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Exploring the Dangers and Benefits of the UK's Permissive Competence-Based Approach: The Use of Vocational Qualifications as Learning Artefacts and Tools for Measurement in the Automotive Sector

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ABSTRACT

This paper presents evidence to show how vocational qualifications act as boundary objects in the stimulation of learning at work and how they, in turn, become the catalyst for the creation of artefacts that have a purpose and existence beyond the life cycle of an accreditation process. The context for the paper is the UK's automotive manufacturing industry, a sector that has undergone considerable change over the past thirty or so years and has been under intense pressure to improve standards. The paper presents evidence from case studies of two companies that produce parts for global car manufacturers. These companies have introduced competence-based approaches in order to audit and assess the skills of their workforces in response to demands from the companies they supply that they can prove their employees are working to the required international quality standards. The competence-based approach, which is contested in the academic literature, has enabled employees to gain National Vocational Qualifications (NVQs), which, in turn, are still controversial some twenty years after they were first introduced. The paper argues that a competence-based approach can be beneficial to both organisations and individuals, but the ambiguities inherent in the NVQ model of competence create tensions and opportunities for restrictive as well as expansive forms implementation.

Vocational Qualifications as Learning Artefacts and Tools for Measurement: The Elastic Potential of Competence-Based Qualifications in the UK's Automotive Sector

INTRODUCTION

This paper is set within the automotive manufacturing sector of the UK economy. It draws on two case studies from a multi-sector study of the relationship between learning in the workplace and the way in which work is organized[1]. The case studies presented here are of companies, based in England and Northern Ireland, who make parts for global car manufacturers. The paper focuses on production workers involved in the manufacture of wheels, cylinder heads and pressed steel for use in car assembly. The increased pressures of the global marketplace means that both case study sites have experienced considerable change in recent years, including job losses, and new forms of work organisation, including multi-skilling. Both sites, for different reasons, have introduced initiatives aimed at accrediting the skills and knowledge of production workers through the use of competence-based National Vocational Qualifications (NVQs).

For some 20 years, since NVQs were introduced, they have been widely criticised and condemned by many in the UK educational and wider academic community. This has tended to render invisible innovative approaches to the assessment and accreditation of skills in the workplace arising out of a competence-based approach. In the two case study settings discussed in this paper, the competence-based approach is seen to be beneficial to both employers and employees. At the same time, however, this very ability to meet both organisational and individual needs creates substantial tensions that have to be addressed by those charged with implementing and supporting learning in the workplace. The paper presents evidence to show how vocational qualifications act as boundary objects in the stimulation of learning at work and how they, in turn, become the catalyst for the creation

[1] Details of the multi-sector study ((RES 139250110A), which is funded under the UK's Economic and Research Council's Teaching and Learning Programme (TLRP), can be found at: http://learningaswork.cf.ac.uk. The study is co-directed by Alan Felstead, Alison Fuller and Lorna Unwin.

of artefacts that have a purpose and existence beyond the life cycle of an accreditation process. Whilst the paper highlights the difficulties organisations face in sustaining these processes, due to the intensity of business pressures, it argues that the concept of a competence-based approach can be beneficial if it is used to monitor and affect change in the organisation of work and, as a consequence, as a tool for making visible the developing expertise of employees at all levels. In that sense, the decisions organisations take in terms of how they construct and implement a competence-based approach will affect the extent to which it can contribute to the broader creation of what Fuller and Unwin (2004) refer to as an 'expansive learning environment'.

In using the term, 'boundary object', we are drawing on the work of Tuomi-Grohn et al (2003:5) and Star (1989) who conceive of objects as artefacts that can be used to mediate between different spheres of activity. Engeström (2004:160) takes this further by arguing that boundary objects, such as care agreements in health settings, can be used as instruments of collaborative expertise in the process of what he terms 'negotiated knotworking' involving groups of professionals from different organisations or departments who come together to work towards a shared goal. In this paper, we are concerned with work in large manufacturing plants where production operatives are now being required to ensure they conduct their operations within tightly prescribed quality standards and, at the same, time work collaboratively to spot and minimise faults and other problems that could cause a break in production or in sub-standard products being released to customers. To this end, the case study companies discussed in this paper provide evidence of the use and pedagogical potential of boundary objects in the context of large-scale manufacturing, which is attempting to move away from the strict demarcations in terms of work organisation and routinised conceptions of work practice that have been traditionally used in manufacturing plants.

This paper now proceeds in five sections. The first provides details of the economic and business context within which the UK's automotive industry operates and the challenges it faces. The second discusses the contested nature of the competence-based approach and the NVQ model of qualifications in the UK. The third section

explains the case study methodology. The fourth section presents and discusses the findings from the case study research, and the fifth section provides some concluding remarks.

