

# Language, Knowledge and Pedagogy

Functional Linguistic and  
Sociological Perspectives

Edited by Frances Christie and J.R. Martin



**Continuum**

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British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library.

Published in paperback 2008

ISBN: 978-1-8470-6572-8

Typeset by Kenneth Burnley, Wirral, Cheshire

Printed and bound in Great Britain by MPG Books, Bodmin, Cornwall

## 11 Taking stock: future directions in research in knowledge structure

*Frances Christie, J.R. Martin, Karl Maton and Johan Muller*

We have organized this closing stage of our conversation here as a kind of interview, based on an agenda of issues which we hope will inspire future research. The contributions are from the editors, Fran Christie and Jim Martin, along with Karl Maton and Joe Muller, who converse on a first name basis below.

### 1. Why talk?

**Jim:** As we signal early in this book, we've tried here to push along the negotiation of ideas initiated by Bernstein, Halliday and Hasan into a second generation of research. What is it that enables this conversation to continue, across disciplines which usually have very little to say to one another?

This is my own third intense engagement with Bernstein's thinking. The first stemmed from my concern with educational failure, and its relation to the coding orientations privileged or not by institutionalized learning; the second had to do with our struggle to dislodge the hegemonic position of progressive education as far as literacy teaching was concerned; this time round we're focusing on hierarchy and knowledge structure, and its implications for learner pathways in school.

It seems to me that while my functional linguistics colleagues and I are good at seeing how meaning is realized in texts, we're very much weaker at understanding how meaning is distributed in society. The ways Bernstein and his colleagues talk about this unfolds for me as a kind of revelation, and an essential underpinning for any kind of intervention we try to make with social justice in mind. It is hard to read across our respective knowledge structures; but without this reading we can't engineer socially significant changes to educational practice – we tend to waste our time.

**Fran:** My path into the issues here was different from Jim's. As a young school teacher I developed an interest in language in two senses: firstly, I found that traditional school grammar was not relevant for most of the children I taught; secondly, I became interested in the ways teachers and children used language in schools, and I observed that children performed in differential ways which needed explanation in some systematic way. It was through these interests that I turned to Halliday's SFL. It offered both a possible pedagogic grammar and a tool for the analysis of classroom talk. The interest in classroom talk led me to Bernstein's work on pedagogy, and thence to notions of knowledge structure.

Bernstein's unfinished work on a theory of knowledge structure provided a powerful response to the spread of progressivist and constructivist theories of curriculum, which had taken grip on much Western schooling by the end of the twentieth century. What enables us to keep talking is that the two disciplines provide a theoretical frame for addressing the nature of knowledge structure and of curriculum design in such a way that each informs the other.

**Joe:** The work of Halliday and SFL has until recently been a part of my consciousness only in a general sort of way. It is only since my colleagues and I have been working on rendering the knowledge structure of curricula visible, using Bernstein's theoretical tools, that I began to read the work of Fran Christie, Jim Martin and their colleagues seriously. I found to my surprise that they had made considerable progress in making visible the metalinguistic structure of disciplines and curricula. This enterprise, I found, is not only directly parallel to our work in curriculum but shares many of the same epistemological and political convictions. And this work makes clear not only that knowledge lives in texts, but *how*. The advance is considerable.

