

Chapter 7

Founding the sociology of knowledge: Basil Bernstein, intellectual fields, and the epistemic device

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Observation is always selective. It needs a chosen object, a definite task, an interest, a point of view, a problem.

[Karl Popper, 1963, p. 27]

Introduction

The starting point for this chapter is a paradox in the sociology of knowledge, namely, that it cannot see its ostensible object of study: *knowledge*. Although the early 1970s “New Sociology of Education” (NSE) in Britain proposed a rejuvenated sociology of knowledge (e.g., Young, 1971), “this programme, whatever else it produced, did not produce what it called for” (Bernstein, 1990, p. 166). It focused on what Bernstein (1990, pp. 165–180) describes as “relations to” (such as relations of class, race, gender *to* knowledge) rather than “relations within” (the structuring of knowledge itself), and thus developed a sociology without a theory of knowledge (Moore, 1996a, 2000). Our original (and ongoing) intention was (and is) to analyse Anglophone sociology of education to highlight and account for this development. This task, however, poses a “Catch 22” dilemma. Not only does this endeavour involve producing knowledge about the production of knowledge, it does so both within the context and through the study of a field which, we have been arguing, cannot *see* knowledge as an object of study in its own right. If the sociology of knowledge has such a blindspot, then the analytical tools at our disposal would re-create the very phenome-

non we wished to explain, by permitting only a partial (sociologically reductionist) account of its development. Moreover, describing what is obscured by a blindspot is extremely difficult, for what you are trying to point to simply cannot be seen through the current lens. One must, therefore, first establish what it is one is actually looking at and the means for doing so—a new lens.¹

Here one may turn to Basil Bernstein's recent work on knowledge structures and "grammars", concepts which offer a means of systematically describing differences between intellectual fields in terms of the organising principles of their knowledge formations. However, as we point out, these concepts take us only part of the way. What is still required is a means for describing what produces these structures of knowledge, their underlying generative principles. In a recent paper, Bernstein states that the term pedagogy "has restrictive references", one of which is that it does not "point to the phenomena to be described" (see page ___ in this volume). One of these phenomena, and our focus here, concerns the production of knowledge. We argue that, in order to address these areas, we need to move Bernstein's framework forward, as he puts it, "from pedagogies to knowledges". This is to say that, though Bernstein provides a sophisticated theory of the construction of *pedagogic* discourse, studying the *production* of knowledge brings to light a new issue: the basis of knowledge claims.

It is worth emphasising that this is *not* an oversight in Bernstein's work but rather what his approach highlights as the next stage in the analysis of intellectual fields. The organisation of existing knowledge and the procedures for creating new knowledge have long been a central concern in the work of Bernstein, and movement in this direction into the future can be illustrated by considering the development of his ideas (see Table 1). In a recent article, Bernstein outlines the trajectory taken by his work over the past 30 years in terms of what can be described *inter alia* as a movement from the analysis of pedagogic transmission/acquisition of existing knowledge within educational contexts, through a theory of the construction of this pedagogic discourse, to analyses of the knowledge subject to such pedagogic transformation (1999, p. 157). In a series of seminal papers during the 1970s, he developed distinctions between, for example, "collection" and "integrated" codes in the classification and framing of school knowledge (1975, pp. 85–115) and between "visible" and "invisible" pedagogies (1975, pp. 116–145). Such distinctions formed the basis for addressing a wide range of issues relating to how the organisation of educational knowledge regulates consciousness or forms pedagogic identities, regulates the

relationship between the “inner” and the “outer”, and influences the socialisation of individuals into fields of knowledge. During the 1980s, Bernstein focused on developing a theory of the construction of this pedagogic discourse, analysing the principles and social bases of its distribution, recontextualisation, and evaluation in terms of the “pedagogic device” (1990, pp. 165–218). More recently, this work has been built upon to analyse the knowledge structures from which pedagogic discourse is selected and recontextualised (1996, pp. 169–181; 1999). This trajectory thus traces a cumulative and progressive movement through analyses of the reproduction, recontextualisation, and production of knowledge (Table 1).

Table 1: *A trajectory through Bernstein’s analysis of the construction of knowledge*

| <i>Principal focus of theoretical development</i> | <i>Main decade of circulation of theory</i> | <i>Principal publication (Class, Codes and Control)</i> |
|---|---|---|
| Transmission/acquisition of pedagogic discourse | 1970s | Volume 3 (1975) |
| ↓ | | |
| Structuring of pedagogic discourse | 1980s | Volume 4 (1990) |
| ↓ | | |
| Knowledge structures from which pedagogic discourse is recontextualised | 1990s | Volume 5 (1996, 2000) |
| ↓ | | |
| Production of knowledge structures | 2000s | Future development |

Bernstein has also addressed the question of relations between theory and research (e.g. 1996, pp. 91–144). For Bernstein, there is a dynamic interplay between the theoretical construction of and empirical research into objects of inquiry. Throughout his work, theoretical development has made visible new objects of study for empirical research, which in turn have evoked and necessitated the development of theory, which raises further issues for research, and so on. In this chapter, we aim to contribute to the ongoing development of the trajectory by building upon Bernstein’s recent work to further examine intellectual fields of knowledge production. Spe-

cifically, we intend to begin moving to the next step in this trajectory, by analysing the ways in which knowledge structures are themselves produced. As Bernstein suggests, this focus brings to light a new object for inquiry. Indeed, developing Bernstein's approach, we shall outline the necessary foundation and fundamental theoretical object for the sociology of *knowledge*, that is, its defining object of inquiry. In a manner deliberately analogous to Bernstein's concept of the pedagogic device, we refer to this object as the *epistemic device*. In brief, this device regulates how knowledge comes to be viewed as legitimate by altering relations between the arbitrary and non-arbitrary in knowledge; that is, whether knowledge claims are legitimated on the basis of external relations of power or by principles intrinsic to knowledge itself. To put it another way, central to the realisations of the device (and so to the form taken by intellectual fields) is whether knowledge is addressed in terms of "relations to" or "relations within". Thus, an analysis of the workings of the epistemic device will also begin to shed light on the development of the sociology of knowledge itself.

The chapter comprises three main interrelated parts. First, we set our analysis in context by briefly outlining Bernstein's recent conceptualisation of knowledge structures and grammars, and establish the necessity of theoretical development by highlighting the specificities of fields of intellectual production. Secondly, we describe the nature of our object of inquiry (the epistemic device) through an illustration of its effects when intellectual fields are described as undergoing changes of paradigm (such as occurred at the birth of the NSE). This provides a way into outlining the basic conceptual building blocks for analysing realisations of the device. Thirdly, we focus in more depth on two contrastive examples of intellectual fields with (horizontal) knowledge structures similar to these of sociology of education, but with differing strengths of grammar: literary criticism and mathematics. We explore the ways in which the different "settings" of the epistemic device dominant within each intellectual field shape their parameters and possibilities, both sociologically and epistemologically. In conclusion, we clarify the nature and status of the epistemic device, its relationship to Bernstein's "pedagogic device", and the ramifications of our analyses for the sociology of knowledge.

