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Affordance, agency and apprenticeship learning: a comparative study of small and large engineering firms

Dan Bishop

Abstract

Amidst concerns over skills shortages, both the current British government and its coalition predecessors have, against the grain of wider austerity measures, invested heavily in the apprenticeship system. The majority of apprentices are, and have historically been, employed within small businesses. However, research suggests that, in the main, small firms tend to approach management issues – including workplace employee development – in a less formal way than their larger counterparts. What implications this has for apprentices and their workplace learning remains unclear. The article aims to address this gap, and it does so through a qualitative study of apprentices in three English engineering firms of different sizes. The findings broadly support the established picture of informal working and learning processes in the small firm. However, it is argued that this does not *inevitably* restrict apprentices' on-the-job learning. Rather, the ways in which apprentices learn, and what they learn, are conditioned by the interaction – or 'co-participation' – between the opportunities afforded by the workplace, and the apprentice's subjective agency.

Keywords

Affordance / agency / apprenticeship / co-participation / small firms / workplace learning

Introduction

As Avis (2014) points out, the importance of skills in maintaining and enhancing economic competitiveness has become an established orthodoxy in recent years. Consequently, processes of learning and skill formation within organisations have received considerable attention. In particular, researchers have focused increasingly on the ways in which skills and knowledge are developed at and through the workplace, as opposed to designated educational settings such as classrooms. This expanding body of work has illustrated how workers learn new skills through, for example, everyday workplace interactions and socialisation processes, *ad-hoc* trial and error experiments and on-the-job problem-solving (e.g. Eraut 2000; Grugulis and Stoyanova 2011). These researchers assert that what is learned, and how, is shaped by the structure, culture and practices of the workplace. In this view, as Felstead et al. (2007) note, learning – in contrast to ‘training’ – is not something that is elevated or distinct from normal productive activity; rather, it ‘arises naturally out of the demands and challenges of everyday work experience.’ (2007, 190).

This work-based view of learning has coalesced to a significant extent around the concept of apprenticeship. As Fuller and Unwin (2009, 2014) observe, the influence of apprenticeship within political, public and academic spheres has not only endured but also increased in recent years. For example, following the British coalition government’s widely-publicised and austerity-defying programme of investment in the apprenticeship system, annual apprenticeship start rates increased by more than half between 2010 and 2014 (Mirza-Davies 2015, 4). It is worth noting that some commentators have raised

serious concerns about the content and quality of these new apprenticeships. For example, writers such as Brockman et al (2010), and Allen and Ainley (2014) have argued that many new ‘apprenticeships’ have been created in relatively low-skilled service industries that lack a coherent and regulated body of vocational knowledge, and that employers are exploiting the limited regulatory structure simply to re-badge their existing training programmes for mature staff in order to attract public funding. The result is that apprentices on these schemes learn little more than basic task-specific skills in a fairly haphazard way. This is in marked contrast to industries where apprenticeship has a long and established history – such as the engineering sector, which represents the focus of this study.

In spite of such concerns, the return of the apprenticeship to the public and political eye has continued apace. In the academic literature, this was preceded by a similarly renewed interest in apprenticeship, where ‘situated’ learning theories (Lave and Wenger 1991), derived from studies of apprentices, were used to establish broader principles for understanding and enhancing workplace learning.

Influenced by this perspective, recent studies of apprenticeship have explored the ways in which apprentices develop skills and knowledge through on-the-job learning as well as through classroom-based education (e.g. Lehmann 2005; Holmes 2015). Thanks to such research we now have a more complete understanding of how apprentices’ learning can be promoted or alternatively impeded by aspects of the workplace environment, such as the organisation of work and the nature of workplace relationships.

In perhaps the most comprehensive example of this research, Fuller and Unwin (2003, 2011) present their ‘expansive – restrictive’ continuum (Table 1). This differentiates between workplace environments according to the extent to which, for example, working relationships and divisions of labour generate opportunities and incentives for apprentices to learn. Other writers, such as Poortman et al. (2011) and Lehmann and Taylor (2015) emphasise that on-the-job learning opportunities are interpreted and responded to in different ways by different apprentices. In this view, the importance of subjective *agency* is stressed alongside the opportunities presented by the workplace environment, and it is the *interaction* between those opportunities and the apprentice’s agency that shapes the extent and content of the learning that occurs. Billett (2001) describes this interaction as ‘co-participation’, and calls for more research on how processes of co-participation operate differently in different types of workplace, for example in organisations of different sizes. This article aims to answer that call.

It does so by outlining a qualitative study of apprenticeship learning in one large and two small engineering companies in England. Previous research (e.g. Hoque and Bacon, 2006) has illustrated how management practices and skill formation processes tend to be more informal in small firms relative to their larger counterparts. However, we know little about how this greater informality actually constrains or enables apprentices’ workplace learning. The purpose of the article is to address this gap, and to ask how (if at all) the interaction, or co-participation, between the workplace environment and individual agency is shaped differently within the small firm, compared to larger organisations.