**Karl:** The question of what enables our conversation to continue is crucial. Contemporary social science is replete with calls for 'multidisciplinary', 'interdisciplinary', even 'post-disciplinary' work, but all too often these are realized as non-disciplinary monologues rather than fruitful cross-disciplinary dialogue. For me, three attributes of SFL and Bernstein sociology stand out here. First, both share what Bernstein described as an allegiance to a problem rather than to an approach. Intellectuals in both traditions are willing to look beyond the confines of their knowledge structures for conceptual tools that enable them to explain better that part of the world they focus on. Second, they both attempt to generate strong external languages of description, concepts that get to grips with problems in empirical research. This gives them the possibility of a shared purchase on the world, enabling dialogue. For a sociologist, SFL is extremely impressive for its technical armoury – its conceptual framework is elaborate, detailed and aims for clarity. Lastly, both theories downplay the significance of *who* is speaking and instead focus on the explanatory power of their approaches in addressing defined problems. The degree of detail SFL can analyse in texts is eye-opening to me, and working with linguists has made me more aware of the significance of language to my own interests. Whether we borrow from each other's conceptual toolkits or manage to integrate the two theories, or perhaps evolve from cross-fertilization towards integration, is something to be seen – it's an exciting prospect. Politically, what impresses me about both theories is that they start with questions rather than with solutions – what Isaiah Berlin called a culture of consequence, rather than one of commitment, recognizing it is not enough to be well intentioned, one also needs epistemologically powerful knowledge.

## 2. Horizontal and vertical discourse

### 2.1 *The borders of horizontal and vertical discourse*

**Jim:** One thing I remain puzzled about, not addressed in this book, is why Bernstein places crafts in vertical discourse. Since he characterizes these as having weak grammars and tacit transmission (showing and modelling proceeding doing), I expect he would include trades, hobbies, sport and recreation here too.

For various reasons, I'd prefer to treat these as horizontal discourses of a specialized kind. They're learned the same way as other horizontal discourses (via participation and ostensive definition), don't traditionally involve institutionalized learning and don't depend on grammatical metaphor to construct their expertise. What are the grounds for considering discourses of this kind 'vertical'? This is a very important educational issue since radical progressive and constructivist educators seem to believe that all vertical discourses have to be reconstructed as crafts in order for students, especially younger or less successful students, to really learn them.

**Fran:** Well, however we address the last issue that Jim raises here, I don't think it will be by revisiting what Bernstein said of the crafts in vertical discourse. The fundamental issue that faces us for pedagogy is: how do we make it possible for people to move from horizontal to vertical discourse? As a first step we need better teacher education, which, among other things, must be more upfront about addressing the pedagogic discourse of schooling, and more politically sensitive in the best sense. Thus, for example, it will pay more attention to difference (though not the rather vacuous notions of 'individual difference' with which educational psychologists have long had a field day!). It will acknowledge the different meaning codes that children act with when they come to school, and it will not, like much twentieth-century educational theory, subscribe to a rather naive notion of the idealized subject who is 'self-regulating', and who develops benignly, with little assistance from formal instruction (Bernstein 2000: 43). It will also, for reasons explored by both Joe and Karl (this volume), not disguise the essentially hierarchical nature of much school knowledge, making the different knower codes and knowledge codes more explicitly available to students. Here is a nice instance of the ways the two disciplines assist each other: the sociology of Bernstein, Muller and Maton provides a theoretical frame to identify the problem, while the SFL theory provides a language for addressing it.

**Joe:** Through a 2004 PhD study of a master-apprentice relation in cabinet making (a trade close to the carpentry-woodwork examples Bernstein often uses), Gamble illuminates the nature of a tacit knowledge base in craft. Her work shows that while the pedagogic outcome is an external performance that must meet explicit and exact criteria, this performance rests crucially on an internalized competence – or a capacity to visualize the relationship between parts and whole, in both space and time. Visualization stands in place of a non-articulable or ineffable ordering principle that acts as a 'glue' to make all the segments hang together. It is this, what Polanyi calls an ineffable relationship

between particulars jointly forming a whole, even though all the particulars are explicitly specifiable, that makes modelling the only possible transmission-acquisition practice. Visualization thus compensates for the lack of a clear syntax by allowing a formal principle of arrangement to be grasped in embodied form. This goes for the generation of novelty too: as Bernstein explained in an email, 'There will be a strong visualizing of the new. That may be why it is difficult to explain in words. You "see" the design rather than verbalize it.' This makes craft homologous to knowledge forms, which although far more strongly developed in terms of vertical and codified chains of abstraction, share a common feature in that they make the jump from 'token' to 'type' and thus generate meaning at a remove from the everyday. Bernstein acknowledged in an email the difficulty of talking about craft as having an 'internal grammar', and proposed the term 'condensed recontextualization' for the tacit technical principles of craft operation.

