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Recontextualisation and the teaching of subjects

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Abstract

This paper interrogates the concept of recontextualisation and discusses its relevance for understandings of the knowledge required for teaching subjects. While various distinctive approaches to recontextualisation can be identified, this analysis primarily draws on the work of Bernstein, with recontextualisation discussed in the broader context of work on the sociology of educational knowledge. It is argued that Bernstein's approach to recontextualisation can be usefully extended by absorbing insights derived from recent work conceptualising expertise and practice, through a reconsideration of disciplinarity, and by reflecting on historical studies of the transformation of specialised practical knowledge. It is suggested that recontextualisation can help us better understand (i) the structure of subjects and their relationship to disciplines and (ii) the relationship between knowledge and 'content' in the process of curriculum making. Recontextualisation is nevertheless problematic without an acknowledgement of the role of teachers in shaping and enacting recontextualisation principles and navigating recontextualisation rules.

KEYWORDS
Bernstein, curriculum making, subjects, teacher knowledge

INTRODUCTION

Curriculum reform has been a common experience in school systems internationally in recent years, stimulated by the strengthening grip of comparative assessment mechanisms, and as a consequence of the hegemony of a global discourse that holds that educational outcomes are central to economic prosperity (Sahlberg, 2016; Young, 2009). In the context of such reform longstanding debates tend to resurface, including questions regarding the purpose of the curriculum, the role and character of knowledge, and who should be involved in determining curriculum content (Deng, 2020). Various stakeholders, who might include teachers, government agencies, employers, and disciplinary and pedagogical experts within higher education, could lay claim to jurisdiction over the curriculum and have a role in such reforms. Nevertheless, despite some isomorphic global pressures caused by international assessment systems such as PISA, it is notable that curriculum policy has taken differing trajectories in different nations, underpinned by different views of the relations between knowledge, curriculum and teaching. For example, in the United Kingdom, recent reforms in Wales, England and Scotland have answered these questions in distinctive ways, with England appearing to move towards what is termed a more tightly prescribed approach to the curriculum, while both Wales and Scotland have joined a rising 'tide of curricular autonomy' (Sinnema et al., 2020, p. 185), which has emphasised the importance of agency of teachers and schools and moved away from prescriptive approaches to content. Northern Ireland, meanwhile, has for some time foregrounded a curriculum-making role for teachers within the context of 'integrated approaches to planning and teaching' (Greenwood, 2013, p. 443). An important further distinction exists between how the knowledge that constitutes the curriculum is conceptualised, with England remaining entrenched in an approach that explicitly foregrounds 'the importance of subjects as individual disciplines' (Spielman, 2018) while both Wales and Scotland have moved towards conceptualising curriculum knowledge in terms of 'areas', highlighting learning, experiences and the connections between subjects in a more integrated fashion (Sinnema et al., 2020), echoing also the 'areas of learning', 'cross-curricular skills' and 'personal capabilities' in place in the Northern Ireland curriculum (CCEA, 2020).

The relationship between teachers and subjects is at the forefront of curriculum debates in these reform scenarios, although it can also be argued that questions surrounding this relationship have always been central to pedagogical theory and the study of education internationally (Deng, 2020; Furlong & Whitty, 2017). In England, the work of Young and Muller (2013) on powerful knowledge (PK) has caught the attention of curriculum scholars internationally, and become influential amongst policy-makers and teachers in various nations, including England, Sweden and South Africa (Gericke et al., 2018; Hoadley, 2015; Hordern, 2019; Lambert, 2018). In terms of the relation between teachers and subjects, the PK thesis has nevertheless been critiqued for its insufficient attention to the 'didactization of disciplinary knowledge', or in other words how disciplinary knowledge 'is transformed into something that is teachable and relevant for students' (Gericke et al., 2018, p. 429). While Deng acknowledges that PK and the social realism from which it emerged provides an important bulwark against the errors of the 'recent global discourse on policy and practice' with its 'learning outcomes' and 'high stakes testing' (Deng, 2020, p. 57), he also argues that it has assumed erroneously that *subject content* should be derived directly from *disciplinary knowledge*. Deng asserts that the PK thesis has retained 'an exclusive focus on the internal properties and explanatory power of knowledge' with knowledge understood as 'an end in itself, rather than as a means to some larger purpose of education' (Deng, 2020, p. 59). PK is therefore seen as neglectful of the work of teachers in the *making* of content that 'results from institutional curriculum making—a special selection and organization of knowledge for

the school curriculum—that takes place prior to and independent of classroom teaching' (Deng, 2020, p. 59).

