pro-active in constructing their own particular identity. After completing a couple of years experience after formal qualification as a skilled worker, he was offered a new promoted post at work. However, rather than accepting the job immediately, he advertised his services as an experienced skilled worker in a regional newspaper. He received over a dozen replies from companies, and after talking to five or six of these companies, he opted to work for a particular company. The reason he chose that company was because of the nature of the work they offered him. This involved offering specialist advice to major banking companies upon significant changes affecting the insurance industry. This work was at the 'leading edge', involving research and analysis every month. He felt he would learn a great deal, and that this would put him in an excellent position several years in the future to seek other employment, utilising his specialist expertise, or to set up as an independent consultant.

8.3 Extent to which young people have learned to learn

The pace of change in many aspects of work and the work environment put a premium upon the ability to learn. Learning to learn is seen as fundamental if workers are to be able to adjust to changes in organisational structures, technological innovation and almost constant change to work processes (Dutch Ministry of Education and Science, 1993). One key attribute, associated with initial skills development, which needs to be developed is the ability `to pick up the threads' in future when skills need updating (Brown et al 1991). That is, young people need to be confident about their ability to learn in future.

There is almost universal recognition then of the value of learners learning how to learn (Novak and Gowin 1984; Smith et al 1990), and this can give a basis for continuing learning in the

workplace. As a consequence getting learners to learn how to learn is often given as an aim in programmes of initial vocational education and training. However, this does not ensure the issue will be addressed in practice (Evans et al 1987). This is because of the historic problem associated with many education and training programmes of the tendency to focus those tasks that are easier to teach and/or assess (Sockett 1980). Conversely, the development of more general skills, including learning to learn, which underpin much activity in education, training and employment, can be seen as the responsibility of everyone, and hence in practice of no-one in particular.

`Learning to learn' can be linked to the inculcation of habits such as systematic observation, analysis and a questioning attitude (Annett and Sparrow 1985). This it is important especially if learners are to take advantage of opportunities for learning outside formal education and training settings. This links to the need not only to embed the development of learning strategies within an occupational context (Soden 1993), but that the application of learning strategies should also be contextualised: "instruction should demonstrate what strategies can be used, how they can be applied, and when and why they are helpful" (Paris 1988, p 314). The ability and willingness to learn are fundamental to the development of skill, which includes a future-orientation as well as a concern for current performance.

A number of young people (for example, in banking; heating and ventilation; pharmacy dispensing) were engaged in significant continuing education or continuing professional development activities. They were following recognised paths leading to higher technical, supervisory or training qualifications, and they hoped that these, coupled with their experience of work, would open up new employment opportunities. In such circumstances, they had a current occupational identity but were also in the process of going beyond that, and this progression was partly based around their commitment to continue learning.

8.4 Possession of transferable skills

The value of the development of transferable or core skills is now widely acknowledged and an essential task of further education and training is to incorporate these broad skills into learning programmes, particularly those aimed at significant numbers of 16-19 year olds (Brown et al 1991). The increasing pressure on many workers to be able to adapt quickly, perform a wide range of tasks and work in integrated environments mean that not only might a greater range of technical skills be required, but also that greater demands are made upon the use of core skills (Dankbaar 1995). Also it may be that general skills are much more likely than specific skills to transfer (Fortheringhame 1984). Nijhof and Remmers consider that basic (core) skills should be regarded as those "cognitive, communicative and group process skills which have transfer value" (quoted in Dutch Ministry of Education and Science 1993, p. 35).

Most employers are aware that recruits with highly developed core skills (transferable skills and the ability to transfer them) will find it relatively easy to pick up any shortfall in occupationally-specific skills, particularly once they are immersed in an occupational context (BT 1993). They are equally aware though that if the reverse applies, that individuals have the necessary occupationally-specific skills but lack some key core skills, then remediation will be much more difficult (Jallade 1989). Where companies see the nature of their industries changing rapidly

they may be keen for `transcendent' approaches to training. That is, they recognise that core skills become even more fundamental (BT 1993) and that training and skill development will need to go beyond the confines of the traditional industry (Hövels and van den Berg 1991).