Conceptualising Intellectual Fields

Reviewing dominant approaches within the sociology of education,

Bernstein argues that despite surface differences they overwhelmingly share both a common focus and a common blindspot (1990, pp. 165–180). The shared focus is on analysing the ways in which pedagogic discourses work to reproduce external social relations of power, such as class, race, and gender; the shared blindspot is the analysis of pedagogic discourse itself, its “intrinsic features”. “It is as if”, Bernstein writes, “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, p. 166). The sociology of education has, in other words, focused on relations *to*, and neglected relations *within* (educational) knowledge. Bernstein is describing here not simply alternative objects of study but also different sociologies of education with differing principles of organisation and thereby differing possibilities and parameters for producing new knowledge. The organisation of knowledge within an intellectual field is not simply the way in which previously produced knowledge is arranged into some kind of order (although this itself is a feature of interest). It is characterised by a *principle* that also regulates the manner in which new knowledge is produced and its form. As this principle differs, so will the organisation and, crucially here, the *mode of production* of knowledge within the field. In other words, any specific intellectual field is organised in such a way as to make certain things visible and potential objects for knowledge, and other things invisible within its current field of vision.

We, therefore, suggest that the two sociologies Bernstein describes (“relations to” and “relations within”) are sociologies operating under different principles of production, and through different modes of production. The difference between them is thus a difference of *principle* and not just of focus or perspective. It is not that the sociology of education has failed to address the intrinsic features of knowledge through neglect or misplaced priorities, but rather that it cannot *see* an object of this *kind* as an object of study in its own right because of the way in which the intellectual field itself has been constituted and located. It is a matter not so much of intention and commitment as of effect and consequence (Maton, 2000c). The following questions thus arise: What is the nature of this principle? How can we conceptualise this principle? And what are the main forms its realisations take? Here, one may turn to Bernstein’s recent work for answers.

Hierarchical and horizontal knowledge structures

Bernstein has recently developed distinctions between the forms taken by differing structures of knowledge within intellectual fields (1996, 1999). These he defines as hierarchical and horizontal knowledge structures with weak and strong grammars, which we briefly outline in turn. Bernstein defines a hierarchical knowledge structure, exemplified by the natural sciences,² as characterised by

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 differently phenomena. Hierarchical knowledge structures appear, by their users, to be motivated towards greater and greater integrating propositions, operating at more and more abstract levels. (Bernstein, 1999, p. 162)

In contrast, horizontal knowledge structures, exemplified by the humanities and social sciences, “consist of a series of specialised languages with specialised modes of interrogation and criteria for the construction and circulation of texts” (Bernstein, 1999, p. 162). They comprise a series of segmented languages or approaches, which Bernstein visually represents as

$$L^1 \ L^2 \ L^3 \ L^4 \ L^5 \ L^6 \ L^7 \ \dots \ L^n$$

He illustrates this by referring to the specialised languages of criticism in English literature, and, for example, to functionalism, post-structuralism, post-modernism, and Marxism, in the case of sociology. A crucial distinction between the two forms of knowledge structure is the form taken by their development. While hierarchical knowledge structures are based on integrating codes, horizontal knowledge structures are based on collection or serial codes. Development in the former takes the form of the greater generality and integrative potential of new theory, whereas, in the latter, development proceeds by the addition of a new language, an additional segment: “integration of language in one case and accumulation of languages in the other” (Bernstein, 1999, p. 163).

Weak and strong grammars

Bernstein makes a further distinction between *horizontal* knowledge struc-

tures with relatively “strong” and “weak” grammars, in order to distinguish those whose languages have an explicit conceptual syntax capable of “relatively” precise empirical descriptions and/or of generating formal modelling of empirical relations, from those languages where these powers are much weaker. (Bernstein, 1999, p. 164)

Examples of horizontal knowledge structures with strong grammars include mathematics, logic, and economics; examples of those with weak grammars include social anthropology, cultural studies, and (crucially for our focus here) sociology.

Analysing intellectual production: Principles, modes, and devices. What Bernstein provides here is a means of systematically describing differences between intellectual fields in terms of their organising principles, rather than simply their outcomes or empirical characteristics. What is now required is a means of conceptualising the practices which generate these; that is, the underlying generative principles which give rise to these knowledge structures and grammars and enable change between them (i.e., the aforementioned “principle”). For reasons we have already introduced, this necessitates conceptual development.³

Crucial to this necessity is a significant difference between considering the *production* of knowledge and considering its recontextualisation and reproduction. As Bernstein makes apparent with his concept of recontextualisation, fields of knowledge production are irreducible to fields of reproduction. As one cannot read off the form taken by the teaching of physics from the research practices of physicists, so the converse holds true; these two fields of practice have their own specificities. Similarly, what may be tacit in fields of recontextualisation and reproduction may be more evident in fields of production—analysing the latter may open up new concerns for analysis. In the case of reproduction (especially at the level of the school) a crucial role is played by the “pedagogic device” which regulates the distribution, recontextualisation, and evaluation of pedagogic discourse (Bernstein 1990, pp. 165–218). This device is the key to understanding how knowledge generated by intellectual fields of production comes to be transformed into *pedagogic* discourse (see Beck, 1999). However, as the trajectory of Bernstein’s analysis has led to development of the theory, which in turn brings new concerns to light, so the analysis of fields of intellectual production brings to light new issues, which necessitate development of the theory.

One such issue which knowledge *production* highlights is the basis of

knowledge claims, and specifically relations between the arbitrary and non-arbitrary in knowledge. By “arbitrary”, we mean the way in which knowledge may be shown to be related to historically situated social relations of power; by “non-arbitrary” we mean that dimension of knowledge which is irreducible to such social relations of power. In effect, the arbitrary and the non-arbitrary could be said to refer to the traditional foci of the sociology of knowledge and epistemology, respectively. The question of the significance of these two interrelated but analytically distinguishable dimensions of knowledge is not, we suggest, of *primary* significance in arenas of recontextualisation and reproduction. Here, the principal questions concern the articulation of extant knowledge—the processes whereby *pedagogic* discourse is socially constructed. In production, however, knowledge is specialised, in different ways, by irreducible principles intrinsic to itself—the non-arbitrary. Whether knowledge claims deny this non-arbitrary dimension (e.g., forms of relativism and idealism) or rely exclusively upon notions of their own non-arbitrariness (e.g., positivism), they highlight and refer to this dimension. In arenas of knowledge production, the question of the basis of knowledge claims is thus less subdued—it touches upon the very *raison d'être* and conditions of existence of such fields—and the question is centrally focused on relations between the arbitrary *and* the non-arbitrary.

