A Sociology for the Transmission of Knowledges[1]

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Why knowledge?

In two of his final papers Basil Bernstein codified and extended a conceptualisation of the different structures of knowledge associated with intellectual fields (1999a) and signalled a more general move in his theory 'from pedagogies to knowledges' (2001). In so doing he returned to a longstanding interest in discourse, a focus that has brought the approach associated with Bernstein's sociology into regular and fruitful relations with systemic functional linguistics. Such cross-disciplinary dialogue has been ongoing since Bernstein in his early work adapted the linguistic notion of 'code' to his own sociological purposes, refining it over the years into a highly formal analytical concept:

> Thus a code is a regulative principle, tacitly acquired, which selects and integrates meanings, forms of realizations, and evoking contexts
>
> (Bernstein 1990: 101; emphasis in original)

It may be useful to re-visit those sociological purposes, addressing Bernstein's particular appropriation of 'code', his analysis of the 'pedagogic device' and subsequent move 'from pedagogies to knowledges'. The intention is to make more comprehensible the distinctive nature of Bernstein's preoccupation with forms of

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discourse of which knowledge is one. To enquire into Bernstein's sociological roots, therefore, is to broach the question: why knowledge?

In this chapter we briefly sketch a background to Bernstein's theorisation of knowledge. Such an account can be valuable not simply to place this later focus in the context of the unfolding of his wider theory. Many understandings of Bernstein's work are stuck in two principal time warps, focusing on either his early interest in sociolinguistics (in particular the notions of elaborated and restricted codes) or his account of schooling in terms of pedagogic codes. Both freeze the theory to a time before knowledge itself became increasingly central to his thinking. In recounting its subsequent development, however, ours is of necessity a partial account, for several reasons immanent to the theory itself. One aspect of Bernstein's method is that he was always reworking and recasting his ideas. Throughout his career theoretical developments made visible new objects of study for empirical research, which in turn required development of the theory and which then, in turn, raised further issues for research. A second aspect of the theory's development is a form of excavation; Bernstein dug beneath the empirical features of education to explore their underlying structuring principles (most famously in terms of codes) and then excavated further to analyse what generates these principles. Bernstein was, therefore, always engaged in developing more general conceptual tools in the light of what was being revealed by both empirical research and theoretical excavation. Lastly, the resulting theory is driven by an abiding interest in social order and the nature of symbolic control, one reaching from the macro-structure of society to the micro-level of individual consciousness. To recount fully the development of this evolving and wide-ranging theory could lead to the temptation of drawing a map as big as the country. Instead,

we shall simply trace one path through his work to illuminate how Bernstein came to conceptualise knowledge, explore the main aspects of these ideas, and thereby provide one context to their use in the studies collected in this volume.[1] Our guiding thread is the questions raised by the developing theory as it unfolded over time.

The term 'social base' provides an initial key, both to this trajectory and to relations between Bernstein's approach and systemic functional linguistics. To ask about the sociological significance of any symbolic or linguistic ensemble - such as a curriculum, pedagogy or discourse - is to enquire after its social base, its grounding in a material social form of life. As Bernstein put it when describing the nature of his early interest in linguistics:

> Language was the structuring interface by means of which a complex set of ordering and disordering processes were specialised by the social base of its speakers. What was paramount for me was the identification of origins of these ordering and disordering processes, their maintenance and change.
> (2001: 363).

As a Durkheimian, Bernstein considered the principal features of this 'social base' to derive from the forms taken by the economic division of labour in society and the consequent forms of solidarity accompanying them.[2] Both Durkheim and Bernstein described modern industrialised societies as having developed from a relatively unspecialised division of labour to a highly specialised division of labour. As a direct consequence, they tend also to develop from mechanical modes of solidarity to organic or more specialised and interdependent forms of solidarity. In tandem,

societies develop specialised symbolic forms to give effect to the new specialisations emerging from this growing division of labour. In a class-based society, these symbolic resources are not only differentially valued and resourced but also differentially regulated and distributed. The sociological task is to uncover how that differential valorisation, regulation and distribution occurs and thereby to explore the means and mechanisms by which the underlying structures of a complex, specialised society such as ours perpetuates itself, develops and changes. As Bernstein stated:

> I think like Durkheim one can identify and make explicit the social base of the pedagogic relation, its various contingent realisations, the agencies and agents of its enactments. One can begin to formulate a language for the description of the production and reproduction of its discourses. At a more general level such a study connects with the maintenance and change of the knowledge base of society, and crucially with the maintenance and change of modalities of symbolic control, especially those implicated in the process of cultural reproduction. (2001: 364).

This was Bernstein's quest, and it provides insight into the nature of his evolving theory and the questions it raised. The principal concept Bernstein placed at the centre of his explanation of social and cultural reproduction, transformation and change was, at least initially, that of code.

Conceptualising codes

The concept of code has undergone several transmutations in Bernstein's work although the underlying conceptual continuum has remained stable, tracing a range

from ‘less specialised’ to ‘more specialised’. In his early work leading up to the restricted-elaborated code couple, Bernstein (1971) identified code differences in terms of more or less complex lexical, semantic and grammatical features. Soon, however, he came to consider code less as a linguistic repertoire and more abstractly in terms of an orientation to meaning. Bernstein argued that different positions within the social base, understood in terms of their degree of specialization, create, as he later put it, ‘different modalities of communication differentially valued by the school, and differentially effective in it, because of the school’s values, modes of practice and relations with its different communities’ (1996: 91).