The emphasis upon the importance of core skills development is not an argument for the decontextualised teaching and learning of these skills (Barrow 1991), nor for neglect of occupationally specific skills. The key point is that both more specific occupational skills and general core skills can be developed **at the same time.** Indeed integrating the two can be a powerful learning tool (Brown 1988).

The assessment of core skills in practice though is sometimes problematic (Wolf 1991) and core skills specifications may not get to grips with promoting the ability to transfer (Blagg et al 1993). Hence attention may need to be directed more towards the process skills which underpin the ability to transfer. It is therefore important to get both learners and those supporting learners thinking and reflecting upon the core skills development of learners. The line of this argument is that if there are core skills, which underpin effective performance at work, then a crucial aid to the development of these skills is that learners become aware of their significance and how they are being used (Levy 1987).

Because many jobs are becoming more complex through task integration, increasing demands are being made upon learners to extend their knowledge base (through greater breadth rather than greater depth) (Dutch Ministry of Education and Science 1993). This in turn puts a premium upon the ability to transfer knowledge and skills to different situations (not least so as to reduce the learning time). Research highlights the importance of learners developing schema (Hesketh et al 1989), networks (Simons 1990), or maps (Soden 1993), so as to be able to organise what they have learned, with the increased possibility that they could then apply this elsewhere.

Transfer tends to be highly specific and it needs to be **guided**: it rarely occurs spontaneously. However, Perkins and Salomon (1989), in their review of research on transfer, argue transfer is possible, depending upon how knowledge and skills have been learned and how the individual deals with that knowledge in different contexts: "general skills and bits of knowledge taught within a specific context can become transferable" (Perkins and Salomon 1989, p. 22). Hence two conditions are generally required for transfer to take place: context-specific knowledge and general skills have to be brought together and the approach to learning needs actively to seek ways to encourage transfer.

If one intention of a learning programme is to help learners develop the ability to transfer skills, knowledge and understanding, then learning contexts are required which draw attention to the significance of skill transfer. For example, this could involve actively helping people to look for opportunities to transfer skills, knowledge and experience and giving them opportunities to practise making successful transfers (Blagg et al 1992). Exposure to a **range** of contexts then can be valuable both for the way it can enhance and lead to a more complete ownership of a skill (Hayes et al 1983) and because it allows learners to make connections (and think about transfer) between contexts (FEU 1984).

Pea (1987) argues that it is necessary to promote a transfer culture, and this would include organising an affective climate directed at transfer. Hence attempts should be made to make transfer strongly linked to learner motivation and commitment. The whole thrust of this approach then is that learners in particular, but also trainers and tutors, are encouraged to analyse contexts for the possibility of skill transfer. Those supporting learners, particularly in the workplace, have to want to support skill transfer and there is evidence that this condition was often not met in the past (FEU 1985).

Currently both in the Netherlands and Germany stress is being placed upon the potential for simulations or extended project work to integrate a number of strands of learning and to seek to promote the ability to transfer from that base (Dutch Ministry of Education and Science, 1993; Schmidt-Hackenberg 1992; Achtenhagen 1994). Hayes (1992) gives examples of this approach being adopted in England.

The requirement that learners integrate a broad range of experiences, besides having the capacity to develop the ability to transfer, can itself also help in the development of learners' critical thinking and conceptual skills (Winter et al 1981). This does though depend upon learners being given opportunities for reflection so as to broaden the generality of skills and knowledge learned (Simons 1990).

Overall then, it is important to ensure learners are given opportunities to improve learning to learn skills and that a sufficient range and quality of learning opportunities are available for individuals to develop their core skills. Further, if one intention of a learning programme is to help learners develop the ability to transfer skills, knowledge and understanding, then learning contexts are required which draw attention to the significance of skill transfer.

