How is vocational knowledge recontextualised?

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Abstract

This paper sets out to examine how vocational knowledge is recontextualised in curricula, pedagogy, workplaces, by learners, and to ensure the availability of valuable and relevant knowledge for vocational practice. Starting from Bernstein's notion of recontextualisation, and with reference to literature in the sociology of educational knowledge, studies of workplace learning and learning theory, recontextualisation is understood here as a socio-epistemic process which is influenced by the interrelation between the distinct structures of different knowledge types and the social dynamics of vocational education infrastructure. Various aspects of recontextualisation are considered, including whether the overall process can be disaggregated to reveal a series of separate elements, how knowledge is transformed and concepts developed, and influences on the character of recontextualisation. Potential tensions that may affect recontextualisation in vocational environments are identified, and some conditions for reconciling these briefly discussed.

Keywords: vocational education and training, workplace learning, curriculum, pedagogy, knowledge, recontextualisation

Introduction

The importance of vocational knowledge for vocational curricula and formation remains a subject of controversy. Over the last thirty years there have been reductions in what might be termed 'disciplinary' knowledge content in vocational curricula and pedagogy in a series of countries including the U.K., South Africa and Australia (Young 2006; Gamble 2006; Wheelahan 2007; Muller 2009), as governments have orientated vocational education towards the opaque notion of 'skill' and competency outcomes (Payne 2000; Wheelahan 2007). This emptying of knowledge content and obstruction of 'epistemic access' has stimulated reappraisals of how to re-centre notions of knowledge in the vocational curriculum, and has also re-focused attention on what might be distinctive about vocational knowledge (Young 2006; Gamble 2006; Wheelahan 2007). Simultaneous to this, and conversant with the above arguments, studies of workplace learning have examined processes in pedagogy, curricula and the workplace that 'put knowledge to work', focusing on the transformation of knowledge for vocational practice (Evans et al. 2010).

Important for these approaches is a re-assessment of the structures of and relations between forms of vocational knowledge, including how these are collated, combined and transformed in the various spheres of activity of knowledge production, curriculum formation, pedagogy, in workplaces and by learners themselves. This entails a focus on 'recontextualisation', a notion used by Bernstein to explore how 'discourses', or types of knowledge, practice and identity, are constituted and changed in different educational contexts (2000, 31-33), and by (inter alia) Barnett (2006) and Young (2006) in discussions of vocational education. Evans et al. (2010, 246) broaden the scope further, describing recontextualisation as incorporating contexts such as 'schools of thought, the traditions and norms of practice, the life experiences in which knowledge of different kinds is generated', extending the focus to workplace practices and learners. Evans et al. (2010, 246) also suggest that 'concepts are an integral part of practice', providing a link to the 'progessive continuous recontextualisation' that van Oers (1998) outlines.. This suggests that recontextualisation has a degree of flexibility as a notion. It is used to describe how concepts move and change between contexts, and as a means of interpreting how the form and use of knowledge changes, but the potential range of concepts and contexts involved is considerable. Recontextualisation processes are also thought to be undertaken by different parties in different spheres of activity, leading also to questions of how these processes relate, and to how the conditions within a sphere may negate or facilitate the process.

It can be argued that exploring the notion of 'recontextualisation' is particularly important for analysis of vocational knowledge, pedagogy and practice. Recent research in England has illustrated the degree of confusion about the role and character of knowledge amongst those involved in vocational education, including 'diverse and conflicting views…concerning theoretical knowledge' (Bathmaker 2013, 15). The spectrum of concepts and contexts involved in vocational education is very broad, and there may be multiple factors that can influence recontextualisation in a given sector, profession or vocation. The focus on recontextualising knowledge raises questions about the connection between how knowledge is produced, validated and made available to those involved in vocational practice. It highlights issues of epistemic access that focus on what knowledge is being made available to vocational learners, and who has responsibility for its appropriation and transformation. It also draws attention to issues relating to how what is considered useful 'valid' knowledge is being affected by scientific and technological change, and whether these changes are being effectively incorporated into vocational curricula and pedagogy (Clark and Winch 2004). The breadth of the term and its application across a range of scales indicate the importance of further scrutiny.

In this paper, the notion of recontextualisation in vocational knowledge is examined with reference to work in the sociology of educational knowledge and in studies of workplace learning.. A working understanding of recontextualisation is iteratively developed that aims to incorporate the notion that recontextualisation occurs in different spheres of activity, and can be controlled or enacted by different actors. Recontextualisation is understood here as a set of related and ideally sequential socio-epistemic processes that may or may not occur contiguously or synergistically, with concomitant impacts on vocational curricula, teaching and learning. Thus it is possible for the epistemic character of knowledge to be misconstrued though a flawed attempt at recontextualisation. This may be exacerbated by a 'split' in the elements of recontextualisation process, where different spheres, or actors within spheres, have responsibility for separate elements. The character of recontextualisation is seen as influenced by the development of processes of 'generalisation' and 'particularisation' that facilitate recontextualisation 'capability' in all spheres. Recognition of knowledge structure is emphasised, while acknowledging the inherent 'enmeshing' of 'vertical' principles and 'horizontal' particulars in inductive and deductive processes of concept development. As a means of illustrating the points above, the paper revisits some of the examples provided by earlier authors.