Constructivist interpretations of apprenticeship subsume the nature of the knowledge transmitted and the form of its transmission into the notion of 'shared or situated practice' that fits with post-modern versions of heterogeneous local knowledges not transferable to context-independent knowledge. In this version the notion of apprenticeship becomes so pervasive that there is nothing that is not apprenticeship. The term loses its meaning.

**Karl:** Fran's question is the key issue here: what enables the move into vertical discourse? Is it helped by recontextualizing existing disciplines to become more homologous to horizontal discourse? As Fran suggests, it requires making the codes underlying curriculum and knowledge structures more explicit – we need to work out ways of giving different kinds of pupils the keys to the code. Not all pupils arrive with the means to recognize or realize the code required to learn successfully. We need to work at creating forms of curriculum and pedagogy that provide pupils with what we possess, as quickly as possible.

Calls to change education to be more like everyday knowledge fail to understand the difference between horizontal and vertical discourses; in effect, they call for an end to education – they want to make the sacred profane. In the field of information technology education research, for example, a widely made argument currently is that children are 'digital natives' who arrive at school with immense amounts of knowledge. The argument that they already know how to use mobile phones, computers, ipods, etc. is then used to justify moves to peer-group learning and a reconstruction of the curriculum around everyday uses of technology. Such arguments can only be maintained so long as one does not have a theory of education or knowledge. It relies on negating differences between horizontal discourse and its forms of circulation, and vertical discourse and its specific forms of pedagogy. What research is beginning to show in this example is that such moves to 'authentic learning contexts' and peer-teaching tend to leave pupils where they began: with only context-dependent practical mastery rather than context-independent symbolic mastery. This is why recognizing the differences between horizontal and vertical discourse is crucial for enabling pupils to succeed in education. Here SFL and sociology have a potentially crucial role to play in enabling everyone to learn.

## 2.2 *Grammatical metaphor and vertical discourse*

**Jim:** From the perspective of functional linguistics, grammatical metaphor is the key resource used to construct the uncommon sense knowledge of vertical discourses and is characterized in functional linguistics as involving stratal tension, with grammar symbolizing alongside realizing semantics, and the meaning of the metaphor involving its grammatical reading, its semantic reading and the import of the tension between the two. The technicality of the functional linguistic account makes the concept a challenging one to explain to outsiders. Does anyone have any thoughts on strategies we might use to make this crucial understanding accessible to academics in other disciplines, and equally importantly for teachers and students of vertical discourses in secondary school?

**Fran:** This is a hard issue. We already know, from curriculum experience in Australia at least, that school teachers in discipline areas like the sciences are more disposed than their counterparts in the humanities and social sciences to engage with technical discourse, and this reflects their training in the university disciplines. There is, in other words, a relationship between the discourse of the university disciplines and their recontextualized forms in schools, although as Jim notes, under the impact of constructivist models of curriculum, some accounts of the secondary science curriculum have shed their commitment to a vertical discourse. The dilemma for those who espouse constructivist models of curriculum in all areas of schooling is that they actually look for and reward vertical discourse in their teaching and their assessment. This is probably the way into persuading academics and school teachers in the various areas of knowledge to have another look at what they are doing: identify instances of text types that teachers reward in their students' work, bring some of their linguistic features to consciousness, and turn this understanding into teaching practice.