8.5 Extent to which young people have mastered a substantive knowledge base

One response to the speed with which the knowledge underpinning skilled activity is changing is to argue that as long as individuals have the capacity to learn the new information, then less emphasis needs to be given to mastery of an initial knowledge base, particularly if some of it is rapidly becoming out of date. This argument should be treated with caution, not least because the mastery of a substantive knowledge base could itself be regarded as an important process skill. In order to become experienced skilled workers learners should have the opportunity to build a substantive knowledge base. This aligns with arguments about the importance of developing thinking skills and intellectual effectiveness, as mastery of a substantive knowledge base is an important component of intellectual development associated with the development of expertise and an all-round occupational competence or mastery (van Luijk and van der Vleuten 1990). The build-up of a substantive knowledge base as part of domain-specific expertise is central to experts' problem-solving strategies (Chi et al 1988).

The importance of developing an extensive knowledge base to underpin expertise in a domain was under-estimated in practice in the development of many new National Vocational Qualifications in England. The attempt to strip out `unnecessary knowledge' from qualifications was initially followed with too much zeal, and in any case was to some extent misguided in that `to create qualifications which assess the knowledge required to underpin and extend competent performance, directly in relation to such performance' (Jessup 1991, p127) was in an important

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sense too narrow. This is because such a view overlooked that the development of a substantive knowledge base itself is crucial to what is learned in future in the development of expertise (Achtenhagen 1994). This is because a depth of knowledge, going beyond that required to underpin current competence, can be used in a reflective or recontextualising way to inform subsequent practice (Fleming 1992).

The compartmentalisation and unitisation of knowledge and theory can be uninspiring and ineffective (Atkins et al 1993), but occupational skills development, which develops just the knowledge required for performance can also fail to give a sufficient base for future learning (Dochy 1992). Also extending the knowledge base focuses attention on the need to organise, access and use information for different purposes, which itself distinguishes experts from novices (Blagg et al 1993; Eteläpelto 1994). In order to develop a broad occupational competence then there are very strong arguments in favour of supporting learners to develop a substantive knowledge base (Resnick 1987; Barrow 1991), which goes beyond that required to underpin current occupational competence, and equips them to develop future expertise.

According to this analysis then getting learners to engage both with performance and the relationships between activities, explanations and concepts **at all stages of learning (and assessment)** could be particularly fruitful. This would have the additional benefit for learners of drawing attention to the necessity of communicating what you have done and why. It can also be used to encourage an greater reflexiveness and develop intellectual effectiveness in learners. This requires that the assessment system should be sufficiently demanding to act as an engine of learning development (Linn et al 1991).

The belief in the value of learners developing a substantive knowledge base should therefore not be seen as an argument in favour of a concentration on knowledge acquisition at the expense of performance. Indeed the Jessup (1991) line of linking knowledge development much more closely with performance does accord with the value of practical situations as more effective learning environments than attempting to develop a knowledge base in an abstract way (Kirschner et al 1992), and that knowledge is `situated', in part a product of the activity, context and culture in which it is learned and used (Brown et al 1989).

Hence what is now required are more imaginative ways of **integrating** knowledge acquisition, problem-solving and `key qualifications' (core skills) development in work-related activities, which are relevant to the workplace and meaningful for the learner (Achtenhagen 1994; Bunk et al 1993). Diepold and Rischmüller (1987), Achtenhagen (1994) and Hayes (1992) all argue strongly that extended `company' simulations can deliver such integration. They argue that such simulations have the potential for helping learners engage in a broader `systems thinking'. In this respect, there would appear to be some strong alignments with the development of problem-based learning (Boud and Feletti 1991): it is learner-centred with the integration of subjects and skills into thematic blocks, coupled with use of learning oriented work in small groups and self-directed learning. Such methods would also be compatible with assessment processes that tested knowledge generated from an analysis of practice (Atkins et al 1993).

In summary then, the argument for learners developing a substantive knowledge base as a component of a broad occupational competence has a number of strands. First, the build up and use of such a knowledge base is fundamental to high level occupational competence or

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expertise. Second, the development of such a knowledge base is crucial for future learning. Additionally , for those countries such as England that are operating at a low skills equilibrium (Finegold and Soskice 1988) then, such an approach would accord with an attempt to make our vocational education and training more demanding and act as a pressure for a move away from a low skills equilibrium. Such an approach, however, needs to be aligned with practical and active work-based learning, concerned with current and future performance in an holistic approach to the development of competence and expertise. It is also important to monitor what happens in practice, as "work-based learning has the capacity to deliver an exceptionally challenging and rewarding learning environment. However, it can also produce sterility, where challenges are few and a series of mundane experiences lead to little learning" (Brown 1992, p 134).