The question becomes: What lies behind the ongoing reproduction, transformation, and change of intellectual fields as sites of knowledge *production*? What is required is a means of conceptualising their generating principles; that is, an analogue of the pedagogic device, but focused on the question of the basis of claims to new knowledge, a question which addresses this crucial issue of (non)arbitrariness. The first task is to conceptualise intellectual fields in terms of knowledge production. Here we turn to the conceptual framework developed by Maton (1998, 1999, 2000b, 2000d), which argues that relations between these two dimensions of knowledge—the arbitrary and the non-arbitrary—proclaimed by actors within fields of intellectual production represent *principles of legitimation*. Different settings of the relations between these two dimensions are conceptualised as forming the basis of differing *modes of legitimation*, which have ramifications for the form taken by knowledge production and its social contexts. This conceptual framework provides a means of systematically describing differences between intellectual fields in terms of the organising principles of the *production* of knowledge. If Bernstein provides the lens to see knowledge as an object of study, this brings the question of production into focus. The second task is to conceptualise the generative principles which give

rise to these modes of knowledge production. We argue that the principles of legitimation active in an intellectual field are, in turn, regulated by what we term the *epistemic device*. The concept of principles of legitimation describes relations between the arbitrary and non-arbitrary in the distribution, recontextualisation, and evaluation of legitimacy within intellectual fields (see Maton, 1998, 2000b, 2000d). The epistemic device is the means whereby actors, groups of actors, or institutions may alter these relations. In other words, control of the device is access to a ruler and distributor of legitimate claims to new knowledge, legitimate membership of the field (professional identity), legitimate practices, and so forth. The epistemic device is thus the *precondition* of knowledge production; without the epistemic device, there is no means of establishing the basis of knowledge claims. As we show, the epistemic device is also the means, through its realisation in differing modes of legitimation, whereby the knowledge structures and grammars of intellectual fields are maintained, reproduced, transformed, and changed. Whoever owns or controls the epistemic device possesses the means to set the structure and grammar of the field. This is also to say that the device is the object, the means, and the stakes of struggles within intellectual fields. To control the device is to establish specific modes of legitimation as dominant within a field, and so revalorise different forms of capital active within it, restructuring relations between positions. In other words, the epistemic device is the key to symbolic domination.⁴

Such conceptualisations, however, require illustration, as confusion is likely to arise over their ontological status. Bernstein, for example, has had to repeatedly emphasise the distinction between educational knowledge codes and the distributive, recontextualising, and evaluative “rules” regulated by the pedagogic device (which are the *resources* for codes). Such confusions reflect an empiricist tendency to substantialism, that is, to asking *where* the device may be seen, rather than *when*. Crucially, such postulated generative principles are realised not in space, but in time. One sees, as it were, the *effects* of the device, rather than the device itself. To both clarify this point and introduce these concepts, we now provide an illustration of the kinds of things and events we have been referring to. Given our focus on the sociology of education—which Bernstein characterises as a horizontal knowledge structure—our focus is on explicating the notion of differing strengths of grammar rather than differences between forms of knowledge structure.

Illustrating the Switch Event: From “Perspectives” to “Paradigms”

There was a widespread tendency in the early 1970s to employ Kuhn’s (e.g., 1962) ideas about paradigm “crisis”, “revolution”, and “change” in the natural sciences as a way of describing and accounting for differences between theoretical perspectives in sociology and moves between them within its sub-disciplines. (What came to be known as the “New Sociology of Education” is a prime example of this.) Such changes were often described, using Kuhnian terminology, as shifts between incommensurable “paradigms”. The introduction of a new self-description of an intellectual field in this manner goes to the heart of our analysis, providing an illustration of the effects of the epistemic device. Bearing all this in mind, imagine the following scenario whereby an intellectual field is redescribed by its members; from a field of “perspectives” to one of “paradigms”.

Imagine, first, an intellectual field comprising a range of languages, constituted by schools of theory, methodological approaches, definitions of problems and interests, established bodies of knowledge, and so forth. Within this field, some members are primarily interested in, say, macro-level structural concerns, tend to work with large data sets, and use quantitative forms of analysis. Elsewhere in this field there might be another group of members whose interests are at the micro level and who employ ethnographic methods to investigate in-depth processes, perceptions, and social interactions. These “Macros” and “Micros” see their field as comprising a range of *perspectives*. They come together at conferences and exchange ideas and information. They come from different cultures spanning the globe, encompass all stages of the academic career, and include researchers of different genders, sexualities, social backgrounds, and so on. In these gatherings they seek ways to integrate their knowledge and attempt to develop a conceptual language that moves between the macro and the micro. So, though the approaches, substantive topics, and methods of this kaleidoscope of people differ, they are able to speak to each other, to discuss and contest issues and ideas. Debates, arguments, disputes may rage at various moments, but within an atmosphere of mutual understanding. They have, in other words, established criteria and procedures sufficiently explicit for collective decisions to emerge as to which particular perspective most adequately accounts for what is agreed to be the case. This field of “perspectives” is a field of *specialisms* but one which employs (or aspires to) a language of mediation between levels and between approaches. “Macros”

and “Micros” speak to each other through a particular kind of *grammar* (more or less explicit or systematic) that enables them as a community to retain a sense of inclusiveness that transcends their specialist intellectual differences and so to engage in the task of theoretical and substantive integration.

Now, imagine what happens if a group emerges which declares that this is not, in fact, a field of perspectives, but rather a field of competing *paradigms*. This portrayal, crucially, attempts to change the relationship between the array of perspectives and the possibilities of what members of the field can say to each other: Differences between “Macro” and “Micro” are now claimed to be differences of exclusiveness and incommensurability. Criteria and procedures for establishing significant questions and provisional solutions are no longer the subject of debate and negotiation but are viewed as entirely dependent on incommensurable differences of worldview. This new portrayal thus posits a different understanding of the organisation and production of knowledge within the field. When “perspectives” are changed into “paradigms”, adherents to various perspectives can no longer talk to each other—there is very little to say beyond “Who are you? One of us or one of them, friend or foe?” This is no longer a field of *specialists* speaking a language of complementary knowledge integration, but one of exclusively *specialised* knowers (Maton, 2000b, 2000d), each speaking in its own distinctive and incommensurable language or “voice” (Moore & Muller, 1999). The grammar of the field has undergone a fundamental transformation.

The nature of the event

Now, what sort of thing has occurred? What we have described is a move from a horizontal knowledge structure with a (relatively) strong grammar to one with a weaker grammar. Both states of the field represent horizontal knowledge structures (comprise a series of different languages), but the “paradigms” field possesses a relatively weak grammar as its languages have a comparatively low level of integrative power. Essentially, what has changed is the strength of classification between the perspectives (or languages $L^1, L^2, L^3 \dots L^n$) within the field. The introduction of Kuhn’s terminology to redescribe the field thus attempts to “switch” the strength of grammar of the field.

If this describes the underlying differences between the two states of

the field, what, then, is generating these different knowledge formations and, in particular, enabling the process of change from one to another? This question can be addressed by emphasising that “paradigms” is only one *possible* description of the field. It is likely that other actors would contest this view and argue against the imposition of the particular “epistemology” (or, more precisely, anti-epistemology) that advocates of the paradigm model propose. A conflict would then follow between those who support “perspectives” and those who support “paradigms” as the way of understanding the field. In this situation a new *kind* of struggle would emerge: one related to how the field itself is understood rather than to rival knowledge claims between competing perspectives. Hence the introduction of a language of “paradigms” in self-representations is not simply the introduction of one more perspective; it is the emergence of an attempt to fundamentally restructure the nature of the field by weakening its grammar. It is a struggle between explicit *languages of legitimation*: claims about the nature of what is to count as knowledge and the procedures and criteria that members of the field can legitimately employ in its production (Maton, 2000b, 2000d).