The charge levelled by Deng (2020) and Gericke et al. (2018) is that PK risks ignoring the role of the teacher in making and enacting the curriculum for *educationa*l purposes, thus implying that PK downplays the importance of conceptualising the 'subject' independently of the discipline and the educational work of teaching. In this, they also echo Wrigley's criticism that PK overlooks not only the pedagogical necessity to 'move backwards and forwards between experience and abstraction' in the enactment of curricula (Wrigley, 2018, p. 16), but also the emphasis some curriculum theorists have put on the character of the subject as distinct from the discipline (Stengel, 1997). Such arguments also align with the claims of Yates and Millar (2016), who highlight the distinctive differences between the nature of disciplinary physics (and its processes of knowledge production) and the physics of the school curriculum. The school subject of physics can only engage pupils successfully if it foregrounds 'social values and appreciation' of the achievements and possibilities of physics as much as the '''reliable' or 'powerful' knowledge and skills'' within the discipline (Yates & Millar, 2016, p. 307). As Yates and Millar stress, the 'entry point and research knowledge creation', in physics, as in other fields, are 'almost living in different worlds' (2016, p. 307). The role of teachers and the subject communities they belong to therefore become centrally important in ensuring that physics offers something both to those who will use or study it after school, and to those who will not. There is a clear risk that the knowledge of physics, however 'powerful' in Young and Muller's (2013, 2019) terms, fails to offer much to large numbers of school children, particularly if it is taught in a way that seeks to replicate the contemporary practice of disciplinary physics.

It is the argument of this paper that the relationship between disciplines and subjects, and between knowledge and content, can be well explicated through a closer examination of the nature of recontextualisation within the broader context of Bernstein's sociology of knowledge. While Gericke et al. claim that recontextualisation is closely analogous to 'didactic transposition', a notion that has resonance in many European curriculum traditions and relates to the transformation of an object of learning' and its associated 'packet of knowledge' in the context of the 'institutional setting' (2018, pp. 435–436), it is suggested here that recontexualisation (when considered as a component within Bernstein's pedagogic device and knowledge structures) can be more specifically understood as a link between a 'theory of knowledge', a 'theory of content' and what Bernstein terms a 'theory of instruction' (2000, p. 34). Importantly, Bernstein's broader work in the sociology of knowledge can help us explicate differences between subjects, including those that are amalgams of different disciplines, and those that are vocational in orientation. Recontextualisation can offer insight into the relation between disciplines, disciplinarity, subjects and content, if contemporary interpretations of Bernstein's knowledge structures that draw on the philosophy of expertise are taken into account (Muller, 2014; Winch, 2010). Recontextualisation can thus be understood as a key element of the curriculum-making process undertaken by teachers as they negotiate the relation between subject and content, guided by recontextualisation principles and educational ideals. However, this also requires acknowledgment of the implication of notions such as 'recontextualisation rules', the role of the 'regulative discourse' in educational institutions, and that recontextualisation contains multiple distinct and related elements. It is also argued that the importance of recontextualisation is highlighted by drawing on its use (independently of Bernstein) by historians of scientific thought and practical knowledge. This enables a fuller understanding of how knowledge is appropriated from earlier sources of knowledge for specific purposes, often transforming the substance and quality of a discipline, broadly defined.

RECONTEXTUALISATION AND BERNSTEIN'S SOCIOLOGY OF KNOWLEDGE

The work of Bernstein draws extensively on recontextualisation, not least in discussion of the pedagogic device (Bernstein, 1990, 2000), but also in consideration of the relationship between disciplinary 'singulars' and knowledge fields which serve an external purpose (regions) (Bernstein, 2000). Bernstein also notes the existence of 'generics' which are 'constructed…independently of pedagogic recontextualising fields' (2000, p. 53), and thus do not draw on disciplinary knowledge but on a 'functional analysis' of the necessary features of task performance. Bernsteinian recontextualisation has also been used (inter alia) by Muller (2009) to discuss the relation between disciplines and subjects, McPhail (2015) to explore the nature of constructivism in educational thought, and by Hordern (2014a, 2018) to consider the relationship between education and work.

It is in his elaboration of the pedagogic device that Bernstein provides his most detailed discussion of recontextualisation. The pedagogic device is an 'arena of struggle' with 'the power to regulate consciousness' (Bernstein, 2000, p. 38), and through which the construction of 'pedagogic communication' (p. 25) can be examined. Bernstein asks 'whether there are any general principles underlying the pedagogising of knowledge' (2000, p. 25), and suggests that the device 'continuously regulates the ideal universe of potential pedagogic meanings in such a way as to restrict or enhance their realisations' (2000, p. 27). The device is made up of (i) distributive rules, which 'regulate the relationships between power, social groups, forms of consciousness and practice' (p. 28), with the consequence that forms of knowledge, consciousness and practice are specialised to different social groups, (ii) recontextualisation rules, which 'regulate the formation of specific pedagogic discourse' and thus can be used to theorise the development of curricula, and (iii) evaluative rules, which 'constitute' pedagogic practice and thus the transmission of 'criteria' by which symbolic control is enacted (p. 28). The pedagogic device seeks to explain the relay of the symbolic, and to address 'change…in the ordering and disordering principles of the pedagogising of knowledge' (Singh, 2002, p. 573).