For Bernstein a restricted coding orientation, typical of someone in a relatively unspecialised context and with a relatively direct relation to the social base, predisposes that person to context-specific meanings; an elaborated code orientation, typical of someone in a more specialised context and with a more mediated relation to the social base, predisposes that person to universalistic, non-local, context-independent meanings. The principal attribute of an elaborated coding orientation is that it is able to realise more combinatorial possibilities than a restricted coding orientation. Crucially, in societies with a specialised division of labour, such as is found in modern, industrialised countries, to prosper requires the possession of an elaborated orientation to meaning. The principal sites for transmitting this privileged and privileging elaborated orientation are the home and the school but not all homes and not all schools to the same degree. In this way, code becomes a key point of cleavage in class society. Though the concepts of elaborated code and (especially) restricted code have been the subject of considerable misunderstanding and criticism,

Bernstein's early work thereby laid out a basis for understanding how modern societies sustain themselves.

In terms of the concept of code, much of this is common ground between sociologists using Bernstein's approach and systemic functional linguists, who alone in the broader socio-linguistic community saw from the beginning that 'code' was not dialect and that code theory was neither a bourgeois alibi for middle-class speech nor a denigrating deficit account of working-class language, understandings Bernstein later somewhat mischievously described as 'for people who not only won't read but can't read' (2001: 371). Though quick to state he never saw himself as working in sociolinguistics (1996: 147-156), Bernstein often highlighted this shared understanding, paying tribute to the 'remarkable exception' of a collection of papers edited by Francis Christie (1999) and to the 'incalculable' contribution of Michael Halliday and Ruqaiya Hasan both to the development of this phase of the code theory and his thinking more generally (Bernstein 2000: 146).

As his work progressed, Bernstein continued to refine the theory of code towards greater levels of delicacy and generality. His interest shifted increasingly to exploring the elaborated code and the institutionalised sites of its dissemination, principally the school. Bernstein's first step was to see code as a principle operating at a high level across a wide variety of contexts. The concept of code was thereby expanded beyond the possession of an individual to a more general principle or set of rules for the regulation and distribution of meaning. His initial codification of this idea lay in the algebra of the language of classification and framing, where classification conceptualises relations of power that regulate relations between contexts or

categories, and framing conceptualises relations of control within these contexts or categories (1975). By distinguishing between power and control in this way, Bernstein opened up the possibility of exploring the different modalities an elaborated orientation to meaning might take (such as 'visible' and 'invisible' forms of pedagogy) and addressing why a particular modality was institutionalised for particular groups of pupils and with what consequences for their educational experiences and outcomes.

In the sociological work of his students and other researchers, the super-categories of classification and framing have been operationalised into delicate observational instruments that have proved remarkably fecund in empirical studies of classrooms in many different national contexts, including Australia, Chile, Finland, Portugal, South Africa, the UK, and the USA.[3] This work, together with that conducted earlier at the Sociological Research Unit in London under Bernstein's direction, more than gives the lie to a common misconception that the theory lacks empirical application. From this ongoing body of work we now have a remarkably nuanced view of the operation and effects of various pedagogic modalities with children from a variety of different social backgrounds. As these studies show, Bernstein's concepts of classification and framing enable not only the thick description prized in much educational research but also thick explanation. They offer a basis for researchers to address, for example, why particular social groups of pupils may do less well in particular classrooms or schools. Empirical research has been able to show that the group in question may not readily be able to recognise and/or realise the code required for achievement within that specific educational context. This in turn has direct implications for education policy. Simply put, one is effectively presented with a choice: change the underlying

structuring principles of the school, curriculum or classroom to match the code already possessed by these pupils or develop ways of providing those pupils with the key to the code enabling success within those contexts. Unfortunately, the former, often advanced by well-intentioned but misguided educationalists, would effectively relegate subordinate social groups to lower status forms of educational knowledge and hence to the lower rungs of the division of labour; the latter is open to misreading as a deficit theory and requires acknowledging the differential status of different forms of knowledge, an admission considered beyond the pale in much contemporary social science.

This coding stage of Bernstein's theory concentrated on the transmission and acquisition of elaborated orientations to meaning within schools and, to a lesser extent, within the home, and on relations between the two. However, they can in principle be applied to any ordered symbolic ensemble. Bernstein (1996: 188-191) gave the example of using code theory to describe the form taken by the layout and style of lavatories, their different modalities of usage, and their social base. Moreover, he argued that the pedagogic nature of social relations extended beyond the classroom to include, for example, doctor-patient, social worker-client and lawyer-client relations (1999b). Nonetheless, though code theory provided concepts that were highly applicable across a range of contexts from the macro to the micro, Bernstein's principal ambitions also required the theory to be able to account for what it is that schools actually do in the broader realm of the circulation and advancement of culture in society. The question was how schools act as relays of society's distribution of power and principles of control. Put another way, given the now much expanded understanding of the microphysics of school-based code transmission and

acquisition, what is the Durkheimian big picture of society? Bernstein had, for example, argued that struggles between advocates of visible and invisible modalities of pedagogic practice represented an ideological conflict on the wider social stage between different fractions of the middle class: how might these different levels of analysis be brought together to explore further how the differentiation and regulation of symbolic forms shapes social structure? Bernstein's answer to such questions was to attempt to relate the realms of knowledge production, pedagogic recontextualisation and meaning acquisition. Conceptualising codes thereby raised new questions that would lead Bernstein closer to a focus on knowledge: how does a society circulate its various forms of knowledge and how is consciousness specialised in society's image?