Languages, principles, and modes of legitimation. This raises questions concerned with what it is that actors engaged in such conflicts are struggling over and how. Actors struggle for the right to define the field and its practices, but what is the mechanism, the “switching device”, by which this may be achieved? What we are suggesting is that such struggles are for control of the epistemic device—the generative means whereby the parameters and possibilities of the field, its structure and grammar, are established—and that such struggles comprise the proclamation, in languages of legitimation, of differing *principles* of legitimation.⁵ These principles of legitimation set out ways of conceiving of the field and its practices and thus propose a ruler for participation within the struggles and criteria by which achievement within the field (including success in these struggles) should be measured (Maton, 2000b, 2000d). This is to say that languages of legitimation, such as those of “perspectives” and “paradigms”, posit a principle, a specific articulation between the arbitrary and the non-arbitrary, as *the* basis for legitimacy within the field. Different principles of legitimation proclaim different answers to the question of whether knowledge and its production is to be understood as sociologically and historically contingent, or as ontologically necessary, or as particular configurations of both. Different configurations comprising principles of legitimation can be con-

ceptualised by conceiving of the arbitrary/non-arbitrary in terms of what Maton (1998, 1999, 2000b, 2000d), defines as the “epistemic relation” and the “social relation” of knowledge. These refer to two analytically distinctive but empirically interrelated dimensions of knowledge and practice within intellectual fields of production. In short, they conceptualise the ways in which claims to knowledge are both *by authors in social-historical contexts* and *about the world*, that is, that knowledge claims are *by somebody* and *about something*. The epistemic relation is the relation between knowledge and that part of the world of which knowledge is claimed (its proclaimed object of study). The social relation is between knowledge and its author, the subject making the claim to knowledge. Languages of legitimation are conceptualised in terms of the strength of boundaries around (classification) and control over (framing) *what* knowledge may be claimed and *how* (epistemic relation), and *who* may claim knowledge (social relation). Crucially, the forms these relations take within languages of legitimation may vary independently of each other; each may be strongly or weakly classified (C) and framed (F).

In these terms, languages of legitimation can be rewritten as expressing particular configurations of strong/weak C and F for these two relations: as specific *principles* of legitimation (Maton, 2000b, 2000d). These specialise knowledge in particular ways. In the above example, the field was portrayed as first a series of specialisms (“perspectives”) and then as specialised knowers (“paradigms”). The perspectives field exhibits strong C and F of the epistemic relation (emphasising the significance of specialised procedures), but weak C and F of the social relation (knowers are not the issue). The paradigms field *reverses* these strengths, specialising and privileging positions within the field on the basis of *who* is making the claim to knowledge, regardless of the procedures used and the objects studied. In other words, attempts to redescribe the field from comprising “perspectives” to comprising “paradigms” are also attempts to “switch” the ways in which knowledge is specialised to and within the field: in this case, from a *knowledge mode* of legitimation to a *knower mode*.⁶ As such, these attempts aim to control the epistemic device, for whoever controls the device controls the generator of status hierarchies in the field; they are able to set the switch in their favour, so to speak, by establishing particular modalities of legitimation as dominant within the field, and so structuring relations between its constituent elements ($L^1, L^2 \dots L^n$) in different ways.

We develop the substantive analysis further in the next section of the chapter. Before doing so, we need to address a potential misreading con-

cerning the dichotomous resonances of “switch”. Our discussion of different strengths of grammars and two modes of legitimation, alongside the (heuristically intended) “switch” metaphor, may suggest dichotomies: strong/weak grammar; knowledge/knower modes. In terms of the theory, these are not the case, but for differing reasons. When discussing grammars, Bernstein emphasises their *relative* strengths; the grammar of a field of “perspectives” may be stronger than that of a field of “paradigms”, but nonetheless remains weaker than that of logic or mathematics. (We focus on the example of mathematics below.) Thus our description of attempts to *weaken* (or strengthen) grammar—a process of change rather than movements between polar states. In the case of modes of legitimation, knowledge and knower modes are those forms most often encountered when analysing such intellectual fields as contemporary sociology. (Varying C/F for epistemic and social relations independently gives *four* possible modes; see Maton, 2000d). Furthermore, neither grammars nor modes of legitimation represent ideal types, which remain at the level of the empirical; rather, they represent real principles whose empirical realisations are dependent on the enabling context (Bernstein, 1999; Maton, 2000b). As we show, the fact that these grammars are typically conceived as absolute states and modes of legitimation, portrayed as an either/or choice, itself reveals something of the nature of these fields, namely, their tendency to construct false dichotomies of complete rupture. The “switch” is held to have only two settings, and changes between them are described as totalising.

Grammars, Modes, and Communities: The Cases of Literary Criticism and Mathematics

We now deepen and expand the analysis to explore the ramifications of differing strengths of grammar and modes of legitimation for the form taken by fields of intellectual production. Here we apply the conceptual framework outlined above to examine two contrastive examples: one where the dominance of a knower mode of legitimation results in recurrent attempts to “switch” the grammar of the field to a weaker form (literary criticism); and one where a knowledge mode underpins a relatively strong grammar (mathematics). We focus in particular on the two dimensions highlighted by the epistemic and social relations: the form taken by the epistemological and sociological features proclaimed as defining and legitimating the fields.

We should first emphasise that within certain epistemological parameters (given by the ontology of a field's domain), the strength of grammar current at any moment in time (its capacity to produce knowledge and in what form) is contingent upon the *condition* of the field in terms of its location within the broader structural dynamic of the education system. This will be strongly influenced by factors such as educational expansion, state policies regarding funding, and the degree of external regulation of institutions. These issues are not the focus of analysis here. The necessarily partial nature of the following accounts is intended to illustrate the effects of differing realisations or "settings" of the epistemic device in shaping intellectual fields, rather than to represent attempts to fully account for these fields. Our intention is *not* to displace the focus of conventional sociologies of knowledge but rather to highlight the structuring effects of a generative mechanism hitherto absent from their analyses.

The paradigmatic episode: The case of literary criticism

The schismatic phenomenon represented by the move to weaken grammar, though never before systematically theorised, has been recognised in a number of ways for a long time. Perhaps its most oft-noted form is that of a generational conflict (e.g., Hoggart, 1995; Moore, 1996b). Senior members of an intellectual field bemoan junior members' lack of originality and proclaim with a jaundiced eye: "We've heard this all before!" Conversely, younger members of the field bemoan the inability of their elders to break free of their outdated ideas, recognise their obsolescence, and allow the birth of the "new". The senior members despair at the lack of understanding of the history of their discipline; the junior members view this as just so much dead weight. The young are said to be living as if the past never happened; the old to be living in the past.

One could analyse this as simply a "conflict of the generations", a battle between the established and the newcomers, the conservative old guard and the Young Turks.⁷ There is, however, more to it than that. Such events take the form of *schism*, the proclamation of a radical break, typically either *serially* as a break in time or *segmentally* as a break in space between contemporaneous "standpoints". The 1960s, for example, witnessed a large crop of notices of births and deaths: the death of God, the traditional family, elite higher education, the classics; the arrival of the "new student", "new sociology of education", "new universities" (indeed, Christopher Booker

[1969] christened the decade the “age of the neophilicists”).

Examples of the present-day form of segmental “breaks” are provided by forms of “standpoint” theory and “voice” discourse (Moore & Muller, 1999). Whichever form the schism takes, it announces a language unique to itself and incommensurable either with the past or with the “normal” paradigm or dominant standpoint. Furthermore, this “paradigm” event has a paradigmatic form. Within sociology it appears that Kuhn’s “revolutionary science” is normal, and a period of “normal science” would be revolutionary.