Bernstein's use of recontextualisation

Bernstein's use of recontextualisation informs his discussion of the development of the pedagogic device. Bernstein (2000, 33) specifies that recontextualisation involves a 'principle that selectively appropriates, relocates, refocuses and relates other discourses to constitute its own order'. This principle 'creates recontextualising fields, it creates agents with recontextualising functions' (2000, 33), and can be seen as a notion that interrelates macro, meso and micro processes of knowledge validation, discourse formation and pedagogic practice. For Bernstein, recontextualisation is also the means through which 'regions' of professional or vocational knowledge emerge from disciplinary 'singulars' (2000, 52), selectively combining and refocusing elements of the 'pure' disciplines to meet the requirements of a 'supervening purpose' (Muller 2009, 213), which may involve vocational formation or industrial imperatives. Indeed, the 'region', as the 'interface between disciplines (singulars) and the technologies they make possible' (Bernstein 2000, 52), can be seen as a useful notion for analysis of the socio-epistemic formation of vocational knowledge, as knowledge is assembled and recontextualised to meet the objectives of practice. Regions face 'inwards towards singulars and outwards towards the field of practice' and often have 'professional bodies setting standards of practice' (Bernstein 2000, 55), although Muller's (2009) analysis makes clear that other authorities may be equally or more powerful in vocational regions. In a separate passage Bernstein (2000, 113) mentions 'principles of de-location, that is selective appropriation of a discourse…from a field of production….and a principle of relocation….within a recontextualising field', providing further indication of the separate elements of a recontextualisation process.

There are a number of interrelated elements of Bernstein concept of recontextualisation that warrant further elaboration, including the notions of 'selectivity', 'delocation and relocation', 'refocusing and relating' and the 'principle' with a 'purpose' that drives the recontextualisation. The idea of 'selectivity' implies that certain elements of 'a discourse' or 'knowledge structure' are chosen by an agent for a particular reason. However, how this selectivity happens and what parameters might exist that could constrain it is not discussed. 'Delocation and relocation' could suggest a change of physical location, for example from classroom to workplace, or, alternatively, a change of 'location' between 'discourses' and therefore from one knowledge structure or educational or workplace practice to another. 'Refocusing and relating' suggests that once the elements of knowledge or practice have been 'relocated' they need to be altered, changed or transformed to meet the needs of the new

'discourse', context or knowledge structure. However, this leaves open questions about the extent of refocusing that might be needed, which may vary depending on how different the two contexts, or discourses, are. Lastly, the existence of a 'principle' or 'purpose' that drives the process leads to questions that relate to the structural and agentic forces that could constitute the 'principle' in any given recontextualisation. In other words, is the selection, relocation and transformation of knowledge something that can be conceived as driven by individuals, groups, organised bodies, or primarily by norms that are socio-historically, or epistemically, constructed, and is this a function of the sectoral or vocational context? Further questions might be asked about whether recontextualisation processes are continual, occasional or intermittent. For example, the recontextualisation of singulars into regions to form a body of professional or vocational knowledge could be seen as a 'one off' process, or alternatively as a continual process of the formation and reformation of vocational knowledge as new disciplinary developments in the singulars are recontextualised to meet the needs of vocational practice.

An analysis of Bernstein's work leads to the conclusion that recontextualisation can be seen as a 'multifaceted concept' (Guile 2011, 455) involving a sequence of interconnected elements that form a process. The different elements of recontextualisation may vary in their character, form and duration depending on circumstances, but generally follow a sequence for recontextualisation to occur. It could however also be suggested that the elements of recontextualisation may not necessarily be 'contiguous', in the sense that different elements of a recontextualisation process may be enacted by different agents at different times, exacerbating disconnection between the elements, stretching the sequence, and resulting in a form of recontextualisation that is very different from a process that is enacted by the same agent or collection of agents sequentially as a unitary process. It is, of course, also conceivable that recontextualisation can fail to occur, despite the intentions of those involved.

A number of researchers have worked with notions of recontextualisation to describe processes of vocational knowledge production, curriculum formation, pedagogy, workplace practices and processes of learning that relate to questions of how vocational knowledge is recontextualised. In the sections below some of these contributions are briefly examined, including those of Barnett (2006), Young (2006), Gamble (2004, 2006), Breier (2004), Guile (2011, 2012), van Oers (1998) and Evans et al. (2010). Some of these authors explicitly use Bernstein's notion of recontextualisation, whereas others have reinterpreted the concept and broadened its use while acknowledging Bernstein. However the notions of

recontextualisation developed by van Oers (1998) are derived instead from the Vygotskian tradition and activity theory, an approach which also informs the work of Guile (2011, 2012) and Evans et al. (2010).

Recontextualisation as 'bridging the gap' between disciplinary and practical knowledge

Barnett (2006, 144), drawing on Bernstein, provides a useful simplified definition of recontextualisation as the ''appropriation' and 'transformation' of knowledge for various purposes'. Barnett suggests that the formation of vocational knowledge is distinguished by a process of 'reclassificatory recontextualisation' (RR) that brings 'organisational and technological problems' together with disciplinary knowledge to produce a 'toolbox of applicable knowledge' that is a restructuring of disciplinary knowledge for vocational purposes (2006, 147-8). Although Barnett does not discuss this specifically, reclassificatory recontextualisation can be understood as the process whereby a 'region' of professional or vocational knowledge is formed. This region of knowledge can acquire 'conceptuality' from disciplinary knowledge and a degree of 'contextuality' from the problems of practice, thus orientating the disciplinary knowledge towards the practice context. In the terminology developed by Maton (2011) and used by Shay (2012) to identify the distinctive nature of professional knowledge, this knowledge acquires both semantic 'density' and 'gravity', with principles that are 'derived from theory but strongly embedded in practice'(Shay 2012, 9).