9. How to promote effective work-based learning in support of continuing skill development

The foregoing arguments make it clear that it is increasingly likely that elements of initial and continuing skill development are dependent upon learning while working. Onstenk (1994) points to the need for workplaces to offer 'strong learning environments', where it is possible for learners to apply their developing skills, knowledge and understanding in different contexts. There are some obvious difficulties for some small companies in providing the full range of learning opportunities required for the development of a broad occupational competence. In Germany, one consequence of the reformation of apprenticeship training in engineering and electrical occupations was a discontinuation of apprentice training among a number of smaller companies, who could not meet the higher requirements (Grünewald et al 1989). This was despite these companies typically employing a high proportion of skilled workers and being committed to training (Lane 1988).

In the Netherlands too, smaller companies had difficulties providing sufficiently varied learning opportunities (Nieuwenhuis and Wiggers 1994). One response to this problem was to allow several different firms to enter into a single apprenticeship agreement with a trainee to provide the training collectively (Hövels and van den Berg 1991). The rationale for this was that it gave access to a much wider range of experiences, including use of different types of equipment. The existence of networks of interdependent small companies in some occupational and geographical areas might increase the possibilities of such co-operation (Bull et al 1995). The increasing interdependence between suppliers and major manufacturers, which means employees of a smaller company may spend lengthy periods of time working in the larger one could also be utilised for training and development (Dankbaar 1995).

Training practitioners in one study in England strongly believed that organisational culture itself could be influential, whereby "the *wrong* organisational culture would significantly inhibit effective learning" (Knasel and Meed 1994, p 17, original emphasis). In contrast, in an organisation with a long-standing commitment to learning, then it may appear natural that workers learn with the company (Brown and Evans 1994). Pettigrew et al (1988) saw the existence of receptive or non-receptive training contexts as influential upon the whole approach companies adopted to the development and management of their human resources.

While some small companies are reluctant to get involved in training and development (Keep and Mayhew 1994), other relatively small or medium-sized enterprises are highly innovative, and particularly if linked into `multi-firm networking processes' (Rothwell 1993), they can offer very rich learning environments. In such circumstances, work itself (and the survival of the company) is concerned "with extending levels of organisational adaptability and flexibility and with developing new areas of knowledge and technological competence" (Rhodes and Wield 1994, p168). The richness of the work/learning environment is such that knowledge and expertise rapidly develop through work, which is itself taking place in different contexts (and possibly companies). In such circumstances great emphasis is given to possession of "a broad mix of skills is required to achieve viable levels of flexibility in the development and delivery of products and services, and to sustain viable inter-firm networks" (ibid. p 169).

The development of a deep-seated occupational mastery is dependent upon a balance being struck between learning for work and learning through work (Brown and Behrens 1993). It is unrealistic to expect such mastery to develop where it is matched onto largely undemanding work: job restructuring needs to be placed upon the agenda in such circumstances (Raffe 1991). Keep and Mayhew (1994) argue that in many areas in England employers have a low demand for skills, so attention needs to be focused not only upon the possibilities for learning associated with particular activities or jobs, but also upon the extent to which the organisation itself demonstrates a commitment to learning through its culture (Brown and Evans 1994; Pettigrew et al 1990).

Work-based projects are one means of enhancing work-based learning, integrating learning from different contexts and encouraging learner independence. This is not to argue that such a project-focus is always necessary, but without it the work and/or training had to be already exceptionally rich in opportunities for learning and development. Training or learning-oriented organisations may not need a framework of explicit work-based projects, but those without such an orientation may find such a framework useful in helping them focus more explicitly on learning.

In Germany, attempts at reformation of the in-company vocational education and training component of apprenticeships centred around a number of pilot projects (Diepold and Rischmüller 1987; Schmidt-Hackenberg 1992). One avenue of development for second and third year apprentices made use of `Leittexte' (guidance scripts or project briefs), which consisted mainly of written questions, designed to help trainees become more self-reliant and independent through finding out for themselves. The whole approach was similar in design, intention and execution to the development of work-based projects as part of the British YTS Core Skills Project (Evans et al 1987).