In literary criticism during the early 1960s an event similar to our “paradigms” example occurred, when proclamations of the “new” and claims for rebirth became the focus of much debate, including a series of lectures by Frank Kermode entitled *The Sense of an Ending*:

When we survive, we make little images of the moments which have seemed like ends; we thrive on epochs. Fowler observes austerely that if we were always quite serious in speaking of “the end of an epoch” we should live in ceaseless transition; recently Mr. Harold Rosenberg has been quite seriously saying that we do. *Scholars are devoted to the epoch.* (Kermode, 1967, p. 7, emphasis added)

Kermode’s discussion highlights two points we explore here, namely, that such claims are based on an apocalyptic ontology and that they represent what can be described as “creative fictions”. We discuss these points in turn.

Apocalyptic ontology

Such arguments for “crises” and “breaks” in intellectual fields often proclaim an apocalyptic event in the world; they are, Kermode suggests, secular versions of apocalyptic cosmology. A rupture or radical break with the past is proclaimed: from the modern to the post-modern novel (world, condition, subject, etc.). This change in the object of study is held to require new ideas, rendering all existing work obsolete. Thus, with the addition of each new language, the object of study is said to have radically changed. Although one should remember that this new portrayal of the field is likely to be (and indeed was) contested, if it did become the dominant way of seeing the field, the effects of these kinds of claims about “the new” would be to restrict the epistemic community and intellectual focus of literary criticism to the here and now. First, it sets the present adrift from the past, which

indeed becomes a “foreign country”—in fact, an incommensurably different culture. The old and the young (in this example, though we could also base our example on class, gender, race, religion, and so on) are held to literally inhabit different worlds, and authors from before the proclaimed break are said to have little to say about now.

Second, this way of representing the field makes location in time or social space the basis of knowledge claims. To draw the line between “the past” and “the modern” (or “post-modern”) in this manner not only sets the present adrift from the past, it also specialises the present (or at least those who proclaim themselves its representatives). For, although a new world is proclaimed, the basis of access to legitimate knowledge of this world does not reside in procedures specialised by this new world but in the ability of the knower to *see* this new world at all—it is the new *knower* and not the new world which forms the basis of new knowledge. So, each new knower, with a gaze specialised by time and place, brings along a new and different language and object of study. In other words, each generation (paradigm or standpoint) rewrites the world in its own image. Crucial here is the emphasis placed on the social and temporal co-ordinates of the specialised knower: *Who* you are is more important than *what* you are discussing or *how*—a knower mode of legitimation.

This knower mode problematises communication between different groups of knowers within the field (in this case between past and present members) resulting in a restricted epistemic community. Although each segment or language of the knowledge structure is cohered by shared socio-cultural dispositions (values, aspirations, beliefs), cohesion and communication between segments is at best uncertain and fragile (and often merely tactical, as in defence of the entire field from external attack). Here, knowledge is always *somebody's* knowledge and nothing but. In terms of the conceptual framework, the social relations of the field are strongly classified and strongly framed—each segment represents an epistemic community restricted in time and space. “Knowers” are located within a tightly bounded set of co-ordinates specified by membership criteria, separated from the past (the past is that of the dominant other or before the crucial break) or segregated from contemporaries who do not share membership criteria. The privileged epistemic community, in other words, exhibits space-time compression.

This compression is, moreover, a dynamic process which may fragment the field, as the criteria for legitimate knower membership are inherently unstable. A characteristic of this form of intellectual field is its tendency

towards proliferation and fragmentation into ever-smaller knower communities. Indeed, Kermode's starting point was Harold Rosenberg's (1962) description of *The Tradition of the New*—reports of the field's rebirth were occurring so often that it had become a tradition. With each new break proclaimed, the new epistemic community of privileged knowers becomes smaller, as each new knower brings a new object of study, with knower membership defined by increasingly hyphenated descriptions of identity and membership—to paraphrase Michael Ignatieff, a narcissism of ever smaller differences. Thus the move to weaken grammar tends to recur episodically, breaking the knowledge structure down into its constituent parts (see Maton, 2000b).

Creative fictions

The second point Kermode highlights is that claims of a major change in the object of the study are presented as descriptions of the world. However, as Kermode suggests, they are best understood as representing changes in the conditions of some members of the intellectual field (the new knowers), rather than changes in the condition of the world (compare Singh 2000). A recent example is that of various “post” theories which argue that society is undergoing space-time compression. The analysis presented here suggests that such experiences reflect the situation of members of specific intellectual fields rather than the world at large. As Proust remarked, the one thing that does not change is that at any and every time it appears that there have been “great changes”. Yet, as Kermode puts it, “if we were always quite serious in speaking of ‘the end of an epoch’ we should live in ceaseless transition” (Kermode, 1967, p. 7). In other words, they are at best creative fictions, heuristic devices which highlight specific developments, and should be approached with what Kermode calls “clerical scepticism”. Representing these claims as facts about the larger world is committing what Bourdieu (2000) calls the “scholarship boy”, extremely difficult in intellectual fields undergoing such attempted redescription to make this argument. The proclaimed change is not itself the object of study; it is announced rather than hypothesised and represents an article of faith, the doxa of the new knowers. The epistemic relations between the language and the object of inquiry are weakly classified and framed—it is not the object which regulates the new language, but the knower's “gaze”, specialised by the “break”, which constructs the ob-

ject. This sensibility, the ability to see the new world, not only specialises those who possess it, but also privileges their point of view. To question the break is to be assigned to the other side of the divide and thus have no access to legitimate knowledge of the post-apocalyptic world. Those who cannot see what the new knowers see (and only the elect can) have by definition nothing to say about it. All past languages are therefore redundant, and so past work is displaced rather than integrated. One either “gets it” or one doesn’t: “The times they are a-changing” combines with “something is happening and you don’t know what it is, do you, Mr. Jones?”

Strong grammars and the knowledge mode: The case of mathematics. We now compare this intellectual field with one where proclamations of “ruptures”, “breaks”, and the birth of the “new” are relatively rare: mathematics. If literary criticism represents a “paradigms” example, mathematics represents the “perspectives” field. Bernstein cites mathematics as an example of a horizontal knowledge structure (“a set of discrete languages, for particular problems”) with a relatively *strong* grammar (1999, p. 164). Again, our focus is on analysing the generative principles underlying this grammar and its ramifications for the field. To illustrate the different form taken by mathematics, consider the following potted version of Hoffman’s (1998, pp. 183-201) story of Fermat’s Last Theorem:

- In 1637 in France, Pierre de Fermat (born 1601) is reading a treatise on number theory by Diophantus.
- Diophantus lived in Alexandria, possibly sometime between the first and third century A.D. In his treatise, *Arithmetica*, he discusses at length the “Pythagorean theorem”, observing that “there are an infinite number of Pythagorean triplets, whole numbers x , y and z that solved the equation $x^2 + y^2 = z^2$ ”.
- Pythagoras lived in the sixth century B.C.
- The Babylonians had known about these triplets a thousand years earlier.
- Back in seventeenth-century France, Fermat formulates his famous “Last Theorem” in response to a problem he has derived from Diophantus. He notes that he has “a truly marvellous demonstration” of this theorem that is too big to write in the margin of the *Arithmetica*. Fermat dies in 1665, but the “demonstration” is never found.
- To cut a long and fascinating story short, each subsequent cen-

ture sees further work on the theorem by scores of mathematicians (male and female, from a variety of countries) until ...