The first section assesses current knowledge concerning the impact of organisational environments on apprenticeship learning, as exemplified in Fuller and Unwin's (2003) 'expansive – restrictive' continuum. It then expands on Billett's (2001) concept of 'co-participation' and discusses the way in which he uses the term 'affordance' to describe the pattern of learning opportunities and inducements that emerges from workplace practices and interactions. The second section introduces the parallel but as yet largely unconnected strand of research relating to small businesses and the extent to which their internal dynamics and skill formation processes tend, on average, towards informality. In particular it asks, firstly, whether this tendency might have implications for what and how apprentices learn, and secondly, whether it entails a different type of co-participation between the workplace environment and the apprentice's agency. The research design of the study is then set out, before the findings from each of the three engineering firms are presented and discussed. Ultimately, it is argued that the less structured environment of the small firm lends greater weight to the apprentice's own agency in determining, to use Fuller and Unwin's terms, the expansiveness or restrictiveness of the learning environment. The article concludes by drawing out the implications of the research.

Apprentices' Workplace Learning: Organisational affordance and individual agency

As Grugulis and Stoyanova (2011) observe, recent studies of vocational learning and skill formation have focused on the ways in which learning occurs through the process and

experience of work itself. Rather than privilege activities that are planned and undertaken specifically with skill formation in mind – such as training – researchers have turned their attention to the ways in which aspects of the workplace environment, such as the organisation of work and relationships between employees, give rise (or not) to opportunities and stimuli for on-the-job learning. Billett (2001) refers to these opportunities and incentives as ‘affordances’:

“[W]orkers restricted to familiar tasks may never learn a widening range of tasks or diverse applications of their knowledge... Coworkers’ willingness to guide and assist learners... is particularly salient for individuals’ access to and the development of this knowledge. These affordances are... shaped by workplace hierarchies, group affiliations, personal relations, workplace cliques, and cultural practices.” (Billett 2001, 66-67).

Thus, the structural and cultural dimensions of the workplace are seen as shaping the pattern of learning affordances. Some researchers have applied this perspective specifically to the study of apprenticeship. For example, in a comparative study of Canadian and German apprentices, Lehmann (2005) finds that the range of tasks allocated to Canadian apprentices and the support received from colleagues for learning new skills are generally more limited than is the case in Germany. The pattern of affordances is hence more restricted: “in many cases, [apprentices] are not taken seriously in their workplaces... This not only affects the educational and skill development functions of [the apprenticeship], it also exposes apprentices to exploitation

as cheap labour.” (2005, 115). Similarly, in comparing German and English apprenticeship systems, Clarke et al. (2013) observe that German firms employing apprentices must follow a clear work-based curriculum that provides opportunities for apprentices to develop “a broad range of know-how”, in contrast to “the confinement of the English system to tightly-prescribed tasks.” (2013, 945).

In an attempt to provide a more systematic understanding of workplace learning affordances within the context of apprenticeship, Fuller and Unwin (2003) present an ‘expansive – restrictive’ workplace continuum (see Table 1). This model seeks to provide a framework through which workplaces providing more extensive learning affordances can be distinguished from those where affordances are more restricted. For example, it identifies such features as ‘Considerable reification of apprenticeship beyond everyday work activities’ (e.g. through documentation, symbols and other artefacts) and ‘Workers given discretion to make judgements’ as characteristics of a workplace learning environment that is closer to the expansive end of the continuum. In an environment where such features are present in abundance, learning affordances are predicted to be more plentiful. The opportunities and inducements to learn are therefore greater than is the case in workplaces closer to the ‘restrictive’ end of the continuum. The table below summarises some of the key features of this continuum, distilled from different iterations of Fuller and Unwin’s model (Fuller and Unwin 2003; 2011)ⁱ. These features form the basis of the analytical framework used in this study.

Table 1: Key features of the expansive / restrictive continuum (adapted from Fuller and Unwin, 2003: 411; 2011: 52)

	Expansive apprenticeship environment	Restrictive apprenticeship environment
1	Considerable reification of apprenticeship beyond everyday work activities (e.g. through documents, symbols, language, tools – these are visible and available to apprentices). Explicit institutional recognition of / support for the apprentices' status as learner.	Limited reification of apprenticeship, and restricted access to reificatory characteristics. Ambivalent recognition of / support for apprentice's status as learner.
2	Planned time off-the-job including for college attendance and for reflection.	Virtually all on-the-job: there are limited opportunities for reflection.
3	Gradual, 'stepped' transition to full participation in workplace activities and communities of practice.	Fast transition – moved as fast as possible into full range of activities.
4	Named individual acts as dedicated support to apprentices.	No named or dedicated individual; support for apprentices is more <i>ad-hoc</i> .
5	Participation in different work groups and activities is encouraged – job / team boundaries can be crossed, both inside and outside the workplace.	Participation restricted to immediate work team / area – boundary crossing discouraged.
6	Workers given discretion to make judgements and contribute to decision-making.	Discretion limited to key workers – no involvement in workplace decisions.