However, in order to reconcile disciplinary knowledge with the problems of practice within the 'region', processes of 'selection' and 'refocusing' need to take place that are arguably both epistemic and social in nature. Bernstein's (1999) discussion of 'hierarchical' and 'horizontal' knowledge structures in vertical discourse demonstrated how each discipline has an underlying epistemic quality that is constituted in the relation between its external and internal languages of description, or, in other words, its capacity to relate empirical research to the development of theory at a greater level of generality. The internal dynamics of disciplines thus provide constraints on the extent to which new knowledge claims can be considered legitimate. Thus, for example, new knowledge in a field such as engineering or construction is required to conform to underlying epistemic principles that are provided by a disciplinary knowledge base that has origins in the physical sciences. This suggests that disciplinary knowledge within the region can only be 'refocused' in accordance with its underlying epistemic structure. As Young (2006, 118) emphasises, it is disciplinary

knowledge that has 'principles of recontextualisation' and therefore can provide the 'rules for making explicit the grounds for an explanation'. Thus the 'problems' have to work within the underlying structure of the discipline in order not to weaken the explanatory potential of the vocational knowledge base. In a similar expression of this tension, the 'selection' of problems has to both meet the demands of practice and the demands of disciplinary knowledge to enable vocational curricula 'to face both ways' (Barnett 2006). 'Pedagogic recontextualisation' also features in Barnett's discussion, as the process of making knowledge 'more readily teachable and learnable in particular educational contexts (2006, 146) that occurs in both vocational and non-vocational education. He emphasises therefore the complexity of vocational knowledge and pedagogy, due to 'two distinct recontextualisation processes' (2006, 147).

In discussing how science is often driven by practical problems, Barnett also touches on a key question relevant to the formation of vocational knowledge by alluding to the 'separation of general knowledge from particular experience' through 'decontextualisation'(Layton 1993:59 cited in Barnett 2006), which is then followed by scientific concept formation and a subsequent reversing of the process to solve future problems in a fresh context. Thus disciplinary knowledge may arise from knowledge 'decontextualised' through inductive processes, which is then aligned with the system of knowledge that forms the discipline. The notion of the importance of the 'system' or 'overarching environment' (van Oers 1998, 135) in which abstract concepts can be located is a cornerstone of how those working with activity theory and the Vygotskian tradition interpret knowledge formation. However, although van Oers (1998, 135-6) notes how the 'embeddedness of concepts' can be seen as an essential condition' for 'academic quality', he suggests that this can be linked with a process of 'contextualisation' rather than decontextualisation, problematising abstraction. This also invites a focus on the conditions which enable concepts to develop from contexts, and become refined to meet the requirements of a disciplinary system. From the perspective of social realism the conditions for incorporation into a 'vertical' disciplinary knowledge structure embody a commitment to notions of 'truth' and 'truthfulness' (Young and Muller 2007). For vocational knowledge, this must also ensure that knowledge retains purchase with vocational practice through the demonstration of relevance. The tension and articulation here between the 'general' and 'the particular' (Gamble 2006) in processes of knowledge formation provides a lens through which to explore knowledge transformation.

Young (2006) outlines how Durkheim's distinction between the sacred and profane and Bernstein's (1999) delineation of different knowledge structures highlight the differentiation between theoretical and practical knowledge. For vocational knowledge and the vocational curriculum, which is characterised by knowledge derived from a range of contexts and with varying degrees of conceptuality and contextuality (Muller 2009), awareness of these distinctions and how they may affect how knowledge can be used can be seen as vital. Recent research focused on England demonstrates how the distinctions between knowledge structures and types can become obscured in discussions of vocational curricula and practice (Bathmaker 2013), potentially as a result of government policies, or the requirements ofqualification frameworks. Confusion could also stem from excessive complexity in VET infrastructure, of which the English case is a prime example (Keep 2006). However, if this awareness is so important for curriculum planners, teachers and trainers, it may be equally important for learners, who must be made aware of the origin and distinctiveness of different forms of knowledge. For Young it is recontextualisation which is responsible for 'bridging the gap' (2006, 121) between theoretical and experiential knowledge, and thus is a crucial notion for vocational curricula and pedagogy. It follows, however, that the processes of 'appropriation' and 'transformation' of knowledge between contexts should 'distinguish between the degree of situatedness of knowledge' (Young 2006, 115), but how this occurs is an interesting question. Potentially, these processes can be seen as 'structured' epistemically (Maton 2010), as much as socially, with certain forms of knowledge compatible with certain curricula and pedagogic contexts by nature of their very structure. This structure may be strongly or weakly classified, with firm or highly permeable boundaries between disciplines, and located in a horizontal or hierarchical structure within the vertical disciplinary discourse (Bernstein 1999; 2000, 7-11). Alternatively there may be an absence of structure if the knowledge is located in the 'horizontal discourse' of 'everyday' practical knowledge, which has no organising principles which can relate meaning and integrate knowledge across contexts (Bernstein 1999). The consequent lack of structure may not necessarily be recognised by those responsible for the curriculum. This suggests that certain instances of recontextualisation may fail to transform knowledge for a new context because the structure, or lack of structure, of the 'appropriated' knowledge has not been recognised by those involved in recontextualisation. Equally, the recontextualising agents may simply assume that the relocating context and the appropriated knowledge are compatible. Recognition of the context and the knowledge structure can thus be considered essential for the socio-epistemic process of recontextualisation, and for the 'gap' to be bridged without an error that leaves

knowledge in a form that is unusable in the curriculum or pedagogic context and separated from related disciplinary knowledge.