- In 1993, Andrew Wiles, concluding his lectures at a mathematics conference in Cambridge, writes one last statement on the blackboard and says, softly, “This proves Fermat’s Last Theorem. I think I’ll stop here”. However, by December he has to admit to an *inconsistency* in his proof.
- By September 1994, with the help of a colleague, “the hole is patched” and the Last Theorem is considered officially proved.

What is so striking about this story is its sheer *scale* in historical time and in geographical and cultural space. It tells a story of a mathematician in late-twentieth-century England effectively communicating with a French judge at the court of Louis XIV, and through him with Babylonians from three millennia ago.⁸ 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 living members die, will be in turn the living concern of future members—“a partnership not only between those who are living, but between those who are living, those who are dead, and those who are to be born” (Burke, 1989, p. 147).

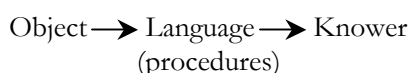
What enables this extended epistemic community becomes clearer when one compares the ways in which literary criticism and mathematics are legitimated. In the case of a “paradigms” portrayal of an intellectual field, legitimacy within the field is measured by focusing on the knower. This knower mode of legitimation may be summarily represented as

$$\text{Knower} \longrightarrow \text{Language} \longrightarrow \text{Object}$$

(“gaze”)

where the arrows indicate the direction of specialisation and regulation. The legitimate language is held to be specialised to the knower, and in turn is said to specialise the object of study; only the privileged knower’s “gaze” may access the object of study. In other words, it is possession of the specialised sensibility, typically restricted to a social-temporal category of knower, which is the purported criterion for membership of the field—the means of socialisation into its principles of organisation is social rather than epistemic. In contrast, the “perspectives” portrayal of a field illustrated by mathematics reverses the direction of the arrows: the object (or problem) is

held to specialise the language (procedures) required to access knowledge of the object, and this in turn is held to specialise knowers; that is, it is possession of the specialist language which is the purported criterion for membership of the field and the means of inculcation into its principles of organisation. This knowledge mode of legitimation may be represented as



where, as before, the arrows indicate the direction of specialisation and regulation. This highlights two fundamental differences, to which we now turn, based on the different roles played here by the epistemic relation and social relation: the status of mathematicians' creative fictions and of the mathematical knower.

Invented worlds. As in literary criticism, mathematicians create fictions. They have the freedom to invent problem-situations, where different imagined mathematical worlds may exhibit different qualities (for example, in some geometries, parallel lines converge at infinity, whilst in others they do not) and may be designed precisely for that purpose. As the mathematician Ronald Graham explains,

In so many areas of mathematics it seems natural or appropriate to create your own mathematical world. You have a lot of choices. I want to consider structures that have thus-and-such properties. I want this structure and not that one. (quoted in Hoffman, 1998, p. 265)

The specialised languages of mathematics are specialised to these different problem-worlds, the nature of each problem regulating the form taken by its procedures. However, mathematicians cannot explore these worlds just as they like. Once a problem is established, the parameters of the problem and the criteria of its solution remain relatively constant: a strong grammar. A "fiction" (problem or theoretical postulate) is constructed whose nature and criteria of solution are held to be intransitive. Furthermore, certain kinds of procedures, values, and principles (such as consistency) will hold constant whatever the nature of the problem. If a theorem (in whichever problem "world" of maths) is demonstrated to be inconsistent, then it just *is*; its author cannot legitimately make *ad hoc* claims. Andrew Wiles, for example, could not claim that although his first attempt at solving Fermat's Last Theorem was inconsistent in Cambridge it was

consistent in Oxford, or that though inconsistent in 1993 it would be consistent if Manchester United lost their next game. Mathematics has explicit criteria whereby particular claims can, at the end of the day, be demonstrably shown to be true or false, right or wrong, legitimate or illegitimate, to transcend specific worlds and endure over time. In terms of legitimation, the epistemic relation is thus strongly classified and strongly framed.

Mathematical knowers. These explicit criteria are said to transcend differences in the social and temporal co-ordinates of actors. Thus, discoveries by men and women of genius in the intellectual field, once they are established, can be used by people of no genius at all in a semi-mechanical manner in order to obtain legitimate results (cf. Berlin, 2000, p. 25). In such a field, problem-situations may persist over centuries and span the globe, previous work may be built upon and developed regardless of context, and answers may be adjudicated and progress judged by anyone sufficiently trained in the field's specialised procedures. One's claims to be a specialised knower (one's professional identity as a mathematician, a Fermat's theorem expert, etc.), one's use of antecedent knowledge, and one's decisions as to the legitimacy of one's own and others' claims to new knowledge—are all held to be motivated by purely “intellectual” (or mathematical) considerations, themselves regulated by the specific problem or object of inquiry. They thus focus on knowledge of specialised procedures, which anyone may use, regardless of location in time and space: The social relation of knowledge is one of relatively weak classification and framing. Paradoxically, it is this, so to speak, partial negation of history by the knowledge mode of legitimation that enables the history of the discipline to remain alive. Rather than specific knowers being locked into their socio-historical contexts, they remain active contributors to the field's current production—the past may be a foreign country, but it is not an incommensurably different culture. The fact that Fermat, for example, is one more Dead White European Male is deemed to be irrelevant to the *form* in which his Last Theorem remained active within the problem field of the discipline.⁹ In other words, questions of who is a specialist knower are said to be the domain of the epistemic relation rather than of the social relation of knowledge.

This way of understanding an intellectual field thus generates a strong grammar which enables both cumulative development of work over time within each (problem-specialised) language and also communication between different languages. It is said, for example, that very few mathemati-

cians actually understand Wiles's solution and so remain unable to personally judge whether he has indeed solved Fermat's Last Theorem (Hoffman, 1998, p. 198). However, though working in other problem-worlds, they trust those who work in this particular area to use the explicit criteria. There is thus a connection with the past and with other knowers in the present in an extended epistemic community.

Summary. Both literary criticism and mathematics are examples of intellectual fields with horizontal knowledge, but they differ in their relative (weak and strong) strengths of grammar. Bernstein's concepts thus enable us to describe similarities and differences between fields beyond their empirical and substantive characteristics. Our focus here has been on the principles underlying and generating these differing strengths of grammar and their ramifications for the form taken by intellectual fields. Our examples illustrate two settings for the epistemic device, realised in two different modes of legitimation, which give rise to these different grammars. The "tradition of the new" in literary criticism is an example of an explicit attempt to seize control of the epistemic device in order to impose a particular configuration of the arbitrary and non-arbitrary as the dominant mode of legitimation in the intellectual field. In this case, the mode emphasises the social and historical arbitrary as central to legitimacy, focusing on the *relations to* knowledge of the knower, resulting in a weak grammar and restricted epistemic community. Once established as dominant within a field, such a *principle* is particularly difficult to change (though the empirical realisations of the principle may be subject to ceaseless change), for emphasis is increasingly placed on *who* owns the epistemic device, giving rise to a succession of new knowers. In contrast, the knowledge mode of legitimation exemplified by mathematics emphasises the non-arbitrary relation of procedures to their objects of study, focusing on epistemic relations *within* knowledge, and giving rise to a strong grammar and extended community. Here, who owns the device is not a matter of explicit contention; it is, so to speak, the social property of the field itself. Thus, paradoxically, those fields often thought of as socially oriented, such as sociology, may be grounded in individualism, and vice versa. In both examples one sees the workings of the epistemic device in terms of its *effects*, which are realised through mode of legitimation and strengths of grammar. The epistemic device's settings shape, for example, the manner in which the past, as when it is embodied in a literary canon, is available as an intellectual resource and as a continuing repository of problems and material to be transformed within the current production

of knowledge. With a knower mode and weak grammar, the past of the field is more a mass of debris to be cleared away to enable the building of fresh knowledge. For extended epistemic communities, the past remains a basic source of material to incorporate within current production.