Table 1: The arena of the pedagogic device (adapted)

Field of practice	**Production**	**Recontextualisation**	**Reproduction**
Form of regulation	distributive rules	recontextualising rules	evaluative rules
Kinds of symbolic structure	knowledge structure	curriculum	pedagogy & evaluation
Principal types	hierarchical & horizontal knowledge structures	collection & integrated curricular codes	visible & invisible pedagogies
Typical sites	research papers, conferences, laboratories	curriculum policy, textbooks, learning aids	classrooms & examinations

The pedagogic device

Bernstein's answer was: by means of the pedagogic device (see Table 1). Named (potentially misleadingly) after the 'language device', the pedagogic device forms the basis of his account of: the ordered regulation and distribution of a society's worthwhile store of knowledge, ordered by a specifiable set of distributive rules; the transformation of this store into a pedagogic discourse, a form amenable to pedagogic transmission, ordered by a specifiable set of recontextualising rules; and the further transformation of this pedagogic discourse into a set of evaluative criteria to be attained, ordered by a specifiable set of evaluative rules.[4] In Bernstein's conceptualisation each of these rules is associated with a specific field of activity: a field of production where 'new' knowledge is constructed and positioned; a field of recontextualisation where discourses from the field of production are selected, appropriated and repositioned to become 'educational' knowledge; and a field of reproduction where pedagogic transmission and acquisition takes place. The specific activities of each field are, Bernstein suggests, primarily, though not exclusively, associated with specific sites. As the above implies, the three rules and fields constituting the device are said to be hierarchically related: production precedes recontextualisation which precedes reproduction.

Together these three rules and their associated fields constitute an 'arena' created by the pedagogic device. Taking each in turn, the distributive rules distinguish between which knowledges are deemed more or less worthwhile and which of these forms of knowledge should be distributed to whom. Following Durkheim, Bernstein saw the fundamental division of labour - into mental and manual forms of labour - as related to a corresponding symbolic cleavage between sacred and profane symbolic orders,

where the higher status, more rewarded, sacred symbolic orders are differentially distributed, in the past by various kinds of priestly castes and the Church and in more recent times by the education system. Distributive rules regulate relations between these symbolic orders and how they are to be distributed - who enjoys access to what forms of knowledge, and in particular, who enjoys access to the means of producing new knowledge. The recontextualising rules construct pedagogic discourse, the 'what' and 'how' of schoolwork; they comprise principles for 'delocating a discourse, for relocating it, for refocusing it' (1996: 47), transforming knowledge into pedagogic communication. Evaluative rules complete the circle by establishing the evaluation nodal points that are to be acquired, stipulating the specialised consciousness that should result. These three sets of rules could thus be said to integrate analyses of power (distributive rules), knowledge (recontextualising rules), and consciousness (evaluative rules).

As Sadovnik argues, what is critical about the notion of the pedagogic device is that 'Bernstein is concerned with more than the description of the production and transmission of knowledge; he is concerned with its consequences for different groups' (1995a: 10). Moreover, as ever, Bernstein's sociological concern lay with how the differential regulation and distribution of knowledge is related to the evolving structure of society. Thus the theory aimed not only to bring together power/knowledge/consciousness but to place this within an account of cultural and social reproduction, transformation and change. Bernstein argued that the three fields of production, recontextualisation and reproduction together represent an 'arena of struggle' (1990: 206) in which groups attempt to appropriate or control the pedagogic device. To control the device is to have access to a 'symbolic ruler of consciousness',

a ‘ruler’ in both senses of having power over consciousness and measuring the legitimacy of its realisations:

> Groups attempt to appropriate the device to impose their rule by the construction of particular code modalities. Thus the device or apparatus becomes the focus of challenge, resistance and conflict.
> (Bernstein 1996: 193; emphasis in original).

The code modality announces what should count as a marker of success or achievement and the pedagogic device is the means whereby this principle of hierarchisation is created, reproduced, transformed and changed. Those in positions of power are, Bernstein suggests, able to metaphorically ‘set’ the device such that the dominant, higher status code modality favours their own. Conversely, actors whose dispositions and practices are characterised by a different code may experience difficulty in recognising and/or realising practices that are rewarded within the specific context. The question Bernstein posits as crucial for research thereby became: ‘Whose ruler, what consciousness?’ (1996: 193); that is, who controls the pedagogic device and what kind of principle of hierarchisation (code modality) are they attempting to impose as the measure?

The ‘pedagogic device’ is an ambitious attempt to capture the role of education in the sociological big picture, reaching from social structure to individual consciousness. It represents a synoptic perspective on the orders of symbolic life; if classification and framing began from the micro-physics of the classroom, the device comprises an attempt at beginning a grand unified theory. It also works at a higher level of abstraction than codes. The rules regulated by the pedagogic device are resources for the construction, reproduction, transformation and change of codes rather than the

codes themselves - one sees the effects of the device and not the device itself. At the same time, this stage of Bernstein's work subsumed earlier understandings of codes at a higher level of abstraction, which he now defined as:

$$\frac{O}{+- C^{i/e} \quad +- F^{i/e}}$$

< NOTE TO EDITORS: The '+-' should be on top of one another, with the '+' above >

where O refers to 'orientation to meaning' (elaborated or restricted) and the line refers to the embedding of this orientation in relative strengths (stronger and weaker) of classification and framing (1990: 43). Bernstein's conceptualisation thus operates at a high level of both generality and abstraction. It also, for that reason, lends itself less easily to empirical research. Indeed, Dowling (1999) argues that it cannot be operationalised, though Bernstein (2000: 116-120) cites studies by Cox Donoso (1986), Swope (1992) and Singh (1993) which have deployed it as an overarching framework for empirical studies.