Recontextualisation as generalisation and particularisation

Young (2006, 120) suggests that recontextualisation as a notion indicates the importance of certain pedagogic approaches, and draws attention to Breier's (2004) notion of 'generalising and particularising pedagogic strategies'. 'Generalisation' and 'particularisation' are arguably important concepts for understanding what the 'transformation' element of recontextualisation might entail. This not only has relevance for understanding the pedagogic recontextualisation that Barnett (2006) describes, but also other forms of recontextualisation as knowledge is 'relocated' from a field of production to curricula, pedagogy, and to learners. The capacity to accurately identify and articulate how and why theoretical and practical knowledge types are 'enmeshed in each other' (Young 2006, 118) in vocational contexts supports the process of defining valid and valuable vocational knowledge. This identification process is also important for revising, selecting, and absorbing current and new knowledge. As science progresses through the interrelation of practical problems and scientific concepts, requiring a capacity to move through a process of 'abstraction' from a problem and relocation back into the specifics of new contexts (Barnett 2006), so vocational knowledge should have the capacity to oscillate along a spectrum of generality as it engages with the demands of practice, and develops and validates new working concepts. However, this process is enabled by a recognition of the distinctiveness of knowledge, as without a recognition that some forms of knowledge acquire 'generality' and context-independence (Gamble 2006) while others remain 'particular' and 'context bound' this oscillation does not escape from the 'arbitrary conceptual relations that are generated by sensory perception' (Guile 2006, 261), with no anchor to enable the conservation, revision and progress of the disciplinary knowledge base of the vocation.

Just as a web of refined and validated concepts are vital for the sustenance of a vocation, so it is important to consider the 'repertoires' and 'reservoirs' that harbour and relay the context-dependent knowledge of experience (Bernstein 1999), and how knowledge built on experience relates to, and compares with, theoretical and disciplinary knowledge. Gamble (2006, 91-93) demonstrates how concepts can be derived in context dependent knowledge, illustrating this through discussion of craft. These 'visualised' concepts exist 'in the mind of the worker', representing 'a picture of the 'whole' to be created' (2006, 91). Gamble also

outlines the inductive pedagogic processes that characterise how students are led towards an understanding of a mathematical concept through 'procedural repetition' (2006, 90). For Gamble (2006, 93) both the 'particular' (context-dependent) and 'general' (context independent) forms of knowledge incorporate principled 'wholes' and procedural 'parts'. The capacity to work with 'generality' is arguably developed with accumulation of knowledge in both spheres. For the craftworker working with context-dependent knowledge, the ability to conceptualise and create a new object through the 'unity of head and hand' (Gamble 2006, 910) is derived though immersion in the context. Thus a traditional craft apprenticeship, incorporating years of practice, dialogue with a 'master' and exchange of 'repertoires' with the development of skills, enabled the apprentice craftworker to acquire a capacity for visualising the 'principled whole' and its relation to the 'procedural parts' (Gamble 2006, 92). Similarly, the 'trainee' scholar gradually develops the capacity to grasp 'context-independent' concepts quicker as she progresses through her education, perceiving the relation between theories and related procedures ever more competently. With time a deductive capacity is possible as the scholar acquires sufficient understanding of how concepts can be formed to interpret the 'parts' of the world.

However, there is a distinction between processes in context dependent and context-independent spheres. Whereas concepts in the context-independent sphere benefit from the socio-epistemic quality assurance and infrastructure of a discipline, and must fit to the requirements of the knowledge system of which they are a part (van Oers 1998; Guile 2006), concepts in the context-dependent sphere must be visualised in the mind of each individual craftworker, with the 'part-whole relationship…held as tacit knowledge' (Gamble 2006:93). Gamble indicates how processes of industrialisation, mechanisation, and changes in work organisation have eroded the potential of the part-whole relation in context-dependent knowledge, as conception has been 'separated from execution' by 'printed pattern books and plans' (2006:91). Those who are able to engage in physical creation independently are perhaps the only workers able to maintain the part-whole relation in context-dependent knowledge in the contemporary industrialised world, finding some manner of resisting the fordist procedularisation of physical labour. Others are caught in an interconnected network of procedures and actions, with limited purchase on the overall creative vision. Certainly those who spend their weekends assembling flat-pack furniture are not encouraged to engage with a principled 'whole', as they follow a sequence of procedural instructions to arrive at an end result not of their conception. Similarly, a construction worker on a major project may be

asked to execute his task according to the specific instructions of the foreman, with limited opportunities to engage with the overall design.