While the expansive – restrictive continuum seeks to illuminate the role of the workplace in shaping vocational learning processes, other writers have stressed the reciprocal part played by the *individual*. For example, Poortman (2011) and Hodkinson and Hodkinson (2004) emphasise the importance of individual subjectivity in interpreting and responding to the learning affordances that the individual encounters at work. In doing so, they draw back from more structural analyses and highlight the significance of the employee's *agency* in shaping what and how they learn (see also Higgins 2013). These authors argue that different individuals have different experiences and biographies with regard to training and learning. These diverse experiences generate varying dispositions, which in turn lead to divergent responses to whatever learning affordances are provided within the workplace. Lehmann and Taylor (2015) make the same point in relation to apprentices; where some perceive a learning opportunity, others may perceive compulsion, a chore or nothing at all. Thus, what constitutes a more expansive learning environment for one apprentice may be construed as more restrictive by anotherⁱⁱ.

In attempting to combine the insights of the structural and individual perspectives on learning, Billett (2001) calls for a clearer understanding of how individual agency and organisational affordance interact in different types of workplace. In his view, it is this process of interaction – or *co-participation* – between context and agency that determines what and how individuals learn at work:

‘[T]here is a need to understand more fully how workplaces afford opportunities that lead to the development of robust vocational knowledge. There is also a need to

understand how workers elect to engage with what the enterprise affords. These reciprocal bases of participation and engagement in thinking, acting and learning are referred to as co-participation' (Billett 2001, 64).

Applying this perspective to apprenticeship learning, Poortman et al. (2011) find that the prior dispositions and motivations of individual apprentices play an important role in framing their perceptions of the affordances on offer. For example, some of the apprentices in their study prospered when in receipt of highly structured workplace guidance, while others thrived in a less rigid environment that allowed more room for independent learning and reflection. What such evidence suggests is that the nature of the apprentice's workplace development is the product of a complex interaction, or co-participation, between the affordances of the organisational environment on the one hand, and individual agency on the other. Given the research evidence highlighting the tendency towards relatively minimal structure within small firms compared to larger businesses (explored below), this potentially gives greater emphasis to the agency of the individual apprentice in determining the extent and content of their on-the-job workplace learning.

Workplace Learning Processes and Informality: The small firm

Kitching (2007) observes that, as workplace learning occurs through everyday work activities and interactions, it is inevitably shaped by the broader pattern of working relationships and management practices within the organisation. In small firms, these

relationships and practices tend to be characterised by informality rather than by bureaucracy and structure. For example, as Marlow et al. (2010) point out, while there is significant heterogeneity under the ‘small firm’ umbrella, ‘[T]he absence of professionalized knowledge or practice and the context of social and spatial proximity create a fertile environment for the persistence and dominance of informal employment relations’ (Marlow et al. 2010, 956).

Within such an environment, skill formation processes tend to reflect a similar level of informality. Levels of formal training activity are, on average, significantly lower in small firms than in their larger counterparts (e.g. Hoque and Bacon, 2006), although again there is significant variation within this picture, for example by sector (see, for example, Mayson and Barrett, 2006). In explaining this pattern, Ashton et al. (2005) observe that small firms do not normally possess sufficient resources to invest in extensive training and development programmes, and rarely employ specialist trainers. Furthermore, Hoque and Bacon (2006) note, the costs of training are much more problematic for small firms as they do not possess economies of scale. Such factors militate against formal training activity.

However, as Bishop (2012) argues, we cannot equate a lower level of training activity with a lower level of skill formation or learning activity; a growing body of research argues for greater appreciation of the central role played by *informal* workplace learning within small firms. Reviewing this evidence, Dawe and Nguyen (2007) observe that the ‘[s]mall business learns “through doing”, with the focus on current... issues in

the workplace, and through social networks.’ (2007, 7). Increasingly, research has affirmed the importance within small firms of informal learning through everyday work practices, by talking to colleagues, or by *ad-hoc* experimentation (e.g. Harris 1999; Holden et al. 2006).

Whether this represents a problem (or indeed an advantage) either for the small firm or its employees is unclear. According to Hill and Stewart (1999), an informal approach to skill formation is often seen as valuable in enabling the small business to respond swiftly and cost-effectively to external market changes. However, as Edwards (2010) argues, we cannot assume that informal learning is functionally equivalent to formal training. Formal, structured approaches to employee development are, he claims, of particular importance when developing particular kinds of capability, for example skills that need to be guaranteed at a standardised level (such as health and safety), or procedural knowledge. Others have argued that a lack of investment in formal training systems can disadvantage employees by failing to guarantee minimum skill levels while also leaving them without formal recognition of their skills (e.g. Leach, 2010; Bishop, 2012).