In the Netherlands, employers without a clear training orientation had problems delivering sufficient opportunities for learning on training schemes (Hövels and van der Berg 1991). In such circumstances other means of making learning opportunities available should be considered. For example, simulations have the potential to facilitate exploratory learning in relation to complex dynamic systems (de Jong and Ngoo 1992). In Italy, Fiat have attempted to build a corporate knowledge base, which is constantly enlarged and updated, to underpin and support work-based learning (Follis and Finello 1995).

One problem associated with proposing the use of work-based projects is that some people have a fixed idea about what a project looks like (whether it is a `typical' business studies market research project or production of a `typical' engineering craft product). However, a group project might be a review of quality control procedures of a service organisation (European Community IFAPLAN 1986). Indeed the complexity of production processes and the intensity of work pressure on employees might mean that projects could address a whole range of issues and activities, which while desirable and of direct interest to the company are not carried through because of more immediate pressures.

The purposes of work-based projects need to be clearly thought through (Evans et al 1987). An example of a project with a clearly thought out purpose could be where there is an intention to get learners to **reflect** on their work-based learning to try and achieve a different (and more `expert') way of conceiving problems at work (Eteläpelto 1994). An alternative to using work-based projects might be to use learning plans, contracts and reviews as a means of getting reflection upon experiences and learning at the workplace (Marshall et al 1992). Knasel et al (1994) show that similar ends can be achieved through the use of action planning, learning logs and reviews or through using a critical incidents approach.

In all three countries, there is developing interest in ways of linking working and learning:

- increasing attention is being given to work-based learning, especially by large companies, particularly making use of action learning, project work and self learning, sometimes supported by systems of tutoring, mentoring, coaching and group work;
- in all three countries attempts have been made to encourage systematic reflection upon what has been learned through the use of assignments, work-based projects or Leittexte (guidance scripts);
- other workers not necessarily trainers or supervisors, can play a mentoring , support or coaching role to those developing their skills at work. Although in some cases, such workers lacked the necessary support skills for the help to be as effective as it might have been;
- in developing occupational expertise, those becoming skilled have to develop appropriate mental models or 'ways of thinking', and one key stage in achieving this is through the development of frameworks or networks which link together knowledge and ideas from different sub-areas or sets of activities;
- work-based learning experiences could range from the challenging to the rather sterile: efforts should therefore be made to create a workplace context that qualifies as a 'strong learning environment', where those working and learning are able to apply their developing skills, knowledge and understanding in different contexts;
- the value of work-based learning is established in some contexts, but a key question is how can these ideas be put into practice in other contexts;
- there could be considerable benefit from establishing a European infrastructure to facilitate networking between different initiatives, programmes and alliances aimed at the promotion of work-based learning: for example, in trying to forge 'alliances of learning' covering a wide range of companies in particular industries.

10. Concluding discussion

I do not propose to offer a summary of the way forward, which reduces the complexity of some of the issues that I have raised in this paper. Rather the complexity should be valued in that it is that complexity which makes it necessary to seek a more imaginative forward. Indeed the complexity of issues outlined here might make it useful for a series of learning networks to be established that could promote and support developments in work-based learning. These networks could be organised on local, regional, national or European levels, and within and across industrial sectors, as appropriate. They could play a strategic role in the further promotion and development of work-based learning as a means of developing and updating broad-based occupational expertise. Such networks would probably require some external financial support. However, they would also require a suitable development environment, if they were to flourish: one based upon an innovative research culture for vocational education and training in Europe, and there are signs that this what a number of nascent European groupings are seeking to foster.