Breier's analysis of pedagogic practices in legal education provides material illustration of how theoretical and experiential aspects of knowledge are enmeshed 'in the cut and thrust of pedagogical encounters' (2004, 206). The horizontal discourse of practical experience is thus seen as a key element of vocational education and formation, contributing to understandings of the 'organisational and technological problems' that Barnett (2006) describes, and provides opportunities for learners 'in formation' to 'test' theoretical knowledge and propositions against the practical realities of their workplaces (Evans et al. 2010). As Breier's (2004) example demonstrates, the extent of this usage of horizontal discourse depends on the degree to which learners and teachers have experience of the practical realities of the vocation concerned and ways in which theoretical knowledge is transformed and adapted in the 'heat' of practice. Making effective use of the interrelation between theoretical concepts and practical examples, involving the capacity to oscillate between the conceptual and the contextual, can be seen as vital for vocational knowledge, learning and work. Breier (2004, 211) points out how legal expertise is associated with 'depth of knowledge about the law and its application' and 'in the academic context, with the depth of theoretical and contextual knowledge as well'. In legal study and work, this can be seen as particularly important due to the inductive and deductive processes that operate to form and refine valid legal knowledge (Breier 2004, 211). More broadly, the notion of the 'role of the horizontal in the vertical' (Breier 2004, 214) suggests that the 'organisation' of practical problems is as important for the 'reclassificatory' processes as the 'organisation' of the discipline. Turning to Bernstein's discussion of horizontal discourse (1999, 159-161), we can see that effective 'circulation' and 'exchange' of the 'repertoires' and strategies that workers use to identify and manage problems provides for the construction of a 'reservoir' of analogous experiences that can then contribute to the direction, but not the essence, of knowledge production, the vocational curriculum and pedagogic processes. Whether through sharing 'war stories' (Brown and Duguid 1991), through professional networks, or ensuring that the social infrastructure of the 'region' is sufficiently aware of the changing demands of practice, the flow of horizontal discourse is key for vocational knowledge to reflect the 'complexity' of a vocational practice (Breier 2004:213). Indeed, the importance of embracing the 'complexity'of a vocation while illustrating the tension between principles and the realities of practice can be seen as a key lesson of Breier's analysis.

Broadening the scope of recontextualisation

Evans et al. broaden the notion of 'context' in which recontextualisation occurs to include 'schools of thought, the traditions and norms of practice the life experience of different kinds in general' (2010, 246). This interpretation focuses to a greater extent on the contexts, or spheres of activity, through which forms of knowledge can be recontextualised, aiming to unpack how recontextualisation works. These spheres of activity include the creation of curricula through context recontextualisation, pedagogic practice, workplaces and recontextualisation by learners themselves (Evans et al. 2010). Generally consistent with the tradition that has emerged from Bernstein's work, this work emphasises that 'vertical and horizontal logics differ and are not seen as easily related to one another', with disciplines possessing 'greater resources for recontextualisation because codification provides principles for selection and recombination' (Evans et al. 2010, 246). However there are also attempts to tackle how 'rules of combination for practical knowledge' can be developed for vocational curricula (Guile 2011, 455), a rule-generation process that may be problematic if we follow Bernstein's (1999, 2000) implication that recontextualisation rules are present in vertical disciplinary discourse rather than horizontal 'everyday' discourse.. In addition to bringing 'learner recontextualisation' into view to a greater extent, knowledge is seen as recontextualised in distinct curriculum formation and pedagogic processes, foregrounding the role of 'the constitution, and constitutive role' of the interrelated activities of teaching and learning in the vocational curriculum (Guile 2011, 453). Curriculum planners are challenged to 'identify how forms of knowledge that are part of a particular tradition of social practice….become part of another social practice' and to 'appreciate why and how the forms of knowledge change….because of a new purpose' (Guile 2012, 93). This is underpinned by the assertion that while all knowledge forms are 'contextual' they 'are not necessarily context-bound' (Guile 2012, 93).

The approach of Evans et al. (2010) and Guile (2011, 2012) distinguishes between different spheres in which recontextualisation takes place. 'Content recontextualisation' is described as the process whereby those with authority over the curriculum 'formulate criteria to determine which aspects of the forms of knowledge…should be included in a programme of professional formation' (2012, 93). Organisations that might have authority here could include awarding bodies, employers and their representatives, occupational associations,

government agencies or trade unions, depending on the national and sectoral context. It is important to note that 'content recontextualisation' is not a process of validating newly produced knowledge, but rather a process of validation of available knowledge for the purposes of vocational formation. The orientation of 'content recontextualisation' is towards the formation of curricula, and therefore may involve the appropriation and transformation of knowledge from disciplinary sources and the world of practice. However, the objective of ensuring that curriculum reflect the needs of practice, and the pedagogic processes that will introduce knowledge to practitioners 'in formation' may be in tension with the ongoing review and renewal of the knowledge base of the vocation.

Relations between spheres of activity and 'split' recontextualisation

How knowledge is appropriated and transformed for a curriculum is thus a sensitive socio-epistemic process. The relation between the curriculum sphere of activity, the selection and transformation of knowledge for the demands of the vocation, and pedagogic practice is not necessarily straightforward. Indeed, it is possible that aspects of a recontextualisation process may be 'split' between different spheres of activity. For example, a curriculum may involve the 'appropriation' of knowledge from a disciplinary source or from practice but neglect to 'transform' this knowledge effectively. 'Transformation' of knowledge that has been appropriated elsewhere may therefore be left to those involved in pedagogic practice, with limited guidance as to how the curriculum authorities envisaged the process taking place. Misalignments may then occur as pedagogues enact their own interpretations of what the curriculum authorities intended, resulting in some surprise when outcomes do not concur with those preferred by the authorities. This may result in the processes of 'transformation' also being removed from the control of teachers and trainers. Young's (2006, 106-107) discussion of the knowledge-based based approach to vocational knowledge can be seen as an example of where knowledge was 'appropriated' and validated for the curriculum in one sphere, leaving pedagogues to work out how to transform it to support vocational practice. Contrastingly, the standards-based approach (Young 2006, 107-109) negated any role for curriculum or pedagogic recontextualisation, leaving the learner/employee to appropriate and transform 'knowledge' direct from the workplace in order to demonstrate vocational competence. As Bathmaker (2013) shows, the infrastructure in which vocational qualifications are assembled and validated may be heavily disaggregated, with roles and

responsibilities lying with specific awarding bodies, employer representatives or government institutions. This can be seen to negate the potential for recontextualisation to occur contiguously and synergistically, with the parties involved denied sufficient autonomy and flexibility to 'appropriate' and 'transform' knowledge to fit the requirements of the sphere of activity in which they operate. In such situations, there is a disincentive for parties operating in one sphere (i.e. pedagogy) to engage with activities in another sphere (i.e. content appropriation for the formation of a standards based qualification), particularly if qualification content is tightly specified.