The pedagogic device therefore theorises the process by which pedagogic discourse (including but not only in educational settings) is structured, shaped, and realised in-practice. What is recontextualised through the pedagogic device and contained within discourse is *not only* knowledge, however, but also 'consciousness', 'practices' and 'identities' (Bernstein, 2000, p. 28, pp. 65–79). Importantly, 'every time a discourse moves from one position to another' (i.e. is recontextualised) 'there is a space in which ideology can play' (Bernstein, 2000, p. 32). The recontextualisation rules are central to the process of the structuring and shaping of pedagogic discourse, and are enacted within the official and pedagogic 'recontextualisation fields'. The official field is 'created and dominated by the state and its selected agents' while the pedagogic field consists of 'pedagogues in schools and colleges', educationalists and researchers (Bernstein, 2000, p. 33), who may all struggle amongst themselves for control over the recontextualisation process and the nature of the curriculum. Through recontextualisation a 'discourse moves from its original site to a new positioning as pedagogic discourse' (Bernstein, 2000, p. 32), and in so doing it is 'ideologically transformed' (33). These discourses are 'constructed by a recontexualisation principle which selectively appropriates, relocates, refocuses and relates other discourses to constitute its own order' (Bernstein, 2000, p. 33).

To illustrate recontextualisation in the context of the pedagogic device, Bernstein provides the example of the relation between carpentry and woodwork, with the first 'outside pedagogy' and the second 'inside pedagogy'. Whereas carpentry is a 'real discourse' which has objectives, constraints and techniques with real-world application, woodwork is an 'imaginary discourse' (Bernstein, 2000, p. 33), which somehow 'selectively appropriates' the

essence of carpentry so that it is suitable for pedagogic practice in educational contexts. Bernstein makes the further distinction between physics in the 'field of production' (the 'activities of physicists' (p. 34) producing new knowledge) and the 'imaginary physics' (p. 33) of the school, which is constructed in the 'field of recontexualisation'. Bernstein states that 'as physics is appropriated by the recontexualisation agents, the results cannot be formally derived from the logic of that discourse' as 'the recontexualisation agents will select from the totality of practices which is called physics in the field of production' (2000, p. 34), an argument echoed in Yates and Millar's (2016) analysis. Some elements of 'real' physics may be selected for the 'imaginary' school physics in some conditions or jurisdictions, and other elements elsewhere. School physics in one nation or one group of schools may be different from another. The process of selection is itself shaped by how curricula are determined in a given context and the roles of agents (who may be teachers, government agencies, local authorities or subject specialist associations) in that process. The agents are active in the co-production of the regulative or 'moral discourse' present within the educational system which 'creates order relations and identity' (p. 32) specific to that system or institution. Thus knowledge and practice are reconfigured into forms of pedagogic discourse deemed appropriate for a given educational context.

Bernstein's outline of recontextualisation contains several distinct albeit related processes or actions, including selection, appropriation, relocating and refocusing (2000, p. 33), while 'delocation' is also mentioned as is 'transformation' (p. 32). It is possible to conceive of a situation in which different agents, or constellations of agents, are involved in different elements of the overall recontextualisation process. For example, while a government agency may provide some general principles around the 'selection' of discourse, it may be teachers themselves who are charged with the appropriation, relocation and refocusing of subject knowledge (e.g. from history or physics) to constitute a curriculum for their learners according to the 'regulative' or 'moral' discourse within which they work. On the other hand, a more prescriptive model could see knowledge selected, appropriated and transformed into curriculum materials sanctioned by an official agency for teachers to then implement in classrooms. In such a scenario, teachers might still have some discretion in shaping the curriculum learners receive through their pedagogic practice, but even this can be substantively controlled through scripted lesson planning (Shalem, 2018).

As noted above, recontextualisation processes also involve the shaping of consciousness, identity and practice. Bernstein emphasises that recontextualisation encompasses not only the 'what of pedagogic discourse' but also 'the how; that is the theory of instruction', which 'also belongs to the regulative discourse, and contains within itself a model of the learner and of the teacher and of the relation' (Bernstein, 2000, pp. 34–35). The nature of the regulative (or moral) discourse latent within the institutional context and pedagogic practice thus shapes the transformation process of the pedagogic discourse, and influences 'conduct, character and manner' and the organisation and teaching of subjects within the school (Gamble & Hoadley, 2011). This may result in very different outcomes and practices in different institutions, and in different jurisdictions. In some contexts, teachers may have little purchase on the regulative discourse, whereas in others individual teachers may find increasing possibilities to shape the transformation of knowledge by co-constructing new regulative discourses that can shape the recontexualisation process. The policy context and the politics of the recontextualisation field shape the extent to which teachers can exercise autonomy and have a role in formulating the curriculum. With academisation in England, some sponsoring organisations that control chains of schools advocate specific models of learning, teaching and thus a theory of instruction (Hordern, 2014b; Whitty, 2014), and this *may* provide a context in which the influence of individual teachers over the enacted curriculum is heavily constrained, although it may be inaccurate to assume that processes within academies are not 'participatory and inclusive' (Keddie, 2019, p. 9). In Wales on the other hand, we are seeing encouragement

for teachers to take ownership of the curriculum-making process with greater 'flexibility and autonomy' (Sinnema et al., 2020, p.183), and thus potentially shape the what and how of pedagogic discourse (see also Power et al., 2020).