The significance of the pedagogic device for this brief overview, however, lies more in the path it opens up to the issue of knowledge, a hitherto rather neglected focus in Bernstein's otherwise ambitious sociology of education. For, in setting forth these ideas and making a case for the necessity of a theory of the pedagogic device, Bernstein highlighted the absence of an analysis of pedagogic discourse itself and raised questions of the forms taken by knowledge, issues he came to realise had not been answered by his account of the device.

Making knowledge visible

It is interesting to observe that though knowledge is ostensibly the basis of education, and we are said to now live in 'knowledge societies', it is often left unremarked in studies of education. A potential barrier to seeing knowledge is a version of what the sociologist Dennis Wrong (1994) once called the 'over-socialised' image of people, which in education becomes what may be called an 'over-ideologised' image of knowledge and pedagogy. In its crudest forms this leads to treating knowledge as if it exists only to reproduce various forms of social inequality (which form depending on the perspective being advanced) or, in some more extreme positions, in claims that all knowledge is ideologised and can be understood wholly in terms of either domination or subordination. Here knowledge is reduced to the knower perspective, the ruling ideas of an age are the ideas of the ruling class (or gender or ethnicity and so forth) and nothing but (see Maton 2000, Moore & Muller 1999). To all of this there is some truth, but it is not the whole truth. Approaches operating with an over-ideologised image of knowledge provide much of value; they offer insightful accounts of the ways in which social relations of power pervade the conditions and contexts of the production, recontextualisation and reproduction of knowledge and stand as a corrective to any temptation to decouple power and knowledge. However, the barrier that an unnuanced image of knowledge and pedagogy creates is simply that, from these perspectives, we do not have to take the internal ordering of symbolic forms seriously. Education becomes a reflection or epiphenomenon of social structure, one without any intrinsic powers, properties or tendencies of its own. All questions of '<u>what</u> knowledge is at stake?' give way to the question: '<u>whose</u> knowledge?'.

This was the problem Bernstein felt was presented by most reproduction theory approaches to education and which he intended his account of the pedagogic device to help rectify. He argued that such approaches analyse only 'relations to' education, such as relations of class, race or gender to pedagogic discourse:

> It is as if pedagogic discourse is itself no more than a relay for power relations external to itself; a relay whose form has no consequences for what is relayed.
> (1990: 166).

What was additionally required, he argued, was an analysis of 'relations within' pedagogic discourse, that is, an analysis of 'the intrinsic features constituting and distinguishing the specialized form of communication realized by the pedagogic discourse of education' (1990: 165).

It was just an analysis that Bernstein's theory aimed to offer. However, to achieve such an aim required bringing knowledge more firmly to the centre of the theory's focus, for several reasons. First, Bernstein came to believe that the concept of code 'took for granted, and left unexamined, the <u>form</u> of the discourse' (1999b: 273) and the pedagogic device 'didn't actually show the nature of pedagogic discourse. It showed how it was put together but it didn't show its nature' (2001: 373). In short, the pedagogic device was the condition for the construction of pedagogic discourse; what was still required was to address the forms this discourse might take, necessitating a focus more on the forms of knowledge than solely on the forms of pedagogic communication. Second, having analysed the transmission and acquisition of educational knowledge (in the field of reproduction) and its construction (in the field of recontextualisation), the question remained as to the forms taken by the

symbolic dimension of the field of production, the knowledge from which pedagogic discourse is created (see Table 1). Lastly, though arguing that we are now entering a new 'Totally Pedagogised Society' based on life long learning, for Bernstein a continuing focus on 'pedagogy' was paradoxically insufficient:

> I think now, looking forward, that a sociology of pedagogy does not indicate or suggest the conceptual development necessary to grasp the discursive culture for which we are being prepared. The term pedagogy has restrictive references, despite my attempt to expand its use. (2001: 367).

To understand the contemporary situation required a focus on what kinds of knowledges are being distributed to which social groups and to shape what forms of consciousness. With this, Bernstein signalled a move in his thinking from pedagogies to knowledges: 'I have lately been attempting what could be called a sociology for the transmission of knowledges' (2001: 368).

In coming to address the lack in his approach of an understanding of the forms taken by discourse, Bernstein was keenly aware of Durkheim's characterisation of the internal properties of sacred symbolic ensembles and how they differ from everyday modes of thought. How, asked Bernstein, do these differently patterned symbolic ensembles relate to the social base, and in what way do they differ in their specialisation of consciousness? Bernstein had earlier asserted that elaborated codes differ from restricted codes in their ability to realise more combinatorial possibilities - could this be further stipulated? Moreover, his key notion of recontextualisation highlighted how school subjects are not simply a reflection of their associated fields

of knowledge: what forms might the latter take? In his last major contribution, Bernstein attempted to address these questions.

Discourses and knowledge structures

Bernstein's conceptualisation of the knowledges subject to pedagogic transformation (1999a) begins from the wider perspective of distinguishing two forms of discourse: horizontal discourse and vertical discourse. Horizontal discourse refers to everyday or 'common-sense' knowledge and 'entails a set of strategies which are local, segmentally organised, context specific and dependent' (1999a: 159). The knowledges comprising this discourse 'are related not by integration of their meanings by some co-ordinating principle, but through the functional relations of segments or contexts to the everyday life' (1999a: 160). In contrast, vertical discourse 'takes the form of a coherent, explicit, and systematically principled structure' (1999a: 159). Where the knowledges of horizontal discourse are integrated at the level of relations between segments or contexts, the knowledges of vertical discourse are integrated at the level of meanings which are related hierarchically: 'context specificity through "segmentation" in horizontal discourse, but context specificity through recontextualisation in vertical discourse' (1999a: 161).