Such concerns prompt important questions about apprenticeship learning in smaller firms. As noted above, larger firms tend towards a more structured and resource-intensive approach to learning and development than their smaller counterparts. Does this grant them an advantage in terms of providing, in Fuller and Unwin’s (2003) terms, a more ‘expansive’ learning environment? For example, a large business may have greater

capacity and internal structure to enable the implementation of a gradual, stepped learning programme for apprentices, to allocate designated training and support personnel, and to 'reify' the apprenticeship through the institution of documents, tools and other artefacts (see Table 1). The study therefore posed two key research questions:

1. Does the tendency towards greater informality in small firms entail a corresponding tendency towards a more restrictive (or more expansive) learning environment?
2. To what extent does the propensity for a lower level of structure and formality lend the individual apprentice's agency greater weight in determining what and how they learn? That is, does the process of co-participation between affordance and agency in apprenticeship learning operate differently within the less structured environment of the small firm?

Methods

In order to access apprentices' interpretations of and engagement with workplace learning affordances, a qualitative, comparative approach was used, involving research within three companies. To ensure that meaningful comparisons could be drawn between the three research sites, a single sector approach was employed. The engineering sector was selected, mainly due to the comparatively high emphasis within engineering apprenticeships upon the workplace as a site for learning (Ryan 1999) but also because of the central importance of engineering in the historical development of apprenticeship models in the UK (Gospel 1995).

Three engineering firms were studied, each operating in the metalworking sub-sector. One ‘large’ firm was chosen (i.e. 250 or more employees), and two ‘small’ firms (1-49 employees), one of which fell into the ‘micro-firm’ sub-category (1-9 employees). In order to qualify for selection, each firm needed currently to employ at least one apprentice following the SEMTAⁱⁱⁱ-approved Engineering Manufacture apprenticeship. All of the firms were located in England, and in each of them the standard duration of the apprenticeship was three years. Further details concerning the three firms studied, and the research participants, are provided in Table 2.

The primary research method was qualitative, semi-structured interviews supported, where possible, by workplace observation (see below). In each of the three firms, a senior manager (either the managing director or the training director) was interviewed in order to obtain an overview of the firm and its apprenticeship practices. The apprentices were then observed for a short time in the process of conducting ordinary work tasks (in the large firm, access was granted to first year apprentices only). As Eraut (2000) points out, observing respondents in addition to interviewing them enables the researcher to collect information regarding informal or ‘hidden’ learning processes that survey methods and interview-only approaches struggle to capture. These observations informed the questioning used in the interview that followed shortly afterwards.

The interview data were analysed thematically using a flexible coding framework based primarily on the Fuller and Unwin (2003) expansive / restrictive framework (Table 1). Particular attention was given to the dimension of the framework highlighting the

level of discretion provided to apprentices, as this relates directly to processes of co-participation between affordance and agency.

Table 2: Breakdown of the sample

Company profile	Respondents Interviewed
<p>1. <i>'Met-tech plc'</i> Large firm: 317 employees (12 apprentices). Factory-based production of metal infrastructure components (e.g. girders) in large quantities, mainly for the construction industry.</p>	<ol style="list-style-type: none"> 1. Training Manager 2. Apprenticeship Supervisor 3. Apprentice 1 (first year, age 16) 4. Apprentice 2 (first year, age 17) 5. Apprentice 3 (first year, age 17) 6. Apprentice 4 (first year, age 17)
<p>2. <i>'Covington Metals Ltd.'</i> Small firm: 45 employees (2 apprentices). Processes and refines metals to order for the manufacturing industry.</p>	<ol style="list-style-type: none"> 1. Managing Director 2. Tool room supervisor / mentor 3. Apprentice 1 (first year, age 17) 4. Apprentice 2 (third year, age 19)
<p>3. <i>'Metalhead'</i> Small / 'micro' firm: 8 employees (1 apprentice). Overhauls and refurbishes component-manufacturing machinery for the metalworking sector.</p>	<ol style="list-style-type: none"> 1. Managing Director 2. Machine fitter / mentor 3. Apprentice (first year, age 19)

Table 2 illustrates the sample. Overall, 13 respondents were interviewed: 6 in the largest firm, 4 and 3 respectively in the small firms. All of the respondents were male, which reflects the gender composition of the firms themselves and the engineering apprenticeship population more broadly, less than 4% of whom are female (TUC 2013). All company and individual names have been changed to protect anonymity.