RECONTEXTUALISATION AND KNOWLEDGE STRUCTURES

Bernstein's work suggests that recontextualisation may, nevertheless, be strongly influenced by the recontextualisation rules implicit in a knowledge structure (Muller, 2009, 2014). The first distinction is that which Bernstein makes between horizontal discourse, which is 'oral, local, context-dependent' and vertical discourse, which is described as 'coherent, explicit' and 'systematically principled' (1999, p. 159) or characterised by 'specialised modes of interrogation' and 'specialised criteria for the production and circulation of texts' (p. 161). Whereas horizontal discourse provides strategies for dealing with specific mundane contexts (Bernstein mentions learning how to get dressed or tie shoelaces), vertical discourse offers 'specialised symbolic structures' (1999, p. 161) which enable thinking beyond immediate experience and understanding of the social and material world. Within vertical discourse Bernstein distinguishes further between hierarchical and horizontal knowledge structures. Those knowledge structures which are hierarchical are characterised by 'integrating propositions, operating at more and more abstract levels' (Bernstein, 1999, p. 162), such as in the physical sciences. In such structures earlier theoretical models become refuted as more abstract theories emerge that can 'incorporate them in more general propositions' (Bernstein, 1999, p. 163). On the other hand, those structures which are horizontal or 'segmental' are characterised by multiple specialised languages which simultaneously provide differing perspectives on a phenomenon (with examples such as Sociology with its 'languages' such as 'functionalism, post-structuralism, post-modernism' (Bernstein, 1999, p. 162)). Horizontal knowledge structures can be further categorised by the strength of their 'grammar'. Certain horizontally structured disciplines are said to have strong grammars (economics, maths, linguistics), which suggests they impose 'restrictions on the empirical phenomena they address' and that they have an 'explicit conceptual syntax' (Bernstein, 1999, p. 164), whereas others (e.g. sociology, cultural studies) are said to have weak grammar in that they focus on a wide range of phenomena and are less capable of developing 'relatively precise empirical descriptions' (ibid.).

Bernstein's 'vertical discourses' can be seen, however, as not just structures of (know-that) 'propositional knowledge' but instead systematic and dynamically evolving constellations of know-that and inferential and procedural know-how (Muller, 2014; Winch, 2010). The practical knowledge and interaction within specialised communities that this conceptualisation necessitates suggests that vertical discourses depend on specialised practices with normative orientations which have their own internal goods and internal accountabilities (Hordern, 2017). Vertical discourses are specialised forms of knowledge that enable thinking beyond immediate experience and thinking the 'unthinkable' (Wheelahan, 2010), but the propositional elements of the knowledge are brought alive by certain forms of (disciplined and specialised) practice. Arguably, the category of vertical discourse incorporates academic disciplines, professional and applied disciplines and some forms of specialised craft knowledge (Gamble, 2014; Hordern, 2017). However, as is emphasised in the pedagogic device and clarified by Muller (2009), disciplines (as discussed in Bernstein's (1999) vertical and horizontal discourses paper) are not the same as subjects, at least in formal educational contexts. As the 'imaginary physics' of the subject is constructed from the 'real physics' of the discipline through processes of selection and appropriation it is possible that the knowledge structure becomes confused, with the sequencing of conceptual material muddled. Following the arguments of Winch (2010), propositions draw their meaning in

relation to a web of related propositions, and thus the propositional components of a knowledge structure may only have full resonance for learners if brought into relation with each other, ideally through a pedagogical process which enables the development of capacities to infer meaning. A recontextualisation process can negate the potential for inferential relations to develop in the minds of learners if certain propositions are neglected, downplayed or not related sufficiently to other propositions with which they are inextricably related in the knowledge structure.

Recontextualisation 'errors' can thus potentially emerge, particularly in the transformation of hierarchical knowledge structures into pedagogic discourse, if teachers or other curriculum makers have insufficient personal knowledge of the disciplinary structure and the disciplinary practice. A physics teacher without a background in physics may have limited recontextualisation 'capability' to make the physics curriculum. For horizontal knowledge structures with weak grammars, the structure of the knowledge itself provides fewer explicit expectations for the subject, as different specialised languages (or theoretical traditions) may be preferred and still do sufficient justice to the discipline. Nevertheless, the teaching of sociology may be considered insufficient without a coverage of differing perspectives on social structure and agency, while the teaching of chemistry is very likely to be considered insufficient without coverage of the properties of matter. What may be particularly important is that the approach to inquiry, the *discipline* of the discipline (Bridges, 2006) is recontextualised in the relation between discipline and subject. In sociology this may be interpreted as the 'sociological imagination' (Wright Mills, 1959), in geography as sensitivity to the character of 'place, space and the environment' (Lambert, 2019, p. 257) or in history as awareness of 'historical significance' (Counsell, 2011, p. 208). In science, this may be not only the scientific method, but also a fallabilist approach to knowledge claims (Young & Muller, 2013). For a school subject, it may be particularly important that the *discipline of the discipline* is maintained and sustained as knowledge is recontextualised and the pedagogic discourse formed for teaching in schools, if the *imaginary* and the *real* are to maintain a relationship. However, how can that disciplinarity be encapsulated within the curriculum except through a sufficient volume of recontextualised disciplinary knowledge?