It is common to conflate this distinction. For example, some cognitive psychologists will refer to knowledge as 'everything that goes on in the head' or as 'everything that is a script for action', and some linguists might consider knowledge to be 'everything that is marshalled in a person's linguistic repertoire'; this tempting conflationary gesture inheres in commonsense itself. However, in making the distinction Bernstein

is not suggesting the discursive practices of actors do not move between the two or that they represent an impassable fault line in the empirical world. Rather, the distinction is important for understanding social structure. If no such distinction is made, then relations between specialised symbolic forms and the specialised division of labour cannot be explored. The distinction is thus crucial for addressing the key sociological question: how are differently valorised and rewarded forms of knowledge differently distributed in society?

Bernstein starts his account by recognising that distinctions between forms of discourse had periodically been made in social science. However, he argued that a further attempt to account for knowledge is required because of a tendency within such discussions to offer a simple dichotomy - such as concrete/abstract thought, local/official knowledge or everyday/school knowledge - that obscures differences within vertical discourse (2000: 156). Accordingly, Bernstein then turns his attention to the different forms taken by vertical discourse, making a distinction between 'hierarchical knowledge structures' and 'horizontal knowledge structures'.

Bernstein defines a hierarchical knowledge structure as 'a coherent, explicit and systematically principled structure, hierarchically organised' which 'attempts to create very general propositions and theories, which integrate knowledge at lower levels, and in this way shows underlying uniformities across an expanding range of apparently different phenomena' (1999a: 161, 162). This form, exemplified by the natural sciences, Bernstein visually represents as a triangle of knowledge, one motivated towards building an apex of greater integrating propositions. In contrast, a horizontal knowledge structure is defined as 'a series of specialised languages with

specialised modes of interrogation and criteria for the construction and circulation of texts' (1999a: 162), such as the disciplines of the humanities and social sciences. For example, in sociology the languages refer to its wide array of competing theoretical approaches, such as functionalism, structuralism, Marxism, post-modernism, and so forth. A key difference between the two knowledge structures lies in the form taken by their development. According to Bernstein, a hierarchical knowledge structure develops by moves to widen the base and sharpen the tip of the triangle: theories are sought that embrace more empirical phenomena and comprise fewer axioms than existing theories. Intellectual progress is thus defined as the integration and subsumption of existing ideas within more overarching and generalising propositions; for example, as the Nobel prize-winning physicist Richard Feymann put it: 'Physics has a history of synthesising many phenomena into a few theories' (1990: 4). In contrast, a horizontal knowledge structure develops through the addition of new languages. We thus have 'integration of language in one case and accumulation of languages in the other' (1999a: 163).

These knowledge structures have ramifications for the intellectual shape of fields of production. Bernstein suggests, for example, that the segments of horizontal knowledge structures tend to be characterised by short-term obsolescence, only to reappear again sometime in the future in a new guise. They are more vulnerable to the changing winds of intellectual fashion, but though names and styles may change, a similar account is likely to recur within each new language that emerges. Here, from the perspective of comparison with hierarchical knowledge structures, differences between these segments become akin to 'fingerprints on identity cards which are otherwise exactly the same' (Adorno & Horkheimer 1947: **page**). The capacity to

create knowledge that builds on and goes beyond existing knowledge is limited. Different knowledge structures thereby have crucial significance for the possibility of creating epistemologically different understandings of the world. They also shape social practices and forms of pedagogy and differently specialise consciousness within their intellectual fields. For example, Bernstein argues that in hierarchical knowledge structures acquirers do not have the problem of knowing whether they speaking or writing physics: 'the passage from one theory to another does not signal a break in the language; it is an extension of its explanatory / descriptive powers' (1999a: 164). In horizontal knowledge structures acquirers are faced with an array of languages based on different, often opposed assumptions, making it less clear that one is indeed speaking or writing sociology. Given all this, the question then becomes: who has access to what form of knowledge?

In conceptualising these knowledge structures Bernstein is concerned with exploring the properties of what Karl Popper (1972) terms 'World 3', the products of our human minds or 'objective knowledge', rather than 'World 2', our mental states or subjective knowledge. For, as Popper put it, 'no theory of subjective knowledge will be able to account for objective knowledge' (1994a: 13). In contrast to the 'over-ideologised' image characterising many approaches to education, Bernstein's theory is thus an account of knowledge rather than of knowers. This is not to say that Bernstein's approach diminishes human agency in favour of hypostasising knowledge as an autonomous and freely-floating entity separate from the social practices of actors. Rather, his conceptualisation aims to make visible knowledge as an object, one with its own properties and powers that are emergent from, but irreducible to, social practices and which, indeed, help shape those practices. To explore these properties

and powers, Bernstein could be said to abstract knowledge from practices and social contexts, 'rather like a figure relieved of its ground' (1975: 2), as he described how his earlier work abstracted transmission and acquisition in the school from its wider constraints and contexts in order to analyse those processes. In doing so, however, he brings to light the ways in which the structuring of knowledge itself works to shape social practices, identity, relation and consciousness.

Exploring questions raised by 'knowledge structures'

As we have outlined, each stage of the theory's development and empirical application raised questions which helped drive the theory forward. Bernstein's conceptualisation of knowledge structures is no exception; it raises a host of questions, many directly addressed by the contributors to this volume. Here we shall explore two main issues as a context to these engagements: the nature of differences between knowledge structures; and relations between knowledge structures and the curriculum.