Evans et al. (2010), building on their research into how knowledge can be 'put to work' in different contexts or spheres of activity, distinguish between 'pedagogic', 'workplace' and 'learner' recontextualisaion as separate processes. However, it is worth considering how these different recontextualisation processes relate to one another. Does recontextualisation in one context or sphere of activity impact on the process in a related sphere? For most programmes of vocational formation it is highly likely that recontextualisation processes in pedagogy and in workplaces have some relation, and thus the capacity of the workplace to provide the forms of recontextualisation that learners are thought to need become a key consideration. The examples provided by Evans et al. (2010), Guile (2011, 2012), provide illustrations of how teams of vocational educators and practitioners with some degree of control over the curriculum, pedagogy and workplace activity are able to form the infrastructure needed to achieve a degree of coherence in a vocational programme. For instance, Guile (2011) shows how staff from a university and an employer in England were able to co-operate in the development of a vocationally-orientated programme that met the requirements of the aircraft engineering industry while retaining the capacity to collectively take decisions about the selection, appropriation and transformation of knowledge in curriculum and pedagogy.. However, this degree of collaboration may be confined to certain elements, or levels, of vocational education. Indeed, examples such as Guile's (2011) may be more prevalent at higher levels of education. In much of vocational education there may be fewer opportunities for this form of capacity building, as the processes of curriculum specification (Bathmaker 2013) and variable levels of constraint over pedagogy (Avis et al. 2011), may be complicated by a vast diversity of workplace contexts which may or may not be supportive of curricula or pedagogic objectives. Workplace recontextualisation may be a particularly variable and complex notion, affected by the extent to which the forms of knowledge 'embedded….in workplace routines and artefacts' (Guile 2012, 94) serve to

represent the forms of knowledge introduced in curricula and pedagogy. Many learners may experience some disjuncture between the knowledge considered valuable in the workplace and that prioritised in the curriculum. As Evans et al. (2010) identify, it is the 'workplace practices and activities that support knowledge development' that enable workplace recontextualisation to occur, factors affected by the productive systems in which organisations are located and the patterns of work that flow from them (Felstead et al. 2009). Workplaces may exhibit practices and prioritise knowledge that would be considered redundant or counterproductive for current vocational formation.

The potential for the 'disconnect' above, points to the importance of the dynamics in the 'region' of vocational knowledge to incorporate an engagement with knowledge processes in the workplaces. Arguably the development of a knowledge production and validation infrastructure that brings together educational institutions, professional/vocational bodies and employers to digest how well content, pedagogic, workplace and learner recontextualisation cohere is vitally important for the spread of the practices that Evans et al. (2010) and Guile (2011, 2012) outline. Although 'theoretical concepts are already a feature of workplace artefacts, routines and practice' (Guile 2012, 96), learners may have to discern how the concepts embedded in workplace activity may differ from the theoretical concepts introduced and prioritised in curricula and pedagogy, leading potentially to dissatisfaction with, and change to, workplace practice. Thus 'learner recontextualisation' or 'what the learner makes of it' (Evans et al. 2010: 247) is a process that may lead to challenge, innovation and further workplace knowledge recontextualisation, while involving the appropriation, selection and transformation of knowledge from curriculum, pedagogy and the workplace. This potential complexity focuses attention on how vocational learners develop recontextualisation capabilities.

Developing the capability to recontextualise knowledge

In addition to using the work of Bernstein (1999, 2000), recontxtualisation can also be seen through the lens of a different tradition. Evans et al. (2010) and Smeby and Vagan (2008) make reference to van Oers's (1998) ideas of 'horizontal' and 'vertical' recontextualisation. van Oers, working within the framework of activity theory and concerned primarily with recontextualisation of knowledge in the pedagogic sphere, develops a notion of recontextualisation as involving a ' continuous process of embedding contexts in contexts' (van Oers 1998, 135). According to van Oers 'there is no valid theoretical argument showing

why an action must be detached from a situation first to be applicable in another situation, and there is no empirical evidence for the necessity of decontextualisation for transfer' (1998:137). This might be seen as challenging assertions of the possibility of 'context independent' knowledge (Gamble 2006), or potentially having bearing on the processes of abstraction that Barnett (2004) refers to in terms of knowledge production and validation. However, van Oers does not deny the significance of abstract thinking for the development of the 'academic quality of concepts' (2008, 135). Abstract thinking is, however, described as 'not context free', but 'a state of being highly involved in a theoretically-construed world, based on explicitly used relations, logical rules, and strict norms of negotiation' (van Oers, 139). Arguably, this state has some correspondence with Bernstein's (1999) description of how disciplinary knowledge is produced and validated , reflecting the confluence between Durkheim, Bernstein and Vygotsky's positions on the sociality and historicity of knowledge (Young 2003; Guile 2006). The Vygotskian tradition asserts that we 'develop ourselves through using external, symbolic cultural systems' (Guile 2006, 256), agreeing with Durkheim on the distinctiveness of conceptual knowledge, albeit with a different perspective on the conditions for its development (Guile 2006). Therefore, although it is possible to argue that knowledge is always produced 'in a context', the specificities of disciplinary knowledge production enable abstraction, generalisation, deductive thought, and the location of a revised or new concept within a web of concepts that transcend immediate context. These concepts are then subject to revision, interpretation, and curriculum and pedagogic recontextualisation through processes of generalisation and particularisation, albeit within the constraints provided by the disciplinary knowledge structure (Young 2006; Gamble 2006; Breier 2004; Bernstein 1999).