Our analysis should not, however, be understood as diminishing the significance of social and institutional factors in the *enacted* practices of intellectual fields, as would be argued by conventional sociologies of knowledge. Rather, our intention has been to illustrate the force and effects of (more or less tacit or explicit) self-representations of a field's operations. The distinction between extended and restricted epistemic communities, for example, refers to the ways *members* of a field define it at any particular time, rather than to the structures of fields *in themselves* (see Popper, 1972). Differing languages of legitimation, similarly, represent not perspectives *within* a field but perspectives *towards* the field, and they affect the relationship of the *community* to the field—it is the community of practitioners (or groups within it) that is “extended” or “restricted”, rather than the field itself. To reiterate, our aim is to contribute to the integration of the insights of existing approaches to knowledge, rather than to displace them. As we have illustrated, the epistemic shape of an intellectual field has ramifications for its social form. Thus, paradoxically, an exclusive focus on the *sociology* of knowledge underestimates the significance of the sociological nature of *knowledge*.

Conclusion: Devices and the Sociology of Knowledge

What we have termed the “epistemic device” is an analogue of the “pedagogic device”. Here we briefly consider the relations between these two devices to clarify the nature of the epistemic device and open up the issue of realising a sociology of knowledge which does more than analyse “relations to”.

As we have outlined, the epistemic device is the generative principle for the construction of knowledge, or more precisely, for the distribution, re-contextualisation, and evaluation of *legitimacy* in intellectual fields of knowledge production. That is, the epistemic device regulates who can produce legitimate knowledge, the ways in which antecedent knowledge is selected and transformed in the course of producing new knowledge, and the criteria for adjudicating claims to new knowledge. This is achieved through the form taken by principles of legitimation, that is, their modalities (e.g.,

knowledge and knower modes).

To introduce this concept alongside the pedagogic device is to imply neither that the latter is inapplicable to fields of intellectual production, nor that there are two devices at work within arenas of knowledge *production* but only one within those of recontextualisation and reproduction. Both devices form the basis of all three arenas. We suggest, however, that whilst the epistemic device is not absent from the latter two, in their practices it is secondary to a wide range of other, primary *pedagogic* concerns. The specificities of intellectual fields, and specifically their concern with the basis of knowledge claims, bring this device to our attention. So, we can state both that all new knowledge is recontextualised knowledge—knowledge is socially produced by means of antecedent knowledge—and also that, conversely, all educational knowledge is subject to the epistemic device. For example, a child in a history lesson who declares, “I don’t know what happened, Miss, I wasn’t alive three hundred years ago”, is positing settings for the epistemic device by proclaiming a knower mode of legitimation. One of the achievements of Bernstein’s work has been to widen the question of the pedagogical nature of social relations well beyond the school classroom. Here we are arguing that the epistemological nature of social relations is similarly universal and ubiquitous—if it were not, we would not be able to function on a day-to-day basis. In short, the epistemic device moves the focus from the sociological to encompass also the epistemological. It moves us from thinking about pedagogies to also thinking about knowledges as well.

The contrast we are making between these two devices is thus *not* one between a social principle (pedagogic) and a *logically formal* epistemological principle (as was sought by positivist attempts to reconstruct the logic of scientific discovery in terms of formal logic). As realist philosophy of science has long recognised, the logic of discovery and its associational forms is *intrinsically* social in character, but it is social in a very particular and specialised way (though there is no complete agreement as to its form: see Moore, 2000). It is what Luntley (1995) terms that “simple truth” about our relationship to the world that makes *any* form of effective action possible. Hence, the epistemic device is *social* in character, and, though most of its realisations are most systematically developed in university disciplines (especially within the natural sciences), *necessarily* ubiquitous and universal. It is the precondition of knowledge. The question this raises is the nature of relations between the pedagogic and epistemic devices. At this stage, we suggest that they represent two parts of a bigger picture, dimensions of an

overarching knowledge device. This represents, we believe, a crucial next step for empirical and conceptual enquiry.

Similarly, though principles of legitimation are most immediately and clearly expressed in the kind of languages of legitimation illustrated by the literary criticism example, this is not to say they are absent elsewhere. Often they are realised in and simply accepted as the routine activities of actors—what could be termed *tacit* languages of legitimation (as illustrated here by mathematics). In other words, whilst struggles over ownership of the epistemic device are constant and ongoing, they often bubble under the surface until such times as the field turns in upon itself. At such moments of open conflict, they assume the form of intellectually developed positions and become a major focus of interest and work within the field in their own right, signalling a rearticulation (or at least sustained reappraisal) of the principles of legitimation underlying the field. This opens up for examination the question of why intellectual fields bubble over at specific periods. Finally, this analysis indicates some intrinsic reasons for the lack of a theory of knowledge which has characterised the NSE's proclaimed sociology of knowledge. Where grammar is strong, knowledge claims are in effect being detached from their authors—*who* is speaking makes no difference to whether or not what is being said is true (Gellner, 1974). It was precisely the insistence upon this that enabled Western universities to free themselves from control by religious and political authorities, and enabled the massive advance of secular critical rationalism at the beginning of the modern period. In a peculiarly contradictory move, those positions within horizontal knowledge structures with the weakest grammars (voice and standpoint theories, etc.) seek to reverse this and return to a new form of the pre-modern (though relabelled "*post-modern*") position where *who* knows is what counts, not *what* is known or *how* (Maton, 2000c). When an intellectual field is characterised by a very weak grammar and a knower mode of legitimation, then the focus for its languages of legitimation becomes the voices relayed by the epistemic device, rather than the nature of the relay itself (cf. Bernstein, 1990, pp. 165–180). Knowledge is held to be nothing but arbitrary; the non-arbitrary is erased. One reason why the "intrinsic features" of knowledge have not been analysed within the sociology of education is, thus, that they cannot be made visible within the current condition of the field; given a knower mode of legitimation, weak grammars cannot *see* the epistemic device. However, to adapt a passage from Bernstein (1990, p. 190), any sociology of knowledge should have a theory of the epistemic device. Indeed such a theory could well be its necessary foundation and

provide the fundamental theoretical object of the discipline.

It is the realisation of this necessity which Bernstein's approach enables and which his and, in a more modest fashion, our own work furthers.

Notes

* The authors wish to thank John Beck and Peter Huckstep for their enlightening comments.