CASE STUDY CONTEXT

Although no major British-owned vehicle manufacturers remain in the UK, the automotive sector still employs over 500,000 people, with a further 100,000 in related occupations, and "comprises 70,000 businesses with a turnover of over £130bn per annum accounting for 3% of UK GDP" (SSDA and Automotive Skills, 2004: 1). The sector comprises many different sub-sectors, from the extraction and supply of raw materials, through component design and manufacture, to the final assembly and sale of vehicles. The auto-components sub-sector is central to the British automotive industry, employing as it does nearly 200,000 people in around 2000 businesses (SMMT, 2002a).

The performance of the UK's automotive industry has been criticised in recent years. Productivity is considerably lower in UK automotive firms than in similar companies in competitor nations such as Germany, the United States and, in particular, Japan. British firms are seen as being too slow to adopt and embed new modes of working and best practice techniques, with the result that their competitiveness suffers (see, *inter alia* Barlow and Chatterton, 2002). Special criticism has been reserved for UK firms in the automotive supply chain, which, according to the SMMT (2002a) are no longer the first 'port of call' for major car manufacturers. In the increasingly globalised automotive marketplace, 'top-range' manufacturers appear to favour suppliers in North America, Germany and Japan, while 'mid-range' (i.e. lower-cost) manufacturers look towards suppliers in Asia and Eastern Europe. UK suppliers are edged out due to "perceived weak performance in innovation [and] engineering" (SMMT, 2002a: 12), and fierce price competition from firms in low-wage economies (Rhys, 2004).

A number of factors have been implicated in UK automotive firms' poor performance relative to their competitors in Europe and overseas: for example, the high

value of sterling, the continued uncertainty surrounding the UK's entry to the Euro, and the bewildering and paralysing array of 'support' schemes for smaller manufacturers (see SMMT, 2002b:7-8). In addition, the sector is seen as particularly old fashioned in terms of its human resource development (HRD) practices and has a staff turnover of 25% (ASL, 2006). The Automotive Sector Skills Council reported in 2006 that:

> One of the reasons for poor staff retention is their lack of empowerment. The sector is typified by a bureaucratic, command culture that discourages deviation from the accepted norms and values of the sector – 'the way we do things around here' (ASL, 2006:14).

The cause of the UK's apparent lack of competitiveness is mostly laid, however, on a dearth of appropriate skills among the workforce, allied with inadequate training and development provision. For example, Mason and Wagner (2002) found that levels of workforce qualification are considerably lower, for all types and grade of employee, in the UK as compared with Germany. UK employers are, they observe, more reluctant to invest in the development of their workers than their German competitors, and this inevitably inhibits their productivity. Most notably, German companies still train considerable numbers of apprentices, in contrast to the UK (see Ryan and Unwin, 2001). Mason and Wagner (2002:6) argue that apprenticeship provides "a sound base for subsequent adult training designed to create flexible and multi-skilled employees on the shopfloor and in maintenance departments".

In contrast to Germany, most of the training that British plants engage in tends to focus on lower level skills, which do little to provide employers with genuinely multi-skilled workers who add value to the production process (ibid2002: 55). Mason and Wagner also point to the greater division between maintenance staff and shopfloor staff in the UK; in Germany, shopfloor staff are generally expected to have the skill to maintain their own machinery, thus reducing machine breakdowns and freeing up supervisors from the day-to-day fire-fighting that prevents their British counterparts from concentrating on more strategic process improvement issues (ibid2002: 40-41). The case study evidence presented in this paper supports Mason and Wagner's argument.

Furthermore, the sector has the least numbers of managers (14%) qualified to Level 4 (sub-degree level), and some 16% of managers hold no management qualifications (ASL, 2006).

The findings of the 2003 National Employers Skills Survey also found cause for concern:

> …23 per cent of establishments [in the automotive sector]… suffered from internal skills gaps… This suggests that there are some 48,258 employees who are not fully proficient at their current job, equivalent to one in ten of the workforce in the sector. (SSDA and Automotive Skills, 2004: 14).

It is argued that these skills gaps can lead to problems such as increased operating costs, difficulties in meeting quality standards and in introducing new working practices (ibid: 25). Furthermore, employers in the sector seem reluctant to take action to rectify the situation as only 43% reported providing formal training for any of their employees compared to a national average of 59% (ibid: 29).

There is evidence, however, to suggest that firms in the UK's auto components sector are attempting to change their work practices. Delbridge and Barton (2002:684), for example, whilst highlighting continued deficiencies in the training strategies of UK firms, also acknowledge that:

> …shopfloor group problem solving is widespread in the auto components industry and that operators are expected to make significant contributions to shopfloor improvement.

Such claims are supported by accounts illustrating the adoption of high-involvement, knowledge-intensive human resource approaches, such as Kaizen teams, works councils and 'Six Sigma' (see inter alia Politt, 2003). Furthermore, Mason and Wagner (2002: 73), highlight the increased use of 'mechatronics'. This represents an approach to design and engineering that integrates mechanical, electrical and electronic processes with software and IT engineering. This new form of manufacturing combines

previously disparate technologies and processes, therefore requiring a new set of skills from production operatives and has, according to Mason and Wagner (ibid), left manufacturers with little option but to adopt a more positive stance on employee development.