Turning to van Oers's notions of 'horizontal' and 'vertical' recontextualisation, it is possible to perceive an important distinction that his work clarifies, with relevance for vocational pedagogy and practice. Firstly, horizontal recontextualisation involves the use of an already established concept or 'generality' and its re-particularisation into a new context. This is a process of simple appropriation through recognition and selection of the appropriate concept, followed by a relocation and transformation of knowledge into the fresh context. It presupposes that those involved in horizontal recontextualisation have access to the 'general' concept. On the other hand, vertical recontextualisation occurs where 'new action patterns develop into new activities and new contexts for acting', and these are 'motivated by a new object' (van Oers 1998, 139), which suggests a process whereby a new problem encountered

within a context necessitates a process of abstraction in order to progress further with the activity. Thus, for van Oers, 'the development towards more abstract forms of activities is one of the results of continuous progressive recontextualisation' and is not 'characterised by decontextualisation or disembeddedness' (2008, 141). van Oers emphasises how the context that the children in his example are familiar with (trying on shoes in a shoe shop) enables the supporting of the 'meaning of the new abstract activity' (2008, 141), that of measurement. This may align well with the suggestion above of the importance of ongoing particularisation and contextual re-embedding for conceptual purchase. A new abstraction or generalisation is thus tried and tested by learners or practitioners until its validity is assured. As a consequence, new knowledge may be produced and could become part of established patterns of practice, achieving a form of context-independence.

The further question here is whether and how an abstract concept developed in the form described above could meet the requirements of a theoretical knowledge system that underpins vocational practice (or in other words become a 'context independent' concept in a vertical disciplinary discourse). It seems improbable that the requirements of a discipline can be met without an awareness of how concepts are interrelated within the relevant disciplinary knowledge structure. This suggests some form of pedagogic assistance, and, in order to acquire an 'academic' quality, awareness of the processes by which disciplinary knowledge is validated.. In van Oers's example, relating specifically to pedagogy rather than knowledge production or validation, it appears the process of generalisation is potentially accelerated by pedagogical input or the introduction of a new tool (a measuring mat) (1998, 139-140). However, this pedagogical intervention is only possible if the concept 'discovered' by the children, or vocational practitioners, already exists in the disciplinary structure underpinning the practice, enabling the pedagogue to provide the link with the wider web of established concepts that support the practice. In other words the knowledge discovered is only 'new' to the children, or the practitioners in a vocational context, and not 'new' to the wider knowledge base. Following Gamble (2006), without pedagogic input cogniscant of the relevant conceptual system, the children in the example would only be able to acquire a context-dependent conceptualisation of 'measurement' that related to the task at hand, and would not be able to abstract beyond the immediate relation between the 'parts' of the activity and the 'whole' without assistance.

However vertical recontextualisation is conceived, it appears to be a useful categorisation. Smeby and Vagan (2008) in their research into the formation of nurses and physicians

identify how knowledge may need to be vertically and horizontally recontextualised between educational and work contexts, while 'relational knowledge' in particular may be best learnt solely in practice. The discussion above suggests that the role of pedagogy and workplace in enabling particularising and generalising strategies is a key factor for the development of the practitioner recontextualisation capabilities that Smeby and Vagan (2008, 170) recommend.

For 'learner recontextualisation' it is also important to identify the conditions in which the 'chains of recontextualisation can be forged by practitioners…as a way of maximising the integration of subject-based and work-based knowledge' (Evans et al. 2010, 250). This would seem to be a key dimension of vocational practice, involving practitioners with sufficient education, workplace experience and engagement in ongoing professional development to support each other in recontextualisation processes. The capacity to critically review and improve vocational practice would be heightened by the ability to recognise knowledge differentiation and engagement with the conceptual system of vocational knowledge. This then provides opportunities to develop greater understanding of the relation between 'the whole' and the 'parts' of vocational practice (Gamble 2006). Although the classical craft apprenticeships which enabled workers to comprehend a part-whole relationship through visualisation strategies are rarely feasible in the circumstances of vocational practice in the industrialised world (Gamble 2006), where theoretical knowledge and awareness of the 'conceptualised environment' of the workplace are increasingly essential (Guile 2010; Clark and Winch 2004), the tacit knowledge developed through practice is still as vital as ever for identifying problems and solutions (Brown and Duguid 1991). Thus the 'chains of recontextualisation' are vital for the transformation of knowledge for vocational practice, whether guiding those 'in formation with developing their capacity to 'vertically recontextualise', appropriating and selecting knowledge from the disciplinary knowledge base and educational institutions, or sharing 'war stories' that enable the development of a 'reservoir' of practical strategies for finding solutions to problems (Bernstein 1999).