The various vertical discourses outlined by Bernstein (1999) are largely representative of what might be called 'pure disciplines' (Becher in Muller, 2009) or 'singulars', where the internal problematic is primarily controlled by those who consider themselves disciplinary adherents or participants in the disciplinary practice. Such a categorisation would work for physics, history, sociology, maths and economics, although in each case the 'problematic' is shaped to some extent by the world beyond the discipline. However, Bernstein also develops a further category of knowledge structure, described as 'regions' which can be thought of as 'recontextualisations of singulars' that 'face outwards towards external fields of practice' (2000, p. 55), and are thus somehow answerable to a 'supervening purpose' (Muller, 2009, p. 213) which sits outside of the knowledge structure and its associated practice. Such regions may include professional disciplines such as medicine, architecture and engineering (where the knowledge structure and its adherents are afforded a degree of societal status), but also 'business studies, communications and media', 'journalism' and 'tourism' (Bernstein, 2000, p. 52) (where the knowledge structure may be guided primarily by industrial changes and workplace requirements). Recontexualisation in such regions assumes a different character to that experienced in 'singulars' as a greater range of agents may be involved and the 'recontextualisation principle' must take account of imperatives shaped by the external context of the professional or industrial practice. There may also be increasingly demands to close the gap between the imaginary of the pedagogic discourse and the real discourse of work practice, on the grounds that students studying medicine, engineering, tourism or journalism are doing so in order to prepare for direct entry into the labour market.

In addition to these occupational fields, the idea of a knowledge 'region' could also relate to subjects that have been constructed from different disciplines to meet particular demands of government policy in relation to the curriculum. This could apply to the subject of citizenship in secondary schools in England, particularly where it is formally acknowledged within a curriculum. Gibson (2009) demonstrates how the citizenship curriculum in England introduced in 2000 drew on strands of political, philosophical, legal and sociological thought, but only partially facilitated a convincing engagement with questions of democracy, participation and dissent. One question that regions have to struggle with is from where to draw their identities, consciousness and practice if there is not a direct relationship with a discipline. Whereas the subjects of maths and history can look to their disciplines, the region of citizenship is able to draw on a range of disciplinary sources but risks drawing on none if careful processes of selection and transformation are not undertaken by teachers with sufficient expertise to do so. The consequence of inadequate recontextualisation could be a citizenship curriculum which has recourse only to policy documents or to mandated teaching materials as the basis for its consciousness, identity and practice. This could lead, in Bernstein's terms, to a 'generic', and thus a curriculum empty of any symbolic or substantive basis within the 'pedagogic recontextualisation field' (2000, p. 53).

While Bernstein's knowledge structures and the recontextualisation relationships between disciplines and subjects discussed by Muller offer a framework for theorising the shaping and structuring of educational knowledge, they do not address all aspects of recontextualisation. It is therefore useful here to note how the notion of recontextualisation has been employed in historical studies of the development of practical knowledge, as these offer alternative insights into recontextualisation processes, including the delocation and relocation of knowledge between disparate contexts.

RECONTEXTUALISATION IN HISTORICAL STUDIES OF PRACTICAL KNOWLEDGE

Recontextualisation is generally understood in the history of scientific thought and practical knowledge as how 'aspects of one knowledge system' are 'transformed within the framework of another knowledge system' (Valleriani, 2014a, p. 3), and thus, similarly to Bernstein (2000), to the appropriation of knowledge from one context and relocation in another, usually involving 'refocusing' as the knowledge is attuned to a new purpose. Historical studies have noted how such recontextualisations can occur across considerable spans of time, including how Hero of Alexandria's Pneumatics was used in early modern engineering and the use of Euclidean Geometry in the Roman period (Valleriani, 2014a, 2014b). Valleriani demonstrates how knowledge can be selectively appropriated to meet the needs of 'aspects that had not yet been developed and/or improved in the frame of the flourishing early modern technology' (2014a, p. 8), but also how 'the theoretical foundations' of the recontextualised knowledge 'became a central component in the theoretical debate, which in turn gave rise to the emergence of new knowledge' (2014a, p. 8). Valleriani (2014b, pp. 150–154) exemplifies this by explaining how engineers designed a new hydraulic organ in the Pratolino gardens in Italy that drew on technical innovations from Hero's hydraulic organ, but innovated further with a new type of cylinder and vault operated by water rather than air on the 'basis of their advanced experience' (p. 154) and awareness of the contextual requirements of their construction. The engineers had sufficiently understood why Hero had presented his applications of pneumatics in that way, and identified how to transform this for the requisite contextual conditions of their practice.