Boer et al (2005: 356) have observed that, in the automotive industry, "the battlefield of competition is increasingly moving from the level of individual firms to that of supply chains". As vehicle manufacturers look to increase levels of efficiency and quality while driving down costs, their suppliers become absolutely critical to delivering the desired performance improvements (see Aigbedo and Tanniru, 2004; Towill et al 2002). To this end, vehicle manufacturers, in an attempt to reduce in-house costs, are decreasing their own capacity in the assembly of 'modules' (e.g. pre-assembled units such as car doors and electronic displays) and out-sourcing this to first-tier suppliers (see Holweg and Mienczyk, 2003). This represents a significant challenge to the auto-component manufacturers, particularly those who occupy the top of the supply chain, who must acquire a whole range of new skills and capabilities simply in order to meet the evermore exacting demands of their customers.

COMPETENCE-BASED QUALIFICATIONS

Competence-based qualifications are used widely in automotive manufacturing, with 88% of employees in the sector holding an NVQ at some level (SSDA, 2004). They were introduced in the UK from the late 1980s onwards as part of government attempts to reform the existing provision of vocational qualifications, which were seen to be too divorced from employer needs, too variable in terms of standard, and too much under the control of education and training providers. The new NVQs (or SVQs in Scotland) posed a major challenge to existing qualifications in that: a) their content was based on national occupational standards identified by sector-based, employer-led bodies; b) their content was described in terms of 'competences' rather than a syllabus of theories and techniques; c) their assessment would be based on criterion-referencing; and d) they could be assessed in the workplace (see Eraut 1994; Raggatt and Williams 1999; Wolf

1995). Crucially, NVQs were seen as being assessment-led. Candidates were required to demonstrate that they were 'competent' in specific tasks and, hence, may not need to attend any form of course to achieve the qualification. Torrance (2007:291), in a study of the uses of assessment in a range of post-secondary education and training settings, argues that the drive to achieve clarity and transparency in the assessment process through the use of 'learning objectives', criterion-based assessment and competences, has resulted in a shift away from assessment of and for learning towards 'assessment as learning'.

Since the mid-1990s onwards, a number of highly critical reviews have been published of this development, in which commentators are particularly concerned about what they see as the lack of attention to the testing of knowledge in the NVQs (see, inter alia, Hyland, 1995; Wolf 1995; Hager, 2004). In her study, Grugulis (2002) has argued:

> [t]he specification of NVQ 'standards' effectively achieves a Taylorist separation of conception and execution with the NVQs' designers deciding which actions constitute competent performance and candidates simply demonstrating that they can perform actions… this form of rationality… distorts work processes and the workplace more than it illuminates… Qualifications based on these assumptions can provide little room for individual growth and few links with the meaning of work." (ibid: 8-12).

The accusation here is that NVQs accredit what workers can already do and, hence, do not provide a platform for further learning and progression (see also Matlay, 2000; Spielhoffer, 2001; and McAdam and Crowe, 2004). Furthermore, as West (2000:30) observes, the failure of NVQs to provide an effective method of developing double-loop learning capacity and 'softer' skills such as "creativity, communication and sensitivity" means that they cannot really be used to meet the requirements of new working practices in automotive manufacturing, such as TQM and lean production. Despite continued concerns about their design and implementation, however, NVQs are specified as the mandatory qualifications in all government-funded training programmes in England, including apprenticeships and the recently introduced *Train To Gain* initiative for adult employees (see LSC 2007 for details). This means that government

provides funding to employers to help cover the costs of putting their employees through NVQ accreditation, a factor that was very important for the case study organisations discussed in this paper.

The originators of the competence-based approach argued that, apart from needing qualifications that would 'prove' an individual was competent (as opposed to showing what they 'knew' as expressed through written tests and exams), employers would also benefit by being able to use the specified competences and standards to audit the skills of their workforces and create training plans. Both these elements were important to the two companies in our study.

CASE STUDY METHODOLOGY

The evidence reported in this paper was collected over a period of three years in two companies which were connected through their decision to use competence-based assessment as a vehicle for achieving organisational goals. This meant that the companies could also align their competency initiatives with NVQs. We already had links with the company based in England (referred to here as Green Company) through a previous study on apprenticeship (see Fuller and Unwin, 2001). Through continued contact with the company, it was known that a decision had been taken to use competence assessment as a way of 'proving' to the company's sole customer that it was meeting required quality standards in its production process. The fact that a relationship of trust between the company and two of our researchers had already been established meant that less time needed to be spent negotiating access to sites, documents and people, and that it would be more likely that senior managers would be willing to share their views.