Reconciling recontextualisation problems through the 'region'

As can be seen from the above discussion, recontextualisation can suffer from discontinuities, misconstructions and a 'spilt' between the 'appropriation' and 'transformation' elements of a process. Reconciling the potential tensions in recontextualisation may be an important aspect of the work of a strong knowledge region (Bernstein 2000; Beck and Young 2005; Muller 2009), that ensures that validated knowledge and associated curricula do not suffer from

endless ‘contextual drift’ (Shay 2012). This can be ensured by the maintainence of a vocational knowledge base that is recontextualising ‘new’ or revised knowledge from disciplinary singulars, other regions and from practice, but always for the ‘supervening purpose’ of vocational practice (Muller 2009, 213). Following Bernstein’s assertion that it is the ‘vertical’ discourse in which ‘recontextualising rules’ reside, then the enduring disciplinary character of the region provides the resource through which recontextualisation for the curriculum can occur. Thus is possible to hypothesise errors of recontextualisation as particularly evident in ‘weak regions’ (Muller 2009), where there has been insufficiently effective recontextualisation of disciplinary singulars to meet the needs of practice.

The effective use of the ‘horizontal’ in the ‘vertical’ presupposes a recontextualisation capability at the level of ‘the region’ that is able to perceive the significance of a new practical problem for the discipline and thus to perceive whether existing concepts have the capacity to develop a solution. However, an inability to recognise knowledge forms and to identify the relation between the particular and the general undermines recontextualisation. Thus the lack of a regional ‘capability’ may lead to difficulties in ‘appropriating’ and ‘transforming’ a practical problem for the development of new conceptual knowledge, and in identifying when new knowledge has to be absorbed into the region. Bathmaker (2013, 16), discussing the English context, points to how the ‘absence of important constituencies in qualification development….sets considerable limitations on the possibilities for vocational educational qualifications to be informed by new and evolving knowledge from research as well as occupational practice’. The formation and maintenance of these ‘constituencies’, which can also be seen as socio-epistemic ‘regions’ grounded in the rules of disciplines and the requirements of practice, is thus vital for the sustenance of vocational knowledge.

The characteristics of recontextualisation

In the light of the foregoing argument an interpretation of recontextualisation can be developed with emphasis on the characteristics below.

Firstly, recontextualisation may be best understood as a socio-epistemic process. This means that the process of recontextualisation, in any sphere of activity, is influenced by both social and epistemic factors, just as the process of ‘validating’ or ‘legitimating’ knowledge itself can be seen as epistemically and socially constituted (Maton 2010). This also implies that recognition of knowledge structure is vital for the avoidance of recontextualisation ‘errors’.

Secondly, recontextualisation can be seen as comprising a set of elements that ideally progress sequentially for recontextualisation to occur. In Barnett's (2006) terms the elements can be broken down into 'appropriation' and 'transformation', although it should be remembered that 'appropriation' also involves the 'selection' of knowledge and 'transformation' involves a process of 'relocating' knowledge, and thus the selection of a context. This unpacking of the elements of recontextualisation also exposes how a recontextualisation process can be 'split' between different spheres of activity, with certain actors having control over 'appropriation' of knowledge for curricula and others left to 'transform' specified knowledge for 'pedagogy'. This splitting may be exacerbated by political, economic or technological factors. Where recontextualisation is not contiguous or synergistic, and thus disaggregated into the control of multiple actors with limited opportunity for collaboration and co-ordinated recontextualisation, the potential for a poor quality of recontextualisation and misrepresentation of knowledge increases. This also has relevance for recontextualisation in workplaces, where there may be discontinuities between the knowledge valued by an organisation and that required for vocational formation.

Thirdly, the 'transformation' element of recontextualisation can be interpreted using the notions of, and the articulation between, 'generalisation' and 'particularisation' (Brier 2004; Gamble 2006), where the reformation of knowledge may need to undergo an oscillation between generalities and particulars to ensure it fits the new context. In many cases, new particulars must be identified and tested for their capacity to reinforce the concept for the new context. The different ways in which this works are well explicated by van Oers's (1998) distinction between 'horizontal' and 'vertical' recontextualisation, and the suggestion that these two forms of recontextualisation may need to interrelate to embed a concept successfully for a new context (Smeby and Vagan 2008). This interpretation can be seen as particularly relevant for learner recontextualisation, but arguably has strong relevance across processes of knowledge validation, curriculum development and pedagogy.

Fourthly, the infrastructure of how knowledge is produced and validated for the purposes of vocational practice can set the conditions for recontextualisation, with impacts on curricula and pedagogy. Bernstein's notion of a 'region' of professional or vocational knowledge, when viewed as an entity with a social and epistemic dimension that is influenced both by the structure of knowledge recontextualised from disciplinary singulars and from practice, and by relations between actors involved in vocational knowledge, curriculum and pedagogy, can provide a lens through which analysis of this infrastructure can be undertaken. It is clear that

regions vary considerably in their 'strength' (Beck and Young 2005; Muller 2009) or 'capability' to deliver effective recontextualisation, with bearing on the character of vocational formation and the potential for 'epistemic access' (Wheelahan 2007) for any given vocation.

Concluding remarks

In conclusion, this paper has aimed to provide an overview of how recontextualisation has been understood and used in educational studies, with particular application to vocational education. The paper identifies recontextualisation as a key notion for debates about the importance of vocational knowledge in curriculum and pedagogy. Building on previous work, the paper has focused attention on defining the characteristics of the recontextualisation process itself, and has opened up some avenues for further research into the conditions that influence the development of recontextualisation capability in various spheres of activity.

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