A further insight of such studies is the focus on how different types and applications of knowledge coalesce around specific problematics and practices. Both Merrill (2017) and

Valleriani's work indicate the interconnectedness of systematic and non-systematic knowledge within amalgams of 'artefacts, instruments, codified practical knowledge, how-to descriptions, recipes, concepts, theories, and rules' (Valleriani, 2014a, p. 3). Recontextualisation may therefore involve determining which additional elements should be appropriated together with a selected element of knowledge, and deciding which are irrelevant. Studies of architectural knowledge in the early modern period have also drawn attention to how systematic knowledge with practical application across multiple contexts is transformed over time through the input and consideration of multiple 'practitioners' engaged in similar problems (for example relating to architectural construction) (Merrill, 2017). Moodie (2020) has discussed how this operated in the context of ale-brewing and artillery, highlighting how knowledge is transformed when it is 'expressed at a different epistemic level for use by a different type of actor for a qualitatively different purpose from the initial practice' (p. 14). Specific techniques of recontextualisation in the early modern era included the use of 'annotations', 'comments' and enlargements of the original texts, in order to consolidate understandings, reframe problems and sketch applications (Valleriani, 2014b, p. 136, and see also Merrill 2017 in terms of architectural practice).

These studies suggest that various forms of specialised knowledge are 'emergent', in other words 'produced by social conditions and contexts but cannot be reduced to them' (Young & Muller, 2013, p. 237). The emergent properties may enable specialised knowledge to have resonance in multiple, seemingly unrelated contexts, including those which could have not been foreseen at the point of production (Hordern, 2021). Such specialised knowledge can be successfully delocated from one context of production from many years earlier (for example in the case of Hero's Pneumatics) and then relocated to meet the needs of new problems in a completely different context much later. This knowledge may nevertheless be embedded within an amalgam of interconnected media, and thus, delocation may need to be undertaken with a 'selection' of those interconnected aspects that can be put to use in the new context, and a removal of those elements which are now irrelevant. This may not only be particularly true of certain kinds of scientific or technical knowledge, but also be true of philosophical or sociological work, for example the use of theorists from an earlier age to shed light on new problems. In each case, a careful process of recontextualisation is involved (comprising decisions about selection, appropriation, application to new problems, cases, and contexts to develop new insights and make fresh progress).

DISCIPLINES, DISCIPLINARY PRACTICES AND SUBJECTS

Through a re-examination of what is meant by Bernstein's vertical discourse and its relation to disciplinarity, a fresh understanding of the potential relation between disciplines and subjects can be advanced. Both Bernstein's work, and that of Young and Muller which draws extensively on Bernstein, assume that there should be a close relation between the two. While Deng (2020) draws our attention to the tendency to equate PK with academic disciplines and theoretical knowledge, and similar tendencies appear with the interpretation of Bernstein as Muller (2014) notes, these are not the only way to understand disciplines, vertical discourse or PK. It can be argued that a 'disciplined' field of knowledge or specialised discourse can encompass a wide range of systematic or specialised bodies of knowledge (incorporating propositional, inferential, procedural and experiential/acquaintance knowledge in various configurations), as can be inferred from Winch (2010) and Valleriani (2014a). While academic disciplines are held up as the archetype, there are good arguments for considering various occupationally related fields of knowledge as systematic and specialised (Muller, 2009), and persuasive exemplars have been produced of how craft activity is underpinned by specialised blends of the procedural, aesthetic and conceptual (Gamble, 2014). How the

propositional, inferential, procedural and experiential are intertwined relates to the purpose of the practice (whether that be academic or otherwise). And to demonstrate 'discipline' the systematicity must be sufficiently open to encompass new claims to knowledge that seek to better provide answers for the disciplinary purpose and problematic. This is the 'inner dynamic' (Muller & Young, 2019, p. 206) of a discipline, through which inferences are continually made and re-made to progress understanding in the face of new or revised questions. The control of the disciplinary problematic is a mix of the internal and external, depending on the nature of the discipline: the more a discipline needs to answer to an occupational or other 'worldly' purpose, the more it will need to respond to external influence on the problematic (Muller, 2009). But it is not just the 'applied' or 'worldly' disciplines that have purposes—all disciplines do. Knowledge is therefore never 'for its own sake'—there is always a question that it is seeking answers to and a problematic that it is seeking to explore.