The Findings: Apprentices' Workplace Learning in Large and Small Engineering Firms

The next four sections present the main findings. The first two address the largest of the three firms (Met-tech), while the third and fourth address the two small firms (Covington Metals and Metalhead). The findings are presented with specific reference to the two research questions posed above: the expansive / restrictive dimensions of the learning environment as identified in Table 1 (which, for clarity, are italicised where identified), and processes of co-participation between individual agency and workplace learning affordances. Then, it is argued that both expansive and restrictive qualities can co-exist within both large and small firms. Whether it is the expansive or restrictive properties that dominate is conditioned by the agency of the individual apprentice, particularly in the smaller firm, where the lesser degree of structure privileges the role of agency in the process of co-participation. The importance of the small firm manager's agency is also emphasised.

The Large Firm: Expansive / Restrictive Dimensions

At Met-tech, expansive qualities were found, firstly, in the extent to which the apprenticeship system had been *reified*. That is, clear and concerted attempts had been made to elevate it above the everyday process of work and to identify the apprentices as learners rather than simply workers. For example, there was a dedicated and well-resourced on-site apprenticeship training facility. Distinct from the college day release aspect of the training (which all apprentices in this study attended), this facility was located in a separate building away from the factory floor itself. Here, apprentices spent most of their first year practicing machining skills and progressing through a series of ‘training jobs’ and ‘assessment jobs’. These were designed according to a development plan devised by the full-time apprenticeship supervisor. The supervisor was a former factory worker who had re-trained as an instructor, and was now responsible for overseeing the development of the firm’s apprentices. He carefully planned the apprentices’ progression through their training jobs, ensuring that their learning was *gradually stepped* in such a way that it guided them incrementally towards the skills and knowledge that would be required for their assessment job (which constituted the assessment for their NVQ level 2 qualification). He explained:

Peter: Everything they do in here... is directed towards the end product, which is the assessed jobs... They might do five or six training jobs [before each assessed job]... Nice simple training job to start with, but as each job progresses, they do something different. So... for the drill-drift, the first training job. Bit of marking out,

bit of hacksawing, bit of drilling. The next job will still do all the processes they've done on the first job, but there'll be something else they have to do. So as each job goes along they're doing another thing or two, but still building on everything they've done before.

(Apprenticeship supervisor)

The apprenticeship supervisor maintained written records regarding apprentices' progress through their training and assessment jobs. He also held weekly meetings with apprentices each Friday where he would review their progress and pass on their timetable for the following week. Each apprentice was also allocated a mentor, who was generally an experienced employee in the factory. Their role was to act as a source of general advice, outside of the organisational management structure (the training manager described them as a 'grandfather figure').

Thus, in terms of the first four dimensions identified in Table 1, Met-tech displayed a range of expansive workplace learning characteristics. The structured, documented and well-resourced process of progression through a planned apprenticeship training programme in a dedicated facility enabled a *stepped* and *reified* learning experience as well as space for *off-the-job reflection*. As noted above, there were also several *named individuals* responsible for apprentices' development (their mentor, the training manager and the apprenticeship supervisor).

Yet, there were aspects of a restrictive environment here too. For example, at no point did the apprentices participate in activities *outside the workplace* (e.g. with customers). Also, the structure surrounding their training created some inflexibility and allowed little room for apprentices to exercise *discretion*. Thus, while reifying the apprenticeship through structure and documentation did much to ensure a standardised process and outcome, it also reduced the space in which apprentices were empowered to make decisions:

Interviewer: To what extent do you have the opportunity to say, ‘I’m going to finish this task soon, I want to do that next’?

Jason: Not much. Perhaps if you’ve finished most of your jobs and you’re just waiting for the milling machine or something, [Peter]’s got a folder in his office with all the things and he asks you if you’ve done that or do you want to do this. Then you can have your say. But normally we’re just told what we’re doing.

Interviewer: Do you like that, or would you prefer a bit more choice?

Jason: It’s OK. I’m here to learn... [Peter, and James, the training manager] have been here for years, so they know what we should be doing and make sure we get all the skills.

(Apprentice)

Thus, the apprentice could only exploit what limited flexibility there was in the training programme once its pre-defined demands had been fulfilled. In this larger firm therefore, the reified, standardised training structure rather than the apprentice's own agency was the primary force driving the apprentices' learning. The situation was somewhat different in the smaller firms visited, as explained in later sections.

The Large firm: Processes of Co-Participation

What Jason revealed in the previous extract was that he was happy to entrust his development to the system laid down by the organisation. He expressed no desire to exercise greater discretion or choice, and essentially allowed his learning to be guided by the structure of affordances available in the workplace, which he felt gave him 'all the skills'. In short, he was content to have limited room in which to exercise discretion and agency. This view was echoed by the other apprentices interviewed at Met-tech. One, for example, was asked whether he liked being in the apprenticeship training facility:

Ben: Yeah, I do. It's a bit like being in school ... [Peter] sets the schedule, tells us what we're going to do, when we're going to do the assessed job and how we're going to get there. He checks on us along the way... So I know what I'm going to be learning tomorrow, next week. You can see what's coming.