1. As will become apparent, for actors in fields such as sociology, producing new knowledge is a less enticing task (and a less enjoyable read) than critiquing existing knowledge. One could suggest that this chapter is "out of step" with the current condition of its contextual field; its reception within that field may substantiate the analysis.
2. See Bernstein (1996, p. 172). Compare Albert Einstein: "The grand aim of all science is to cover the greatest number of empirical facts by logical deduction from the smallest number of hypotheses or axioms" (quoted in *Life Magazine*, January 9, 1970).
3. Within an intellectual field characterised by a horizontal knowledge structure with a weak grammar, as is the case with sociology, our emphasis on explicating the ontological necessity for conceptual development may appear unduly cautious, if not anxious. Such a sociologically reductive response would reinforce our analysis, which itself aspires towards a (strong grammar) knowledge mode of legitimation.
4. Space precludes discussion here of how this conceptual framework complements and develops the approach of Pierre Bourdieu to the analysis of intellectual fields (see Bernstein 1996, pp. 169–181; Maton, 1999, 2000a, 2000d). In future publications, we shall elaborate the role of the epistemic device in symbolic domination.
5. The term "legitimation" was chosen to embrace the insights of both sociological and epistemological approaches to knowledge (see Maton, 2000b). It is preferred to "epistemology", as not all "epistemologies" are epistemological in nature (Popper, 1972); some are *sociologies* of knowledge. Epistemology embraces only the epistemic relation of knowledge—the nature of relations to the non-arbitrary—whereas (as we show) many so-called "epistemologies" base knowledge claims on the social relation of knowledge.
6. Maton (2000d, p.88) emphasises that "Both these modes of legitimation involve a relation to a proclaimed object of study (knowledge of something) and a relation to a proclaimed subject of study (someone who knows it). The distinction between them refers to which relation is emphasised within the language of legitimation; in other words, whether the field is said to be specialised by procedures related to its object of study (the epistemic relation) or by the unique insight of the author (the social relation). For

each mode it is, therefore, the relation which is *strongly* classified and framed which comprises the basis of knowledge claims”.

7. This is a typical explanation offered by sociological studies of knowledge, such as that of Bourdieu. Interestingly, the present chapter is collaboratively authored by a senior and a junior member of an intellectual field.
8. It might be argued that the fact that Andrew Wiles worked in isolation for 8 years to solve the theorem contradicts the argument made here, at least in terms of communication with other living mathematicians. This would be mistaken on at least three counts. First, such an individualised mode of working is relatively rare in modern mathematics (see Hoffman, 1998, pp. 183–184). Second, this mode of discovery does not negate the extended epistemic community engaged in the mode of demonstration; Wiles may have worked alone, but the legitimisation of his proof was social. Third, and most importantly, actors need not be in contact with one another (or even alive) to be fellow members of a field’s active epistemic community. An epistemic community is thus, in Benedict Anderson’s phrase, an “imagined community” (1983).
9. We are not suggesting that sociological factors play no part in access to and positioning within intellectual fields. The focus here is on the ways in which these fields *describe themselves*, their *modes of legitimation*, and their effects on intellectual fields, rather than the working of fields as arenas of social practice.

Bibliography

- Anderson, B. (1983). *Imagined communities: Reflections on the origins and spread of nationalism*. London: Routledge & Kegan Paul.
- Beck, J. (1999). Makeover or takeover: The strange death of educational autonomy in neo-liberal England. *British Journal of Sociology of Education*, 20 (2), 223–238.
- Berlin, I. (2000). *The power of ideas*. London: Chatto & Windus.
- Bernstein, B. (1975). *Class, codes and control: Vol. III, Towards a theory of educational transmissions*. London: Routledge & Kegan Paul.
- . (1990). *Class, codes and control: Vol. IV, The structuring of pedagogic discourse*. London: Routledge.
- . (1996). *Class, codes and control: Vol. V, Pedagogy, symbolic control and identity: Theory, research, critique*. London: Taylor & Francis.
- . (1999). Vertical and horizontal discourse: An essay. *British Journal of Sociology of Education*, 20 (2), 157–173.

- . (2000). *Class, codes and control: Vol. V, Pedagogy, symbolic control and identity: Theory, research, critique*. (Rev. ed.). Oxford: Rowman & Littlefield.
- Booker, C. (1969). *The neophiliacs: A study of the revolution in English life in the fifties and sixties*. London: Collins.
- Bourdieu, P. (2000). *Pascalian meditations*. Cambridge: Polity.
- Burke, E. (1989). Reflections on the revolution in France. In L. G. Mitchell (Ed.), *The French revolution*. Oxford: Oxford University Press.
- Gellner, E. (1974). *Legitimation of belief*. Cambridge: Cambridge University Press.
- Hoffman, P. (1998). *The man who loved only numbers*. London: Fourth Estate.
- Hoggart, R. (1995). *The way we live now*. London: Pimlico.
- Kermode, F. (1967). *The sense of an ending*. New York: Oxford University Press.
- Kuhn (1962). *The structure of scientific revolutions*. Chicago: Chicago University Press.
- Luntley, M. (1995). *Reason, truth and self: The postmodern reconditioned*. London: Routledge.
- Maton, K. (1998). *Basil Bernstein and trajectories of taught academic subjects*. Paper presented at Knowledge, Identity and Pedagogy Conference, University of Southampton, England.
- . (1999). Extra curricular activity required: Pierre Bourdieu and the sociology of educational knowledge. In M. Grenfell & M. Kelly (Eds.), *Pierre Bourdieu: Language, culture and education—Theory into practice*. Bern: Peter Lang.
- . (2000a). *For reflexivity, against narcissism: Pierre Bourdieu and the social and intellectual conditions of social scientific knowledge*. Paper presented at Conference on “Bourdieu in the 21st Century”, University of East London, England.
- . (2000b). Languages of legitimation: The structuring significance for intellectual fields of strategic knowledge claims. *British Journal of Sociology of Education*, 21 (2), 147–167.
- . (2000c). *Popes, kings and cultural studies: Placing the commitment to non-disciplinarity in historical context*. Paper presented at Conference on “Cultural Studies & Interdisciplinarity: Difference, Otherness, Dialogue, Translation”, University of Leeds, England.
- . (2000d). Recovering pedagogic discourse: A Bernsteinian approach to the sociology of educational knowledge. *Linguistics and Education*, 11 (1), 79–99.

- Moore, R. (1996a). Back to the future: The problem of change and the possibilities of advance in the sociology of education. *British Journal of Sociology of Education*, 17 (2), 145–161.
- . (1996b). Extended review: “The way we live now”. *British Journal of Sociology of Education*, 17 (4), 521–530.
- . (2000). For knowledge: Tradition, progressivism and progress in education—reconstructing the curriculum debate. *Cambridge Journal of Education*, 30 (1), 17–36.
- Moore, R., & Muller, J. (1999). The discourse of “voice” and the problem of knowledge and identity in the sociology of education. *British Journal of Sociology of Education*, 20 (2), 189–206.
- Popper, K. (1972). *Epistemology without a knowing subject*. Oxford: Oxford University Press.
- . (1963). *Conjectures and refutations: The growth of scientific knowledge*. London: Routledge & Kegan Paul.
- Rosenberg, H. (1962). *The tradition of the new*. London: Thames & Hudson.
- Singh, P. (2000). Local and official forms of symbolic control: An Australian case study of the pedagogic work of para-educational personnel. *International Journal of Inclusive Education*, 4 (1), 3–21.
- Young, M. (Ed.). (1971). *Knowledge and control: New directions for the sociology of education*. London: Collier Macmillan.