Differences between knowledge structures

The first set of questions concern whether the distinctions in Bernstein's conceptualisation are too clear-cut: is there not a continuum between different knowledge structures? Put another way, we might ask: do not intellectual disciplines exhibit characteristics of both the forms Bernstein delineates? It can seem as if Bernstein is suggesting the development of horizontal knowledge structures is characterised by permanent cultural revolutions that leave no trace of the past. This would make discovering even the smallest degree of continuity of problems, themes

or terms within a discipline appear to be a sign of a hierarchical knowledge structure. However, such a discovery is only to be expected: for an intellectual field to exist, it must have a degree of continuity across time and space. Moreover, the addition of a new language within a horizontal knowledge structure does not necessarily eliminate and is likely to incorporate at least some of the terms of existing languages; when creating a new segmental theory authors are likely to start from established ideas. The issue for Bernstein is not whether over time actors within an intellectual field gnaw away at similar problems, in similar ways, using similar terms or referencing past authors. Rather, the question is whether new theories that emerge subsume and integrate past theories and aim for greater abstraction and generalisability or are considered incommensurable with existing theories. It is a question not of whether authors use existing symbolic materials but of how they do so and with what epistemic outcomes. One would therefore expect to find the same themes, motifs, terms, styles and so forth recurring, being adapted, modified, recast and reworked over time within a horizontal knowledge structure, not only within a specific segment but also across segments. This in itself would not, for Bernstein, signal a hierarchical knowledge structure. Though theories in a horizontal knowledge structure may overlap in their use of common terms, they 'make different and often opposing assumptions, with each language having its own criteria for legitimate texts, what counts as evidence and what counts as legitimate questions or a legitimate problematic' (Bernstein 1999a: 163). So, though the segments of a horizontal knowledge structure may include the same terms, such as 'patriarchy' or 'social class', their authors are not speaking the same language - their assumptions and criteria for legitimate knowledge claims are different. Similarly, one would expect to discover a degree of integration and subsumption of past ideas within each language.

However, the capacity for such development across languages is limited. Even if one were to describe a theory that develops in this way as a mini-triangle (see Wignell, 2007), in a horizontal knowledge structure each such mini-triangle does not subsume and integrate its predecessors and compatriots within the knowledge structure to form part of a bigger triangle. The serial character of development of the knowledge structure as a whole thereby remains accumulation rather than integration.

If the two forms of knowledge structure are different, wherein then lie the bases of this difference? Put another way, is it possible for the social sciences to progress in the same way as the natural sciences and, if so, what would make such development possible? Muller (2007) highlights two attributes of Bernstein's conceptualisation of knowledge structures as key foci for addressing these questions: 'verticality' and 'grammaticality'. The first dimension refers to the degree to which the development of a knowledge structure is characterised by the integration and subsumption of knowledge into more overarching and generalising propositions. What enables knowledge structures to develop in this manner is a crucial area for research, one in which systemic functional linguistics is providing valuable insights; see, for example, Martin (2007) on the role played by linguistic technicality, especially grammatical metaphor, in enabling hierarchical integration of knowledge, and O'Halloran (2007) on how mathematics enables progress in the natural sciences to develop in this way.

The second dimension highlights the role played by what Bernstein terms the strength of 'grammar' or degree to which forms of knowledge exhibit 'an explicit conceptual syntax capable of "relatively" precise empirical descriptions and/or of generating formal modelling of empirical relations' (1999a: 164). A stronger grammar helps

enable the form taken by the development of hierarchical knowledge structures, particularly in relations between alternative theories. For, it is important to note Bernstein highlights that more than one triangle or theory is likely to co-exist, suggesting a prima facie similarity to the segmented nature of horizontal knowledge structures. Both forms of knowledge structure are characterised by conflicts between advocates of alternative theories. However, in hierarchical knowledge structures choices between theories are, Bernstein argues, at least possible on the basis of recourse to empirical research because these theories have stronger grammars. The emergence of a new theory within a hierarchical knowledge structure is thereby both conflictual and integrative: to represent progress it must clash with its predecessor but also be able to explain that predecessor's success. In other words, the new integrating theory includes but goes beyond its predecessor, or as Popper puts it:

> In all those cases in which its predecessor was successful it must yield results at least as good as those of its predecessor and, if possible, better results. Thus in these cases the predecessor theory must appear as a good approximation to the new theory, while there should be, preferably, other cases where the new theory yields different and better results than the old theory.
> (1994b: 12)

In contrast, the relatively weaker grammars of horizontal knowledge structures means that relations between languages or segments cannot be settled by empirical research and are confined to critique. A key difference between knowledge structures is thus not one of stability-conflict, consensus-dissensus or orthodoxy-heterodoxy, but rather concerns the form taken by these conflicts and their outcomes, in which the strength

of grammar plays a role. This issue of grammaticality may prove enlightening for understanding how some social science disciplines are more capable of sustained intellectual progress than others. Bernstein cites, for example, economics, linguistics, logic and mathematics as examples of horizontal knowledge structures with relatively stronger grammars and sociology and cultural studies as representing relatively weaker grammars. Within a discipline with a stronger grammar, where languages purport to share the same empirical referents, there may be the possibility of something akin to the relations between theories that characterise hierarchical knowledge structures.