(Apprentice)

At Met-tech therefore, processes of co-participation were dominated by the framework of affordances made available to apprentices through their highly structured and regulated working environment. This was generally perceived positively by the apprentices, who enjoyed the predictability and stepped progress that the system allowed, thus bestowing it with expansive qualities. In this sense, the feeling of ‘being in school’ voiced by Ben is telling: for these recent school-leavers, the controlled and guided mode of working and learning that they experienced at Met-tech found a comforting resonance with their still-fresh memories of formal education. In subsequent sections, it will be seen that apprentices with different experiences, biographies and preferences may react differently.

The Small Firms: Expansive / Restrictive Dimensions

The two small firms – Metalhead and Covington Metals – provided a very different apprenticeship experience to that observed at Met-tech. Both companies were characterised by flatter hierarchies, greater spatial proximity between employees, an absence of specialist training functions and relatively minimal management bureaucracy. Within this environment, both expansive and restrictive qualities were observed, yet they adopted a different form to that observed in the larger company.

With regard to the ‘restrictive’ dimensions, the *reification* of the apprenticeship above normal work activities was considerably less marked at these smaller firms. So, for

example, the apprentices' daily experience of work was driven primarily by production needs, rather than by an explicit and documented development plan:

Interviewer: So you take an apprentice on. Day one, what happens?

Arthur: Obviously there's a whole plethora of paperwork they have to fill in [for the college that provides the apprentices' off-the-job training]. So, health and safety and so on... Then it's wherever we need them to fit into, wherever the gap is that we need filling... They're pretty much watching for the first couple of days, but they need to start being productive for us pretty quickly after that... They need to play their part in turning out the orders.

(Managing Director, Covington Metals)

Similarly, at Metalhead, new apprentices were quickly set to work wherever they were most needed. They were required to be a worker first and an apprentice second; their training and development was thus secondary to the demands of production. Correspondingly, there were few visible indicators (such as training facilities or specialist training staff) to distinguish apprentices from other workers. For example, while apprentices at both firms were required to attend college for training one day a week, there was otherwise very little *planned time for off-the-job reflection*. At Met-Tech, as illustrated above, the opposite was true, particularly during the first year of the

apprenticeship when the company used its greater resources to remove apprentices from production altogether.

This subordination of the training system to production requirements made gradual, incremental exposure to new work tasks more difficult, as the mentor to the apprentice at Metalhead explained:

Mike: I'd like to have time to sit down and work out a plan of things that [Chris, the apprentice] needs to be doing, like a proper timetable. Week one, learn about the threader. Week two, strip the lathe. Week three, reassemble it... So he can see what he's going to be doing and when. But we can't do it like that, there's just no time. It's all hands on deck. We've got to do whatever needs to be back with the customer. While I'm working I try to think "has Chris done this? Could I be showing him how to do this?" But it's... waiting for the right moment to come up.

(Mentor, Metalhead).

The pace and sequence of the apprentice's exposure to new tasks was thus dictated primarily by the exigencies of production, rather than by a *gradually stepped*, developmental strategy. Similarly, at both firms, the only *named individual* with designated responsibility for apprentices' development was their mentor (invariably an experienced co-worker). Beyond this, responsibility was more diffuse and was seen as 'just something that everyone mucks in with' (Managing Director, Metalhead).

Thus, the two smaller firms displayed a number of ostensibly restrictive features. Resource constraints and the lack of formal management practices together created a context within which *reification* of the apprenticeship was slight, where there was little opportunity to ensure a *gradually stepped* programme of development for apprentices, and where dedicated support for *off-the-job reflection* (other than their time at college) was minimal in comparison to Met-tech.

Crucially however, there was also evidence of expansiveness. For example, at both firms, apprentices were encouraged – indeed, expected – to engage in greater *boundary-crossing* than was the case at Met-tech. That is, they frequently encountered new tasks to complete, new machinery to master and new teams with whom to work. They were not isolated for long periods within a single function (or training facility), but instead experienced a range of work groups and activities within a short space of time. Sometimes, this involved crossing organisational boundaries and working with clients, which was not an opportunity enjoyed by apprentices at Met-tech. Metalhead’s managing director explained that this continuous exposure to new activities was driven partly by the demands of production as outlined above. However, while those demands largely defined the pace and sequence of the exposure, they did not dictate their variety; this was determined more by his personal conviction that, despite the lack of structure and resource, the apprentice should still enjoy as many learning affordances as possible. This highlights the crucial importance of the managing director’s own agency, framed by his previous experiences, which in this case had instilled an intent to provide genuine developmental opportunities:

Rob: I know from experience how apprenticeships work in the larger companies and it was very structured... They'd do time in the drawing office. Time in accounts... So I thought, "Well how am I going to do that? We're only a small organisation. I can't afford to have a young chap just standing by the side of a fitter... I can't have him stopping the main guy working because that's counterproductive." But I'd already gone with the idea and thought, "Blow it. I'm going to have to do this." I'd heard and experienced with friends of mine and people I've known, how disillusioned younger people had got when they'd been... abused by these [youth training schemes]. They'd be... used as a labourer, never going to learn anything. I was clear from the beginning that that wasn't going to happen here. We want a skilled person who can take the company forward, not a labourer, and we're prepared to... make sure he gets those skills.