As a result of the NVQ initiative, Green Company had made contact with a company in Northern Ireland (referred to here as Brown Company) where NVQs were also being used with production workers. Green Company assisted us in making contact with Brown Company who agreed to also participate in the research. In terms of methods, four researchers in the team visited both companies eight times over a period of

three years and also corresponded with managers via email and telephone between visits. Initially, face-to-face interviews were held with senior and line managers to gather information about business and HRD strategy and challenges. Samples of employees were then identified for the focus of the case studies. As well as face-to-face interviews with individuals and small groups, data was gathered through work shadowing and observation on the production floor, and through reviews of company documentation. In Brown Company, a sample of technical staff training to be multi-skilled also kept a 'learning log' for a period of eight weeks (see Fuller and Unwin, 2006). All interviews were taped and transcribed, and names of organisations and individuals have been changed to protect confidentiality.

The two organisations share a number of characteristics in terms of the global context of their product markets, foreign ownership, number and types of employees (mostly male, long-serving and ageing), and the nature of the production process. They have both also witnessed the pressures caused by an increased emphasis on their productivity being measured in terms of efficiency and product quality. For example, reducing the level of waste materials is a key performance indicator and quality assurance is also important to reduce the possibility of future insurance claims against the companies.

Since 2002, Green Company has been a wholly-owned subsidiary of a German car manufacturer, but it has a long history of independence dating back to 1926 when it was established as a pressed steel supplier to the then British car industry. In that time, Green Company has weathered a commercial roller coaster of take-overs and mergers, including at one point being part of a Japanese manufacturer. Green Company, which employs just over 1,000 people, now produces pressed steel and aluminium sub-assembly components (e.g. door panels) for one specific car which is manufactured at another plant some 20 miles away.

Brown Company is a wholly owned subsidiary of a French company which fabricates aluminium components in plants in France, Canada, Spain, and Mexico, and, since 1989,

in Northern Ireland. It makes alloy wheels and cylinder heads for five car manufacturers. By 2002, Brown Company had reached its peak in terms of numbers employed (1,039), but since then it has witnessed periods of redundancy due to contraction in its wheels business, and is now down to just over 800 employees.

GREEN COMPANY'S USE OF NVQS

In 2002, the company was in a very vulnerable and uncertain state as its relationship with the German parent company was based on competing for contracts to supply parts for the nearby car manufacturing plant. A new version of a well-established car was put into production and Green Company was asked to bid for the contract to supply up to 90% of the parts, including the visible panels (known as 'skin panels'). This was an enormous challenge for Green Company due to the size of the contract and the fact that it did not have a track record of making 'skin panels'. The General Manager (Stephen) saw the contract as an opportunity to 'prove competence' to the parent company and, hence, put the relationship on a more solid footing. There were two key areas where he felt Green Company had been paying 'lip service' to standards: a) health and safety; and b) training and development. Stephen said that, "… it was difficult to know if the unskilled part of the workforce [the majority] was really competent". The use of the term 'unskilled' (which actually means unqualified) is indicative of the lack of recognition for the expertise of workers at the shopfloor end of the production process, and the privileging of certified skills and knowledge in the UK.

In recent years, the introduction of automated press lines and the need for workers (known as 'production associates') to be able to operate flexibly across lines had led to substantive changes in the way work was organised and to reductions in the size of the workforce. Historically, when lines were manual and labour intensive, associates had tended to only work on one line. This had resulted in groups of associates with lots of experience in restricted line-related tasks, but a lack of a shared baseline of skills and knowledge. This baseline was now seen to be crucial in facilitating flexible working,

boundary crossing, and, above all, as a means of ensuring quality standards and the elimination of faults.

Stephen conducted a workforce review with John (the Training Manager) and they agreed that some sort of programme was needed to audit the skills of all production associates (including those in charge of lines) and provide proof of competence. John proposed the development of a Competence Assessment Programme (CAP), built around the NVQ Level 2 in Process Manufacturing Operations (PMO), which aligns with the automotive industry's quality standard as agreed by the top automotive manufacturers. The emphasis is on process so that employees can work more flexibly and become multi-skilled, and can interact with each other to solve problems. At that time, a government initiative, the Employer Training Pilot, was providing funding to employers to encourage them to improve the skills of their workforce by getting as many employees as possible to acquire NVQs at Level 2 (see Hillage et al, 2006). Green Company was able, therefore, to access public funding to support its CAP initiative.