**Karl:** Excellent question, Jim. The truth is no guarantee of belief. Two inter-related issues spring to mind here: appealing to the people we wish to help, and making our technical language accessible. When presenting papers or writing in sociology, education or cultural studies, I sometimes hear reactions to the relatively simple conceptual framework I employ, suggesting the world is more complex than the concepts suggest or implying the analysis is somehow cold and needs more warm bodies of knowers. My own strategy is to appeal to the rational, to the fact that in higher education we are still ostensibly concerned with understanding and explaining the world. I simply ask whether the analysis seems to make sense, could the concepts be of use in explaining issues of concern, and if not let's come up with something better. Similarly, as Fran says, one can appeal to the desire of teachers to help pupils learn. It's an obvious point but, in terms of making a technical language more accessible, we need different ways of talking to different audiences. In speaking across the languages of the horizontal knowledge structure of social science as a whole, one has to be a little multilingual, or at least appeal to the codes they operate with. For an audience of academics unused to the kind of language we use in the Bernstein tradition, I employ concepts such as 'knowledge code' or 'knower code' in a less explicitly defined way (such as 'knower approach' or simply 'emphasizes the

knower'), without using classification and framing or epistemic relation and social relation. However, this may be easier to do than for systemic linguists, because our language is less technical, or at least less extensive. I'm not saying we should work against the technicalization of our discourse by dumbing down or not using technical language at all, but simply highlighting that academics and teachers may be operating with different codes from our own, which may require different modes of expression.

### 3. Horizontal and hierarchical knowledge structures

#### 3.1 Verticality and grammaticality

**Jim:** Joe (this volume) develops Bernstein's notion of hierarchality with respect to what he calls grammaticality and verticality: 'grammaticality determines the capacity of a theory or a language to progress through worldly corroboration; verticality determines the capacity of a theory or language to progress integratively through explanatory sophistication. Together, we may say that these two criteria determine the capacity of a particular knowledge structure to progress.' Following on from the discussion of grammatical metaphor above, I'm wondering about the role of technicality in determining degrees of grammaticality and verticality. Technicality involves deploying grammatical metaphor to define terms and place them in precise relationships to one another. In my chapter (this volume) I gave examples from Bernstein (e.g. 'a *horizontal discourse* entails a set of strategies which are local, segmentally organised, context specific and dependent, for maximising encounters with persons and habitats'). Technical terms engendered by the process of definition subsume the knowledge created by the grammatical metaphors, but are not themselves metaphorical. In effect, technicality lightens up the discourse, making room for further grammatical metaphors to move the development of hierarchical knowledge along – and thus contribute to verticality. At the same time technical terms contribute to the development of an explicit network of precise concepts which can be tested against data – and thus contribute to grammaticality (i.e. the possibility of empirical disconfirmation). So, from a linguistic perspective, if grammatical metaphor is the watershed demarcating horizontal and vertical discourse, is distilling grammatical metaphor as technicality the key to establishing degrees of verticality and grammaticality?

**Fran:** Well yes, I think it is, though the whole issue needs a great deal of unpacking; this is one of the issues that Mary Macken-Horarik, Karl and I would like to pursue in the future with respect to subject English – surely one of the most difficult of all subjects in the curriculum in which to propose to teachers that there is a 'verticality' for them to explore! The difficulty about subject English is that the language is *both* the instrument of teaching and learning and the object of study. If English is to be ever understood as having 'verticality', this will be built around what we know of grammatical metaphor. Its emergence is a development of late childhood to adolescence (though many children with literacy difficulties don't master it), and its emergence occurs when students enter the

secondary school, with its different curriculum (though the nature of that curriculum is often subverted these days by constructivist notions).

Successful control of literacy for the secondary school, in which grammatical metaphor plays a crucial role, facilitates entry to 'uncommonsense' experience, because it allows the writer to be distanced from the immediate experience, achieving a degree of detachment from the event. It is precisely this capacity to draw back from experience and build abstraction – be that achieved in writing a valued story, in reviewing a novel or film, or in writing an expository text on some social issue – that subject English actually rewards, though for the most part, English teachers are not aware of this. In the first instance, English teachers need to develop an understanding of the technical terminology involved in understanding how the rewarded language is constructed, and then turn this into a metalanguage they can use in teaching and working with their students. Thus, they can make rather more visible than presently applies what it is that people do with language in order to build the kinds of texts and their knowledge that subject English rewards. An infinitely trickier issue, however, will involve taking the next step: how we take an understanding of the kinds of capacities in using written language laid bare in the first step just described, and develop a coherent and integrated account of the English curriculum, such that a degree of sequence and progression across the years of schooling is achieved. This is an issue that cries out for empirical research!