My final task should therefore be to point towards further research which needs to be undertaken. This could involve three areas of research and development. The first could focus upon developing breadth and flexibility in skill formation processes, so as to equip young people with the ability to adjust to changes in organisational structures, work processes and technological innovation, as well as with the individual flexibility to re-orient their career direction, if necessary. The basic parameters can be outlined, but they still need to be operationalised in practice. So in order to overcome worries that vocational education and training will be too narrowly focused upon particular (current) conceptions of jobs and occupations, which are themselves changing, then it is evident:

- the prime focus of the inter-relationship between education, training and employment needs to be upon learning, and learners need to develop effective learning strategies. This requires learners being given opportunities to improve their learning to learn skills, develop their core skills, and a variety of contexts in which to practise skill transfer.
- processes of review and critical reflection are pivotal, and that organised reflection on what has and what needs to be learned can act as a bridge between working and learning.
- the attention on the process skills underpinning the ability to be effective in different contexts does not diminish the need for mastery of a substantive occupational knowledge base. The development of process skills should ideally be embedded in appropriate occupational contexts. Further, mastery of a substantive knowledge base is not only central to the development of occupational expertise, but it also forms a platform for continuing learning in the future. [Critics of the German dual system sometimes consider too much emphasis is given to mastery of a knowledge base, which often gets rapidly out-of-date. However, what this overlooks is that mastery of a knowledge base does not just result in a product but itself requires a process, and this process has continuing value because it can have a confirming or transformative effect on the beliefs of young people that they can be effective learners.]

The second area for research and development relates to how to make work-based learning more effective. Issues which will need to be addressed include:

- is it possible to forge 'alliances of learning' that cover a wide range of companies in particular industries?

- the processes of formative feedback and organised reflection are vital for the recognition and assessment of work-based learning. How can the use of such processes be extended?
- what are the most effective ways to create an environment supportive of learning in the workplace?
- the possibility of making much greater use of performance in a range of contexts for the purposes of assessment should be reviewed;
- what combinations of assessment evidence hold out the possibility of designing work-based assessment systems which, in addition to being valid and reliable, are manageable and have consequential validity?
- what are the most appropriate ways to resource work-based learning (using different patterns of structure, supervision and support)?
- what are the consequences of different ways of sharing the costs of accreditation of work-based learning (for individuals, employers, education and training institutions, local and central government)?
- there is a need to investigate issues of access and equity associated with the increasing recognition of work-based learning (as there is increasing bifurcation between individuals, groups and organisations in their access to and/or commitment towards work-based learning);
- the purposes of assessment and their effects on work-based learning need to be given careful consideration: particular attention should be focused upon ways of outlining learning outcomes and processes in broad terms and avoiding the problems associated with highly detailed criterion-based assessment systems;
- what process skills underpin the ability to be effective in different contexts? (That is, investigation of the process skills which underpin the ability to transfer would be more fruitful, rather than yet more work on specification and development of core-skills/key qualifications).

The two research and development areas mentioned above are applied and technical in character. Conceptual development, however, is also required. For example, there is a need to investigate ways to reconcile the needs of individuals and the organisation for learning development (for example, the use of learning contracts, project work and portfolios offer scope for assessment and accreditation of individual learning, within a linking of working and learning for organisational reasons), There is a need also to reconcile the arguments of those with differing (individualist and organisational) foci: the former look to develop the skills, knowledge and understanding of individuals, while the latter emphasise the social context of learning within organisations and the value of what is learned by groups and by the organisation itself. Further work is also required on the model of occupational identity formation. The model outlined here looks as if it can handle a number of key tensions in any attempted explanation of occupational identity formation. In particular it looks as if it can cope with the tensions that:

- there are elements of continuity and change over time in the processes whereby occupational identities are formed;
- the individual is a significant actor in the construction of her or his own occupational identity, but the process is not wholly subjective. On the other hand, individuals and their interactions with others are partly constrained by the structures and processes of the

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communities of practice in which they take place, but that these interactions over time may lead to the development of changed communities of practice;

- occupational identities vary in the intensity with which they are held, and in the significance individuals ascribe to them. That is, while they are central to our research, they may or may not be of great significance to the individuals we are tracking. On the other hand, the broader process of identity formation in the sense of 'making a life' is fundamental to all individuals.

The focus of the model is upon a dynamic process. The model should therefore be well suited to be used as a tool for analysing longitudinal data on the processes of skill formation. It has been successfully applied in Europe, but can it be used in other contexts, such as in North America?

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