The company could have contracted out the CAP to an external training provider, but decided that it would work in the spirit of the competence-based approach and create an in-house programme that would draw on the expertise of experienced associates, as well as the company's training department. This was a significant decision in terms of workplace learning as it enabled a group of associates to be seconded into a high profile workforce development role. An initial pilot was carried out. This was led by Susan, a business process manager, Gary, a production manager and Hugh, a retired lecturer in engineering from the local college of further education. Initially, progress was slow due to the challenges involved in motivating associates to take part, and carrying out competence-based assessments in real work time in a vast and noisy production plant. However, the importance of the CAP to business goals meant that senior managers agreed that its achievement should be a non-negotiable target for managers throughout the plant. In response to initial concerns about progress, three associates were seconded full-time to create a practical framework for the CAP, to act as assessors, and ensure that the target number of NVQs was reached. Susan explained that a deliberate decision was

taken not to use line managers in this role as they are generally too preoccupied with production issues. Nonetheless, she noted that managers did have an important role in encouraging the general development of all associates.

One of the seconded team, Brian, described how they set about developing the CAP:

> "What, what we had to look for, we, we basically came up with those ourselves, …we didn't draw that out of a manual, for example, it was our experience on the shopfloor that, that led us to know what we actually needed to watch and observe in order for that person to be judged competent at doing that, that role. And it was something we … we wrote ourselves out a check list of all the elements of the quality check, what we needed to see on the shopfloor."

This check list enabled the assessors to map the skills as practiced on the shopfloor with the competences specified in the NVQ (divided into 'units' and 'elements' of competence). This translation or, to use Bernstein's (2000) term 'recontextualisation', was necessary because the assessment criteria for the PMO NVQ 2 were not created for use in a press shop and, hence, the assessors have been required to interpret and mould the criteria so that they are relevant to the context. They estimated that the process took a month of team work. Ideally, had the time been available, they would have liked to re-write the NVQ so that it more closely reflected the work done in Green Company. In addition, the assessment process had to be applied on the working floor of the plant, as Brian explained:

> "The assessment covered six areas: health and safety, quality, communications and working with your fellow associates, and a job specific, which was metal forming, which is what we all do in the press shop. So we had to design an assessment programme that worked in a holistic way, we, we didn't do it on an individual unit basis. For example, we, we don't come in on a Monday morning and do an hour of health and safety. Health and Safety is something that goes on while we're doing metal forming. So we designed the assessment programme to incorporate all six units at a time, if you like, everything's happening at once usually."

The assessors saw their role as one of accreditation, not training. When the process identified that an associate had a skills gap, their manager or supervisor was notified and the necessary training organised.

To carry out the assessment process, the team identified two sets of artefacts: a) work-based artefacts such as written quality specifications, tools for checking tolerances and measurements, and instructions on computer screens; and b) assessment-based artefacts such as tracking sheets, photographs and portfolios for recording evidence of competence. It was through these artefacts, that associates were able to show they had the skills to perform the required operations, but the assessors decided that a further method, which they termed the 'professional discussion', was needed to draw out the extent of the associates' knowledge. Brian explained:

> "This involved taking the candidate into a quiet room, because it's very noisy on the shopfloor, and we, we had a, a couple of pages of, of notes or questions, not really questions as such but topics that we wanted to talk about, and we recorded this just, just to save ourselves a lot of pen work writing it all down. And we covered, in a professional discussion we covered, again, all six units of the assessment."

The professional discussion was recorded onto CD and associates received a copy to put in their portfolios. As an artefact, the CD is the means to capture the outcome of the discussion that enables the worker to make explicit their tacit knowledge (see Nonaka et al, 2005) and, importantly, stands as a public record of the formal process of competence assessment.

From our observations of a sample of discussions, it was clear that the three assessors were using high levels of pedagogical skill, including the ability to:

- Put the associates at ease
- Structure their questioning in a supportive way
- Use cues and prompts to help the associates reflect on their knowledge
- Guide the associates through the process in a friendly, but highly focused manner

- Provide praise and encouragement as a means to keep associates motivated

The assessors said that both they and the associates were surprised at how much knowledge was revealed through this process, and that the majority of associates appeared to enjoy the discussions. Some associates were very nervous and a minority were resistant to the process, but the majority felt that they had reminded themselves of how much they knew and that this was empowering. One associate, Karl, with fourteen years experience, said he thought the CAP was beneficial because it "ensures that people are up to scratch", though he stressed that, in reality, the plant's quality procedures already ensured that the required standards were met. For him, it hadn't been a question of learning anything new, nor had the process changed the way he worked, but rather he saw the CAP as a confirmation of general competence in the workforce. This is an important issue because it highlights the potential ambiguity at the heart of the competence-based approach. On the one hand, it has the potential to empower individuals by affirming they have skills and knowledge that can be accredited against national occupational standards. On the other hand, to be given a qualification without, necessarily, having to learn something new is a strange idea as most people still regard a qualification as the outcome of acquiring the knowledge 'delivered' via some form of course. It is this model that chimes with the 'learning as attainment' model, which still dominates society's approach to and understanding of education and training (Beckett and Hager 2004; Felstead et al 2005). By focusing on assessment, rather than learning, the competence-based approach represented by NVQs is awkward to categorise in terms of the attainment and participation 'metaphors of learning' (Sfard 1998). It can be viewed as attainment in the sense that candidates achieve a tangible codified outcome and can be viewed as participation in the sense that candidates are participating in a different 'new' form of social practice, which inevitably involves some learning. More work on better ways to conceptualise the competence-based approach is needed, but at this stage, we view the model as 'light' in terms of either learning as attainment or learning as participation. However, as we argue on the basis of our empirical evidence, the plasticity of the model provides scope for the development of more expansive forms of

participation (learning). Further empirical evidence is required to explore where the parameters lie in different sectors and settings.