These two interrelated dimensions are key to the differences Bernstein highlights between hierarchical and horizontal knowledge structures. Both play a role in determining the form taken by their development. In choosing between alternative theories, actors in hierarchical knowledge structures both critically examine their consistency and compatibility with others theories (their internal strengths of grammar) and their capacity to explain the results of empirical research (their external strengths of grammar). Together these provide the possibility of a rational basis for progress in hierarchical knowledge structures, to the extent that it can be decided whether a new theory represents an advance on existing theories by recourse to its integrative, subsumptive and explanatory power.[5] As such they operate with what Maton (2006, 2007) terms a 'knowledge code', where relations with existing knowledge and objects of study form the basis of claims to insight. In contrast, significant changes in horizontal knowledge structures are ideological rather than rational revolutions. Here alternative theories are in a war of hearts and minds and choices between competing claims to insight are based more on a 'knower code', that

is to say, on who is making knowledge claims rather than on what is being claimed and how.

Though Bernstein returned to the issue a number of times (there are three versions of his paper in print [1996, 1999a, 2000] and at least one other longer version that was never published), this question of the basis of differences between knowledge structures could be clearer. There are two possible reasons for this. With Bernstein's conceptualisation we are, as Muller (2007) highlights, 'locked into an early (lexical) metaphorical stage of discussion, where the terms are more suggestive than they are explanatory'. Bernstein mapped out a model of the characteristics of knowledge structures but what remained was to analyse the underlying structuring principles that generate these different knowledge structures. These principles may operate on a continuum which may more clearly delineate their underlying differences (see Maton, 2007). Secondly, knowledge structures are not the only feature of intellectual fields of production; they represent the symbolic dimension of what are social fields of practice. To understand the development of any specific discipline one must also offer a sociological account of 'relations to' knowledge, such as the roles played by the state, economy, social structure, and struggles between actors within the field.[6] A discipline is more than just its structuring of knowledge; the concepts of 'knowledge structures', therefore, shed light on disciplinary development but are not the whole story.

Knowledge structures and curriculum structures

A second set of questions raised by Bernstein's later ideas concerns relations between knowledge structures and educational knowledge, and between their conceptualisations. With the notion of 'knowledge structures' Bernstein is exploring the symbolic products of the field of production (see Table 1); the notion of recontextualisation highlights that a knowledge structure is not necessarily a curriculum structure or pedagogic structure, and his theorisation is not simply a recasting of pedagogic codes. Thus, in terms of Bernstein's concepts as they currently stand, one would not describe a school curriculum in terms of exhibiting a horizontal or hierarchical knowledge structure.[7] However, the caveat 'as they currently stand' highlights, of course, that Bernstein's framework foresees its own reformulation and so whether such concepts will be extended and developed in future is open. Specifically, this raises questions of how the issues highlighted by these concepts (such as the degree to which knowledge structures develop through integrating and subsuming past ideas) can be explored in the school context. For example, Christie & Macken-Horarik (2007) highlight how pupils experience a trajectory of schooling in subject English in ways that often debilitate the integration of already learned knowledge. Rather than explicitly building on past learning, the invisible pedagogy of the English curriculum renders the educational knowledge structure less visible with the effect that pupils often experience the equivalent of segmental rather than integrative acquisition of educational knowledge. Such a study shows how Bernstein's ideas can be fruitfully developed beyond the contexts of their genesis.

If knowledge structures are not curriculum structures, this also raises the question of the degree to which the latter reflect the former. What are the relations between the

knowledge structures of physics, mathematics or English literature and their respective curriculum structures? Bernstein argued that wherever there is recontextualisation there is a space for the play of ideology. Even so, are there limits to recontextualisation and thus limits on the degree to which ideology can shape the construction of pedagogic discourse? Bernstein, following Durkheim, saw that specialised divisions of labour demand specialised forms of consciousness. Since the specialised knowledges in the realm of production rest directly on the material base, there must surely be a limit to the amount of recontextualising they can bear before defeating their purpose. This is made clear by the focus in Bernstein's account of the pedagogic device on 'evaluative rules'; these may be pedagogised artefacts, but if the criteria they construct bear no relation to their parent knowledges in the realm of production, then schooling will undermine its role as a relay of specialised knowledges. Relations between knowledge structures and their corresponding curriculum structures is, in short, a key area for future exploration. It is to this elaboration that existing work in systemic functional linguistics may have the most to contribute (see, for example, Christie & Martin 1997, Halliday & Martin 1993 and Unsworth 2000).

Lastly**,** these questions raise the issue of how to integrate analyses of knowledge structures and of curriculum structures within the same conceptual framework. Bernstein described hierarchical and horizontal knowledge structures as being characterised by integrating and collection codes, respectively, but how these relate to educational knowledge codes of curriculum structures and thus how this analysis is to be integrated into the theory as a whole was not elaborated. One way of bringing these together within the same analysis is explored in Maton (2007).

Conclusion

A key advantage of Bernstein's approach, we have argued, lies in its capacity to render knowledge visible as an object of study. Many approaches to education obscure the very thing that specialises education as a social field of practices. In terms of accounting for the forms taken by discourse and their relations to social structure, knowledge of knowledge has been in relatively short supply. With the concepts of codes, the pedagogic device and knowledge structures, Bernstein provides the basis for furthering that knowledge. In this chapter we outlined one way of understanding how Bernstein's theory arrived at his conceptualisation of knowledge, highlighting the questions raised by the theory's development. We began by outlining how the issue of how differently valorised and rewarded forms of knowledge are differently distributed in society formed a key starting point of Bernstein's problematic. We then traced how conceptualising codes explored a key basis of social and cultural reproduction and change, raising inter alia the question of what gives rise to these codes; and how the pedagogic device modelled the construction of pedagogic discourse, raising the question of the nature of the knowledge subject to pedagogic transformation. Lastly, we outlined how Bernstein's conceptualisation of discourses and knowledge structures offers insights into the forms taken by knowledge, and sketched some of the questions these ideas have raised, issues opened up and addressed by many of the papers in this volume.