**Joe:** The issue of what would constitute technicality in horizontal knowledge structures has not been addressed. I would suspect that in disciplines that proliferate parallel languages, hence with weak subsumption, technicality is too infused with lexical metaphor to be stable, with the result that neophytes often don't know whether they are using the perhaps imperfectly technicalized terms correctly or not. This is why students often learn usage of such discourses not by learning the principles but by mimicking the discursive style of their teachers, and in so doing acquire the disciplinary 'gaze', a rather weak form of consciousness specialization.

**Karl:** This is one of the questions that I think this book really presses us on as the next stage for our thinking. To be speculative, if grammatical metaphor is a key to moving from horizontal to vertical discourse, then perhaps it is the form taken by the process this comprises that shapes differences between hierarchical and horizontal knowledge structures. As Joe is saying, in horizontal knowledge structures technicality is prolific but of a different order. Sociologists, for example, often 'pack up' (to be crude) a whole set of meanings, allusions, political attitudes, aptitudes and beliefs into particular terms, such as 'ideology', 'hegemony' or 'rhizomes'. There are extensive literatures on their definitions, but in common use such terms often signal the author's stance, with a high normative and political loading. One aspect of the difference may be that underlying grammatical metaphor in hierarchical knowledge structures is a *knowledge code* (see my paper, this volume), where its strongly bounded and controlled epistemic relation to the object and other knowledge helps regulate the form it takes, enabling subsumption and a stronger grammar; while, in

horizontal knowledge structures, technicalization may be shaped by *inter alia* a knower code, where this epistemic relation is weaker and more emphasis is placed on the social relation to dispositions, aptitudes, attitudes, etc. Though this gives the resulting language a weaker external grammar, the process (and the basis of legitimate insight) is still regulated, affecting the way it gets taught and the kinds of consciousness specialized.

### 3.2 SFL and verticality

**Jim:** Joe (this volume) characterizes verticality as having to do with ‘how theory develops. In hierarchical knowledge structures, it develops through integration, towards ever more integrative or general propositions, the trajectory of development of which lends hierarchical knowledge structures a unitary convergent shape.’ Bernstein uses the imagic metaphor of a triangle to symbolize this convergent apicality. Triangularity is a useful metaphor for considering the progress in canonical hierarchical knowledge structures such as physics and biology, and perhaps within some of the specialized languages of certain horizontal knowledge structures (those with proliferation inhibiting verticality in Joe’s terms). But I wonder how appropriate the triangle metaphor is for a polysystemic knowledge structure such as systemic functional linguistics, and whether the nature of its object of inquiry, language (and semiosis in general) has engendered its multiperspectival path of evolution (so we end up with a prism, not a pyramid).

Alongside hierarchy, in other words, I’d like to introduce here the notion of complementarity – the idea that we can’t always find ‘ever more integrative and general propositions’ but have to learn to live with (and enjoy) complementaries which taken together exhaust our understanding of the field but which cannot be reduced to a single apical insight. A familiar example of such a complementarity would be light having to be interpreted as both particle and field in physics (consider also Joe’s complementarity of verticality and grammaticality as co-determinants of knowledge structure progression). Is the image of ‘yin and yang’ in other words a possible reading or extension of ‘ever more integrative or general propositions’, alongside the image of the triangle?

**Joe:** I would regard complementaries as belonging to the same apical node, so to speak. It’s the supplementaries that are the competitors, and that logically can’t co-exist on the same apical level. That a proposition can be broken down into independent propositional clusters doesn’t mean that the clusters are conceptually incompatible. (Recall that it is of the essence of Derrida’s approach to deconstruction that there must always be a supplement that can’t be subsumed; for Bernstein, the more hierarchical the knowledge structure, the more intolerant of supplements it has to be.) From my point of view, complementarity and hierarchy are, well, complementary. On the other hand, Bernstein was at least a closet Hegelian, developing his thoughts by antitheses followed by syntheses. Perhaps this gets us closer to yin and yang?