The assessors also noted that some of the associates, who are in the position of line leaders, were less enthusiastic than the people they supervised. This reminds us that experienced workers who are asked to 'prove' competence in tasks that they have been performing day in, day out, for several years may find the process threatening or even demeaning. Some workers expressed ambivalence in the sense that they went along with the process, but regarded it as having more meaning for associates who were newer to the job. The following extract from an interview transcript begins in this vein, but then reveals that even for this associate, who had over 20 years experience, the competence assessment had made him reflect on knowledge he took for granted:

> "I mean it is a step forward and it's the way to go, but you can't teach an old dog new tricks, you know, it's only for the I'd say the newer people. I'm not trying to knock it, don't get me wrong, I never knock it, but if I had a chance of walking away from it, I'd have sneaked away in a corner, forget about me…Catches you out some of the questions mind you…Some of the questions caught us out, had to think about them…Safety, I mean the safety ones and all that are different. Safety warnings and all that, you know."

For some of the line leaders, the NVQ process placed them back on an equal footing with the associates on their line and, hence, the pressure to 'prove' their competence may have felt greater than for the associates.

As far as the company is concerned, the CAP initiative has been very successful. Primarily, it has achieved its main goal of satisfying the parent company that the production workers are 'competent' in relation to quality control and, importantly, improvements have been made in quality checks through the very process of sharpening associates' skills in this area. For example, the company was struggling with faults relating to the thinning levels of the panels – too much thinning results in split parts, which are costly. New callipers were introduced for associates to use to check the thinning and to ensure that they were correct, but not all associates were using the

callipers correctly. The ability to use the tools correctly was included as a key competence in the CAP, as a result of which faults have been dramatically reduced. Stephen, the General Manager, argued that a number of broader organisational and individual benefits had flowed from the CAP, which had:

- awakened interest in learning and development across the plant and generated a demand to progress to higher levels
- provided a skills 'refresher' for the experienced workforce and enabled deficiencies to be easily resolved
- improved associates' confidence
- reduced absenteeism through an improvement in morale
- improved reporting of accidents due to greater concentration on the importance of health and safety

The CAP has, however, generated less positive reactions and the company is now in danger of undoing the benefits that resulted from the initiative. A number of issues need serious consideration. First, despite the fact that they actually made a considerable success of the CAP, the assessors had been charged with designing and delivering a complex initiative for which they received very little training. The assessors said they had found it very challenging to interpret the NVQ assessment criteria in a way that was meaningful to the work in the press shop. This raises questions about how aware senior managers were of the scale and complexity of the initiative they had introduced.

The second, and potentially more serious issue, relates to the way in which the company has failed to build on the CAP in terms of creating opportunities for associates to progress to Level 3. The long-standing demarcation between jobs in Green Company has meant that there was a very large jump between associate grade and the one above. This meant that it has been very difficult for any associates to progress within the company. By running the CAP, however, the company has raised employee expectations. These can only be met by disturbing historical boundaries between job roles (e.g.

maintenance engineers) classified and referred to as 'skilled' (and based on apprenticeship training) and those, such as the associates, referred to as 'unskilled'.

The third issue concerns the company's treatment of the assessors, who were disbanded as a team and returned to their jobs on the line. They too have had their expectations raised, both in terms of their own potential for progressing to Level 3, but also in terms of gaining long-term recognition for the considerable expertise they displayed when parachuted into roles for which they had had very little training and no previous experience.

BROWN COMPANY'S USE OF NVQS

In 2000, Brown Company found itself facing increased and intensive competition from other producers, particularly in Eastern Europe, in the global wheels' market. At the same time, one of its major customers ended its status as a 'tier one supplier' due to weaknesses in product quality. The company decided it had to increase the skill levels of the workforce and introduced a competency-based approach. The training manager, Alec, explained:

> "Before we did this…there was no real method; there was very little measurement. What people needed to do was very poorly communicated. It was really poor. And we just weren't structured to cope with the demands of the environment we were in. So we had a radical rethink."

In similarity to Green Company, Alec stressed that the initiative was driven by the business need to have the skills necessary for the effective running of each department. A further key driver was the introduction of a new global quality standard (TS16949). This requires companies to show how they manage and develop the workforce and maintain their competence. Alec noted:

> "They don't tell you what competency means. There's no definition of competency and competency, as you know, is one of those concepts there's a lot of argument around what it is. Can you describe it? What

> does it mean? Oh, it means something else to me. So there's a lot of that. But what we've used, we've used the (NVQ) national framework as protection against third party audit. So when an order comes in that says how do you train your guys? We tell them. What's the standard? We can show then… it's the national standard."