It can reasonably be argued that disciplines are founded on specialised normative practices that revolve around 'systematic and sustained enquiry made public' (Stenhouse in Bridges, 2006, p. 263), and arguably this is as true for more practically orientated disciplines as it is for those thought to be more 'academic'. Normative practices provide criteria by which claims to knowledge and appropriate performances of the practice (and innovations) can be judged (Addis & Winch, 2019; Hordern, 2020), and such criteria can only exist if there is a purpose to the practice which can provide some measure of achievement. Actions and judgements within such practices are therefore 'mutually' accountable to each other, demonstrating their value through their commitment to work towards the purpose of the practice, while acknowledging that the state of understanding and standards of excellence are always prospective and open to improvement (Rouse, 2007). It is systematic and sustained inquiry within a framework of normative practice that is the essence of disciplinarity, and a sufficiently open and fallible approach to systematicity is only possible if it takes place within a community of inquiry that is committed to truth and truthfulness (Bridges, 2006; Williams, 2002, Young & Muller, 2007). Such communities nevertheless need to be cognisant of the importance of including discordant voices (or those who do not fit a prevailing mould), so that the practice does not become elite, moribund or discriminatory (Hordern, 2020, 2021).

So how does this understanding of disciplinary practice inform our interpretation of recontextualisation in the construction of the educational 'subject', and the 'rules' which guide it? Certain elements of knowledge may be selected, appropriated and transformed in any recontextualisation process without other elements to which those elements are related, and this may have detrimental consequences for the coherence of the curriculum (Muller, 2009). The normative practice in which the discipline is sustained is unlikely to be replicated in its entirety in a school context, although teachers may seek to recreate aspects of it through introducing activities that might be found in higher education or other research contexts. If there is an intention to develop a subject that is related to a discipline (as opposed to a completely unrelated subject, which is also a possibility (Stengel, 1997)), then choices will need to be made about what is selected, appropriated and transformed and about the 'refocusing' of knowledge to the purposes of the educational context (for example in schools). The discipline needs to be 'delocated', scrutinised, dissembled and then re-assembled in the formation of a subject that will have resonance in a school context while still providing a pathway to the discipline. While the discipline may provide 'rules' or at least guidance about the sequencing of conceptual knowledge within a subject to be taught in a school context, and about the procedures and processes that validate such knowledge, the discipline itself will not provide *sufficient* guidance for the making of the curriculum or the teaching process (Lambert, 2019). A case can be made, however, for maintaining within the subject an underpinning 'disciplined' commitment to truth and truthfulness as demonstrated in a disciplinary mode of inquiry, 'imagination' or sense of 'significance'. The subject is also likely to be influenced by its prominence in the 'popular imaginary' (Lambert, 2019, p. 260) and

the expectations placed upon it by its stakeholders. How the subject is conceptualised by the public, by government, by schools and by teachers as they engage within the 'recontextualisation field' may have significant bearing on the nature of the subject and its ongoing development (see Kitson, 2019 for further discussion of the teacher as recontextualisation agent in different subjects). The subject therefore has its own consciousness, identity and practice, in addition to its own configuration of disciplinary knowledge, recontextualised in accordance with its requirements.

'CONTENT', CURRICULUM-MAKING AND THE RECONTEXTUALISATION PRINCIPLE

As teachers engage in curriculum-making the recontextualisation rules that they are working with are shaped by the relation between discipline and subject, the systemic and governmental expectations on curriculum, and the 'regulative discourse' of the school. 'Context specificity' of the vertical discourse of school subjects is provided through recontextualisation (Bernstein, 2000, p. 161) as knowledge is 'reproduced' in educational institutions, but how this specificity develops will be shaped by the recontextualisation principle in the field of reproduction. In such a context the teacher's curriculum-making needs to strike a balance between the requirements of the subject, the level of understanding and engagement of the learner and the practicalities of teaching (Lambert, 2018), but what is the principle that guides this? In a curriculum-making context influenced by Bilding-centred Didaktik, the principle is often seen as the 'development of the full potential of the individual as an independent human being' (Deng, 2020, p. 40), with knowledge 'used in the service' (Luth 2000 in Deng, 2020) of this development of potential rather than (according to Deng) 'for its own end or for its own sake' (Deng, 2020, p. 40). Bildung can thus provide a recontextualisation principle which can be held in the mind of the teacher and provide a rule for how the subject knowledge can be transformed into content to meet the needs of the learner in a specific pedagogical context. The notion of Bildung does not necessarily need to be seen just in terms of a liberal ideal, however. Gonon outlines how contemporary versions of Bildung acknowledge the 'world of industry', the value of experience of work, and the complex nature of modern societies (Gonon, 2017, p. 260) While a Bildung-orientated approach to recontextualisation does not neglect the knowledge structure of the discipline and subject, it recognises that such knowledge may need to be transformed or 'reduced' into its essential elements, and that the teacher needs to carefully select and develop material content illustrative of the knowledge so that the specific requirements of those students a teacher is working with are met, and the potential of the material (and the subject) 'unlocked' (Deng, 2020, p. 50).