(Managing Director, Metalhead)

A similar view was conveyed by his managerial counterpart at Covington Metals. Both expressed the desire to create as expansive a learning environment as possible, even in the absence of a structured training system. In practice, this entailed *ad-hoc* but deliberate considerations of how the apprentice's development needs could be met within the confines of current production schedules. This was an essentially unstructured activity, achieved without a documented process or formal strategy. It was also subordinate to the demands and timetables of production. In terms of Fuller and Unwin's model, this largely

unplanned approach reflects a more restrictive environment. However, as we shall see, it also opened up learning affordances that some apprentices were willing and able to exploit.

The Small Firms: Processes of Co-Participation

At nineteen years of age, the apprentice at Metalhead was slightly older than his first-year counterparts at the other two firms. He had already completed one year of full-time vocational study at college and had also worked for several months at two metalworking firms nearby. This experience had predisposed him towards taking advantage of the opportunities provided by a less structured apprenticeship process:

Chris: Other places I've worked I've been bored just doing stuff I basically did at college... This is mainly why I like this job. One day I could be fitting. Next I could be working on a lathe or a surface grinder. I like the variety here... I don't know what I'll be doing next week. I like that... I'm hoping to be put on a course to do some welding as well, I asked [Rob] and he said he'd let me do that... But I'm doing and learning different stuff all the time... [Mike] quite often says "Come on, you've been doing enough painting for now, one of the others can get on with that. Let me show you how this threader works." And he'll be working on that and I'll help him. Next time I'll do it myself... Or [Rob] will take me out to see a client if he's going. I get to see a lot.

(Apprentice, Metalhead)

Very little of this activity was explicitly planned in advance; it occurred as opportunities arose. Yet, the apprentice still interpreted it as an expansive quality – albeit an expansiveness of a different, less structured kind to that implied in Fuller and Unwin’s model. Other apprentices, with a different biography and set of experiences, perceived such affordances differently. For example, the first year apprentice at Covington Metals – who was younger and had less experience of work and vocational education than ‘Chris’ – encountered a similarly unstructured working and learning environment. However, he interpreted it less positively:

Alex: Sometimes, at college I speak to the other apprentices from other companies... They have practice machines to learn on there. They spend a few days at a time just learning each machine... There’s a trainer who goes around telling them how to use them. I’ve got [Gary, my mentor] who helps me out and shows me whatever he’s doing, like I go on deliveries if he’s going... But he’s doing his own job, and I’m just following him, doing what he needs to be doing... It’s fine, but sometimes I don’t know why I’m doing it.

Interviewer: Would you like to have practice machines and a trainer like those other apprentices?

Alex: Yeah, just to make sure that I'm learning everything properly... In my last assessment, I was like "Am I even doing it right? Am I turning the drill bit the right way or is it just stuck?"

(Apprentice, Covington Metals)

The affordances available to this apprentice were similar to those at Metalhead, and were presented in a similarly unplanned, *ad-hoc* fashion. Yet, this apprentice – like those of his age at Met-tech – preferred a more structured and guided mode of working and learning. He lacked the confidence and inclination of the more experienced apprentice at Metalhead to ascribe positive meaning to the more flexible affordances on offer, and was therefore more likely to interpret and respond to them as a hindrance to his learning than as an opportunity. So, in the absence of a clear, pre-defined structure to dictate explicitly the terms of his or her learning, the apprentice's own agency is thrust to the fore in determining how he or she learns.

Discussion

The study began by combining the insights of two previously unconnected strands of inquiry. The first has explored the role of workplace structures and practices in shaping vocational learning in general and apprenticeship learning in particular (e.g. Fuller and Unwin 2003; Lehmann 2005). The second has highlighted the generally more informal nature of management practices and learning processes within the small firm (e.g. Hoque

and Bacon 2006; Atkinson 2008). Integrating these insights prompted the two key questions of this article. First, does a tendency towards informal management and skill formation structures entail more restricted learning affordances for apprentices? And second, are interactions between those affordances and the apprentice's subjective agency – described by Billett (2001) as 'co-participation' – shaped differently within the less structured environment of the small firm?