At the outset of this chapter we asked the question: 'Why knowledge?'. Why did Bernstein come to set out the basis of 'a sociology for the transmission of

knowledges'? One answer lies in the broadening of Bernstein's focus from how educational knowledge is transmitted and acquired to how that educational knowledge is constructed, and thence to the forms of knowledge from which educational knowledge is recontextualised. Bernstein was thereby tracing knowledge from the school upstream towards its epistemic sources, exploring in turn the fields of reproduction, recontextualisation and production (Table 1). However, an issue we repeatedly highlighted is the sociological nature of this quest. A second answer to the question 'Why knowledge?', therefore, lies in Bernstein's belief that the differential valorisation, regulation and distribution of forms of knowledge in society is a crucial aspect of how societies maintain themselves. Bernstein remained focused throughout his career on the social reproduction function of cultural production, transformation and reproduction. His unfolding account of knowledge sought to understand the role that symbolic forms play in the ordering of social life.

Finally, a third answer to 'Why knowledge?' may lie with the nature of the discipline of sociology itself. Bernstein was repeatedly drawn to studying the sacred - whether understood as an elaborated orientation to meaning, vertical discourse or knowledge structures. Such forms of discourse have the singular charm of being an accumulated sedimentation of symbolic extensions that has been constructed by innumerable cooperating knowers, extended in time as well as space, most of whom will remain unknown to one another. As Moore & Maton (2001: 172) put it when describing the community of mathematicians involved over many centuries and across the globe in unravelling Fermat's Last Theorem:

> It represents an epistemic community with an extended existence in time and space, a community where the past is present, one in which the

> living members interact with the dead to produce contributions which, when they die, will be in turn the living concern of future members.

Such an endeavour is a pure form of communism, as Robert Merton (1973) pointed out, but 'a very individualistic kind of communitarianism' as Arthur Stinchcombe (nd: 20) drily added. At its best, it comprises not only a knowledge structure where past insights are subsumed and integrated, standing on the shoulders of giants to see further (Muller 2006), but also a knower structure in which everyone in the scholarly community is potentially able to contribute (Maton 2007). It is likely that Bernstein yearned for that form of community, one which he rarely found in the lower reaches of his own horizontal knowledge structure, sociology, and that he has done more than anyone else in the sociology of education to change. As we have outlined, Bernstein's theory developed through the subsumption of past ideas within new, often more abstract formulations as it sought to grasp an ever-widening range of phenomena. Bernstein's own way of theorising thereby attempted to help analyse and exemplify principles that could enable the building of knowledge reaching upwards, bringing together individuals within an epistemic community extended across time and space. The capacity of his ideas to do just that is illustrated by their continuing contribution to the ongoing, fruitful dialogue between sociologists and systemic functional linguists.

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[1] For informative introductions to Bernstein's ideas, see Atkinson (1985), papers collected in Sadovnik (1995b) and in British Journal of Sociology of Education **23**(4), 2002, and the website of the Estudos Sociológicos da Sala de Aula centre in Lisbon (http://essa.fc.ul.pt). Given the state of the intellectual field of sociology (which Bernstein would describe as a horizontal knowledge structure with a weak grammar), offering a introductory way into, rather than critique or development of Bernstein's later ideas for a cross-disciplinary audience is not without its dangers: Bernstein himself may have described the following as 'schizzing' or 'creative replacing' (1990: 8-9); his critics, sympathetic or otherwise, may see only exegetic advocacy, the work of what Dowling (1999) describes as 'disciples'.

[2] In highlighting the undoubtedly Durkheimian nature of Bernstein's sociological enterprise we are, of course, not intending to obscure his wide-ranging theoretical interests and integration of insights from, among others, neo-Marxist, Weberian and post-structuralist approaches. Such intellectual ancestry is beyond the limited scope of this chapter.

[3] See for example, studies discussed in Bernstein (2000) and those collected in Atkinson et al. (1995), Christie (1999), Moore et al. (2006), Morais et al. (2001), Muller et al. (2004) and Sadovnik (1995b).

[4] Bernstein's use of the term 'rules' has led some commentators to suggest his theory argues practices are deterministically rule-governed. However, for Bernstein, rules do not by themselves cause anything but rather direct our attention to the controls on the form taken by pedagogic discourse, i.e. to the principles which give rise to its structuring.

[5] This is not to say that this possibility is always taken up in practice. The history of science is replete with examples of overlooked or dismissed theories that, in retrospect, represented advances on existing theories. Whether this possibility is recognised and realised in any particular case is an empirical question in which the nature of an intellectual discipline as a social field of practice plays a key role - the knowledge structure is not the whole story. It is also important to note that there do not exist definitive criteria for choosing between theories; the results of comparison are often inconclusive, allowing alternative, conflicting theories to co-exist.

[6] Conversely, one must beware the temptation to sociological reductionism whereby, for example, the astonishing expansion of science is explained solely in terms of the interests it serves. Bernstein's approach suggests that such social power is an insufficient explanation; one must also take into account the epistemic power characterising forms of knowledge.

[7] This point may appear nitpicking were it not for what could be termed pedagogic reductionism, the tendency in discussions of education for the school classroom to embody the gravity well of a black hole into which all other foci are drawn and distinctions crushed. Though we do not, of course, wish to obscure the significance of the chalkface, this reductionism can obscure the notion of recontextualisation and issues specific to the production of knowledge. Similarly, analyses of textbooks or curriculum guidelines are studies of recontextualised pedagogic discourse rather than of knowledge structures.