He added that NVQs were "simply a mechanism" to enable the company to achieve a structured and validated training system that, in turn, would satisfy senior managers and customers that the workforce was competent. He added:

> "The NVQs are for the employee…the skills and competences are for the employer".

In contrast to Green Company, the senior managers at Brown gave the Training Manager and his three full-time trainers the responsibility for constructing the competence-based programme. Prior to 2000, training at the plant was very loosely organised and the company had no formalised data on the types and level of skills in the workforce. The competency-based approach entailed mapping the company's skill sets on to the NVQ level 2 in PMO (as used in Green Company), which the company carried out in consultation with the engineering Sector Skills Council, SEMTA. To implement the competency-based approach, 95 production operators were selected for training as Skills Tutors. First of all, the 'tutors' themselves were put through a programme to achieve the NVQ and 30 of them also acquired the necessary competencies to perform the role of assessors. Each tutor was assigned one or more operators to train on the shopfloor as part of everyday workplace activity. Each operator was required to achieve the 11 units which form the NVQ level 2 and, in some areas of the plant, additional units from related NVQs. The tutors have to prepare action plans for their tutees and give written as well as oral feedback following assessments.

The training team developed one key artefact as the focus for their programme. This took the form of a 'tutor pack' comprising detailed descriptions of the shopfloor tasks and associated quality checks. The pack was to be used for two main purposes: a) to provide a guide for production workers (particularly new entrants) to all the tasks they

would be required to perform; and b) to act as a vehicle for discussions between workers and assessors when competences were being assessed. Here we see a contrast with Green Company where two types of artefact were used. The packs comprise A4 files containing sheets of text and diagrams, and they are found on every work station throughout the plant. The packs were described by the trainers as "live" documents which were being continually updated and improved through the input of employees at all levels, including specialist engineers and operatives. Despite the Training Manager's insistence that the key driver for using a competence-based approach was the need to prove everyone was working to a clear standard, the 'live' nature of the tutor pack meant that discussions (and to some extent negotiations) were taking place on a regular basis about how practice improvements were being found through everyday workplace activity, and about how these needed to be incorporated into the pack. It could be argued, therefore, that Brown Company's deliberate encouragement of employee involvement in the tutor pack is at odds with the NVQ model of competence in which competence is articulated through rigid statements of procedure. Brown Company appeared to have moved beyond this model into a potentially more expansive approach to workforce development and skills auditing.

The training manager argued that the involvement of employees in the continued development of the pack led to the creation of a "shared vocabulary for production staff" which enabled employees to talk about skills and knowledge. This vocabulary was reinforced through daily team meetings at which supervisors discussed how the different shifts were meeting the plant's key performance indicators in relation to production targets, quality checks and the minimisation of waste.

To complement the competence-based programme and further emphasise the company's aim to improve shopfloor communication and shared problem solving, each shift is given 'projects' by the production manager to work on in teams. For example, one shift we observed completed the following projects: a) re-designed the weight of wheels on the trolleys which take material round the shopfloor ; and b) found a way to reduce the time taken to clean certain machinery. The teams are organised in a non-hierarchical way

with a lead operator, five operators and the supervisor who find time during the shift to discuss the problem and work out how to solve it.

As with the case of Green Company, workers in Brown Company spoke about their surprise at the extent to which the competence-based process had made them aware of the extent of their skills and knowledge. At the same time, however, there was more evidence at Brown that the process had revealed competence gaps. Jim, a supervisor, said:

> "When I started working with the NVQs I was surprised at some of the things that people didn't know…At least now we know that everyone understands the basics. I think productively the operator doesn't generally need to know that much and the NVQ gave them slightly more information than was the minimum amount that they needed. It was good to have them (NVQs) and I think probably for morale it was a good thing to do. It has been of benefit."

The motivational benefit of achieving a qualification is illustrated by this comment from Jason, who progressed on to the NVQ Level 3 and now works as a supervisor :

> "I mean I was just like any other production operator, I'd come in, done the job and go home again until I done this NVQ and from that I thought to myself, 'well I could do better for myself than here I can and I can maybe step on to the rungs of the ladder'…you know what I mean? And that's where I was glad that the company give me opportunities to do the next NVQ level 3."

Given the varied nature of individual dispositions to learning, not all employees, approached the competence-based initiative in the same way (see Felstead et al, 2007; Billett, 2007; Evans et al, 2006). As one operator noted, 'there's some…they don't like being told anything … [and] they're just not interested in their jobs'. This point was stressed by several interviewees (including other operators, supervisors and managers). A production manager provided her own categorization of employees: 'self-starters'; 'the unaware'; and 'the disinterested':

> '[There are] two different types of individuals, those who are self-starters who want to learn and who will actively seek to learn, and others who say "well, I've never been given any opportunities" … And actually there is a third level as well, people who are doing a job and have got to a point where they say "no, I like this level, I like this job, I'm happy here, I don't want to do more"'.