In response to these questions, a number of themes emerged. Firstly, the picture of increasing informality with smaller firm sizes (e.g. Edwards 2010) was reflected here. There was mixed evidence however as to whether this was associated with more restricted learning affordances; both expansive and restrictive characteristics were simultaneously in evidence in each firm. So, for example, with regard to restrictive characteristics, a lesser degree of structure in the smaller companies inhibited the extent to which apprentices could enjoy protected time and space for learning. However, the greater informality enabled more scope for the individual apprentice to exercise discretion and shape their own learning – if, crucially, they were inclined so to do. Conversely, in the larger firm, the structured and reified apprenticeship process did more to facilitate the provision of dedicated learning resources and strategically stepped learning experiences. However, the greater degree of structure limited the space in which the apprentices could cross boundaries and exercise their discretion.

Therefore, in response to the first research question, the relative informality of the small firm environment does not *necessarily* entail a more impoverished or restrictive

apprenticeship experience. The small firm environment presents its own learning affordances, as suggested for example by Holden et al. (2006) and Dawe and Nguyen (2007). Crucially however, the extent to which they were taken up – or even interpreted as affordances – was dependent on the agency of the individual apprentice. This adds further detail to Fuller and Unwin’s expansive – restrictive continuum, as it emphasises that both expansiveness and restrictiveness are to some extent mutable rather than stable qualities, conditioned as they are by variations in individual agency.

It also relates to the second question regarding co-participation. It was seen at Metalhead for example that the more confident and experienced apprentice can prosper within a small firm environment that lacks an established training structure to define and dictate what can be learned – if managers, for their part, are committed to providing learning opportunities where production schedules allow. In contrast, at Covington Metals, the younger and less experienced apprentice struggled without an explicit structure to guide and regulate his workplace learning. This illustrates the weight given to the individual apprentice’s biography and agency in defining processes of co-participation in the small firm, and echoes Fenwick’s (2012) findings relating to the more strategic and agentic approach to learning and career planning adopted by older workers. Two apprentices, in similar small firm environments, interpreted and engaged with the available affordances in different ways and with different consequences for their learning. In contrast, at the larger firm, the established training structure left considerably less room in which the apprentice’s agency could have such an effect; the system itself channelled and propelled apprentices through a series of explicit and uniform learning

affordances. Consequently, the process of co-participation was, in contrast to the smaller firms, characterised by the subordination of the apprentice's agency to the structure of the standardised training regime. Therefore, as Billett (2001) suggested, processes of co-participation will vary in character depending on the organisational context as well as the agency of the individual.

Conclusions

The findings presented above suggest that apprenticeship learning is not solely a product of the 'expansive' or 'restrictive' (Fuller and Unwin 2003, 2011) learning affordances made available through the structural and cultural arrangements of the workplace. Rather, in Billett's (2001) terms, it is the outcome of an interaction or 'co-participation' between those affordances and the agentic response of the individual apprentice. How the apprentice learns, and what they learn, is firmly embedded in this process of co-participation. Future research on apprenticeship learning – and workplace learning in general – would therefore benefit from narrowing rather than maintaining the divide between more structural accounts of skill formation and those that focus on individual agency.

The findings also suggest that the tendency among small firms towards informality in management practices and skill formation processes (e.g. Ram and Edwards 2003; Hoque and Bacon 2006) does not inevitably produce a corresponding tendency towards a restrictive apprenticeship environment relative to larger firms. This is partly due to the

process of co-participation outlined above which, in the small business – in contrast to the larger firm – gives greater weight to the agency of the individual in determining what is learned and how. However, the agency of senior managers in small firms is also crucially important here. The owner / manager’s attitude is pivotal in shaping the internal dynamics of the small firm; with relatively little in the way of formal and structured skill formation processes to ensure a standardised learning process, the manager’s agency becomes a key variable in shaping the apprentice’s learning.

This potential for variation needs to be recognised, as not all small business managers may choose to exercise their agency in such a positive way as did those in this study. Therefore, there is arguably a need for greater statutory protection of apprentices’ on-the-job learning, which Clarke et al. (2013) cite as a positive feature of the German apprenticeship system. British apprentices already receive a level of protection for off-the-job training, but there is currently no such assurance regarding their on-the-job learning. Future research could usefully explore avenues for introducing such protection in ways that allow for the more limited capacities and resources of small firms. There is also a need for comparative studies of skill formation processes in large and small businesses in other occupational areas – particularly those where established vocational training structures are more limited – in order to determine how processes of co-participation operate differently and generate different outcomes within other sectors.

ⁱ This is a summary rather than a full list of all the expansive / restrictive features identified by Fuller and Unwin. See Fuller and Unwin (2003, 2011) for full details.

ⁱⁱ Fuller and Unwin's framework does not preclude this possibility – indeed, they do acknowledge the potential for varying individual responses to learning affordances (see Evans et al., 2006; Fuller and Unwin, 2014). However, they stop short of delineating patterns or trends in this variation (for example, in terms of different types of interaction between affordance and agency in small firms compared to larger organisations).

ⁱⁱⁱ Sector Skills Council for Science, Engineering and Manufacturing Technologies.

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