If Bildung provides an influential recontextualisation principle in a German-speaking educational context, then what does the Anglophone context provide? Arguably, the PK thesis offers the idea of disciplinary expertise: a proficient historian, physicist or mathematician, but it is worth asking whether this is sufficient. While liberal education traditions in the United Kingdom or the United States may foreground a generally educated citizen (Deng, 2020; Pring, 1993), the capabilities approach concentrates on enabling human potential (Lambert, 2019), while more vocational traditions may look to preparation for employment as a means of contributing to society (Pring, 1993). But these notions are not universally acknowledged in the UK and the USA, where there remains much public scepticism about the value of formal educational ideals, with impacts on the content of teacher education and the work of educational institutions (Barrett & Hordern, 2021). The lack of a commonly held notion of citizenship or agreed means for theorising what it means to be human leaves the door open for recontextualisation principles with different conceptions of the purpose of learning and the

curriculum. Where an *educational* principle is weak or absent, there is space for other principles that prioritise narrow forms of competence or competition to come to the fore (Hordern, 2017). In the recontextualisation space of curriculum-making there are opportunities for ideology to play, as governments and schools structure the possibility for teacher professional judgement or set expectations around assessment and curriculum delivery that reduce the opportunities for other teacher-led recontextualisation principles to develop. Teachers may be left with either a lack of potential avenues to exercise curriculum-making capabilities, or with a confusing set of competing recontextualisation principles offered via the official and pedagogic recontextualisation fields. Bernstein's thesis points to the advance of generic forms that foster 'trainability' (2000, p. 53) and task performance and disempower the individual by negating the potential for social imaginaries to develop that can counter prevailing social and political orthodoxies (Bernstein, 2000; Singh, 2002). Furthermore, the absence of generally understood *educational* principles by which knowledge is recontextualised can also undermine the classroom practice that could enable students to recognise, realise, and recontextualise knowledge for their own development.

If the role of teachers in curriculum or content making (or recontextualisation in the field of reproduction) is central, it is important to ask what expertise they require to advance specific principles of recontextualisation that might more adequately balance the needs of the subject, learners and teaching practice. It can be argued that the *educational knowledge* needed to recontextualise subjects into content could include sufficient awareness of debates around the political and social context of schooling, educational theory and the social formation of mind, in addition to awareness of the propositional and procedural structure of the subject, its specific mode of disciplinarity and form of inquiry, and the role of the subject in the development of students. Lambert (2018) draws attention to the tension between subject expertise and a 'whole school' curriculum policy, highlighting how difficult it can be to maintain a subject-specialist form of curriculum making. With deeper educational knowledge, teachers may be better equipped to negotiate such contexts, be more fully aware of the different characteristics and contributions of the subjects, and be more prepared to participate in networks fostering subject specialisms beyond the immediate school context, and thus to make their own specialised 'recontextualisation rules' which counterbalance (and collectively shape) the regulative discourse of schools and education systems.

CONCLUDING REMARKS

Recontextualisation is central to the construction of the 'imaginary' discourses of subject knowledge, and thus central to ongoing struggles over symbolic knowledge and the shaping of societal and individual consciousness. Within this struggle key actors are the school, governments, and educators, with the possibility for action shaped by the structural constraints embedded within the education system. Building on Deng (2020) we could argue that some curriculum traditions, such as Bildung-centred Didaktik and Schwabian curriculum thinking, emphasise the liberating power of knowledge, (specialised) practice and consciousness, and provide *educational* principles by which knowledge can be recontextualised. For such principles to be enacted successfully in the development of content for the enacted curriculum, what is needed are teachers with both subject knowledge and *educational* expertise, and arguably this is only possible with sustained periods of teacher formation. In those systems where educational principles of recontextualisation are not available through widely understood curriculum traditions, or where previous principles are threatened, it is considerably harder to resist the demands of the official recontextualisers and principles of recontextualisation infected by market ideologies or the assumptions of global educational reform.

While disciplines cannot provide a carbon copy template as the purpose of their practice is knowledge production as much as 'reproduction', the normative practice that structures disciplinary disciplinarity provides a guideline for the structure and practice of a subject. Subject communities can draw appropriately on the practice of the discipline but re-orientate their own practice towards the needs of students and the social role of the subject within the educational system. Arguably this subject consciousness amongst teachers is a necessary step for successful curriculum-making (or recontextualisation in the field of re-production) to take place. Yates and Millar (2016) highlight the errors of assuming that a disciplinary knowledge structure *necessarily* structures the subject, but without disciplinarity the subject's role and purpose in the curriculum is left open to question (Whitty et al., 1994). If subject knowledge is to become 'powerful' it thus needs to strike a balance between the disciplinary practice and the needs of society more broadly (including the most disadvantaged learners). It is such acts of recontextualisation which curriculum reforms that depend on teacher autonomy (such as in Wales) will rely on, requiring socially, politically and educationally aware teachers who can shape subjects through 'high levels of skill' and commitment (Power et al., 2020, p. 322) for the benefit of students and wider society.

CONFLICT OF INTEREST

There is no conflict of interest.

NOTE

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