This awareness of the varied dispositions of employees was behind the decision to train a large cohort of operators to act as tutors and assessors, rather than bringing in external trainers. This also meant, however, that, initially, there was a range in quality in terms of the tutors' and assessors' practices. The training manager explained:

> "The (other) difficulty is because we recruited volunteers, for want of a better word, we have some guys who are very, very good and we have some guys who are not so good, and we are currently looking at how we reduce the numbers and how we have a more, how we have a smaller group who are more efficient. And it might be a case that we need to look at additional development. We look at taking them through a level 3. There's all sorts of issues there but we're looking at that because for us it's a moving picture."

Although both Green and Brown shared the same business drivers for the introduction of a competence-based approach, Brown Company appears to have spread the competence philosophy much more widely across the workforce than was the case in Green Company. This is partly a result of creating large numbers of tutors and assessors, and the integration of competence standards within workforce communications (through, for example the daily team meetings). As a result, there is sense that the approach in Brown Company is more embedded within everyday workplace practice than in Green Company where the CAP initiative was introduced and delivered for a specific short-term goal. In addition, and as importantly, Brown Company realised from the start of the process that they would need to find ways of ensuring some workers could progress to the NVQ Level 3 and/or to other qualifications.

CONCLUSION

This paper has provided examples of how two UK companies in the automotive sector are using a competence-based approach to audit the skills of their workforce and improve general standards of work practice. The UK's model of competence-based qualifications enables companies to align these audits with the national system of vocational qualifications and, hence, provide workers with transferable accreditation. As a result, a competence-based approach has the potential to achieve benefits for both the organisation and the individual (see for example, Cox 2007). Our research suggests, however, that, whilst tangible benefits did accrue from the process adopted in both case study companies, the competence-based model requires substantial commitment from employers in order for those benefits to be sustainable over time and to ensure that employee expectations are realised.

The research evidence also supports some of the concerns expressed in the literature about the NVQ-related model of competence and the instrumentalism that now characterises assessment practices in many education and training settings (see Torrance, 2007). We would note, in particular, that the model's permissiveness means that it is more likely to be used for restrictive than expansive purposes. Hence, on the one hand, NVQs can be used as artefacts in an accounting process to produce 'proof' of competence to customers and external regulators (or by governments as targets for organisations to meet or as evidence in international league tables of qualification stocks). On the other hand, they can be used as a means to stimulate the motivation for learning, as platforms for further learning, and as boundary objects in an expansive approach to collaborative workplace learning. In today's target-driven and highly pressurised economic climate), the former approach has considerable appeal for employers in both the public and private sectors.

The two case study companies displayed evidence of both restrictive and expansive practices in relation to their use of NVQs and the competence approach more broadly. In Green Company, the underlying objective was to use the CAP as a means to

satisfy the parent company. Ironically, the three assessors, who had themselves been given an expansive opportunity to move out of their restricted roles on the shopfloor, took advantage of the model's permissiveness and developed the CAP in a much more expansive way than their managers had envisaged. The main example of this was their innovative creation of the 'professional discussion' in which production associates were encouraged to identify and talk through the knowledge underpinning their practical skills. Despite this, however, the company saw the CAP as a means to one end (satisfying the customer) and so it closed down both the programme and the chance to capitalise on the interest in learning and progression that had been stimulated. The chance to also break down the historical divisions between the shopfloor and higher grades (as in the Mason and Wagner study) by using NVQs as true boundary objects was also lost.

In Brown Company, the tutor pack, which began as an artefact of the competence programme, proved to be a very effective boundary object because it was used by all grades of workers in the plant as a shared space for articulating expertise that could be used on a daily basis. In addition, the competence programme was seen from the start as much more than simply a vehicle for auditing existing skills and, hence, was underpinned by a more expansive concept of workforce development. This meant that progression opportunities were seen as central to the initiative.

The competence-based approach and NVQs are an established part of the UK's vocational education and training system and of the workforce development practices of organisations throughout the public and private sectors. Versions of the approach exist in other countries (notably Australia) and the concepts of 'competence' and 'competences' are being hotly debated in the agencies of the European Commission. Our research has caused us to reflect on the extent to which the approach has value for organisations and individuals. We conclude by arguing that any strategy or device for improving workplace performance and developing better opportunities for people to learn and collaborate will play out differently according to the context in which it is used. The UK's current model of competence, and its alignment with NVQs, compounds this problem due to its elastic potential – to be used in a restrictive or expansive way. More thought needs to be given

as to how the model could be adapted so as to make it much more learning-led, rather than simply assessment-led.

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