**Karl:** I agree with Joe – complementarity and triangularity are not mutually exclusive. A question: are the complements (the systems) brought together at a

higher level of abstraction? If not, can they be? Why stop and declare the complements as the height of the ambition to climb?

### 3.3. *Science, social science and humanities*

**Jim:** Joe (this volume) proposes degrees of verticality as a criterion for consigning disciplines to hierarchical or horizontal knowledge structures, and within horizontal knowledge structures to constrained proliferation or unconstrained proliferation types. Degrees of grammaticality complement this with respect to the possibilities for worldly corroboration. Does this give us adequate resources for interpreting Bernstein's hierarchical and horizontal opposition as a cline, and satisfactorily positioning the knowledge structures of social science along it?

I remain puzzled by my own field of linguistics, for example, which presents itself as the science of language and as such strives for as much verticality and grammaticality as possible. This would seem to predict that the proliferation of new theories of language would be highly constrained and that decades of research would lead to integration. It might be argued however that proliferation of incommensurable theories is in fact rampant, and that what we in fact experience is a language proliferating horizontal structure par excellence. This may simply be because linguists can't agree on what language is, and without consensus on data verticality charges off in different directions, and grammaticality 'tests' these divergent models against radically different phenomena. This certainly inhibits co-operation within the discipline, and can cause confusion in the community as far as interventions and applications are concerned.

**Fran:** Most of Jim's last observations apply equally to English, as that is conceived in university departments of that name. All this suggests to me that we have a way to go in straightening out the degrees of verticality that are found/are possible in the hierarchical and horizontal knowledge structures in the social sciences and humanities. About this matter, some of Halliday's observations are worth noting. Thus, he is given to saying that the semiotic sciences in the twentieth century, including linguistics, stood in relation to the objects of their study close to where the natural sciences stood to their objects of study in the sixteenth century. The twenty-first century, he has said, is the century in which the semiotic sciences will come of age, and he is of the view that linguistics will be a pivotal discipline in the endeavour. The paradigms found in his linguistics will have relevance for the other social science disciplines, though that does not preclude adoption of other paradigms. He also has said that it is no accident that the natural sciences got their acts together rather earlier than the social sciences: the phenomena of the natural world are certainly hard to study, but those of the social world – ourselves in fact – are infinitely harder (Halliday 1993). Hence he would agree with a point Joe makes (this volume) that we still are clumsy about the ways we talk about the things we do talk about – we are still shaping the intellectual tools to build our sense of the social world.

**Joe:** I wonder whether SFL and theoretical linguistics, say, are simply two alternative languages of linguistics or whether, as is the case for sociology and anthropology, and human geography, these are disciplines which, though

taking the same broad class of objects, are more fairly treated as different though related disciplines? I would regard the range of approaches within sociolinguistics as different languages, for example; and the rest of us social scientists would dearly love to see a synthesis within that grouping. But I would not have thought that it could be easily achieved across all the 'hyphen-linguistics' in the textbook. But perhaps I mistake the integrative ambitions of SFL?

**Karl:** For me this highlights a couple of issues. First, a discipline is not merely its knowledge structure. A strong grammar and high degree of integration and subsumption are perhaps necessary but not sufficient conditions for avoiding proliferation of languages within the knowledge structure. One has also to contend with the tradition of the intellectual field as a social field of practice, where actors are invested in different approaches. This brings us back to the earlier question of speaking across segments and the issue of persuasion. Second, perhaps what is required is a metatheory, a theory which can determine which of the languages of linguists are more ontologically sound than others. This is perhaps one reason why SFL is looking to approaches such as that of Bernstein – to provide the basis of a means for understanding what is going on in linguistics as a whole, and to help construct a ruler for determining what approaches are more or less empirically adequate and for what phenonema. Bernstein did not focus very much on issues of ontology and epistemology, though there are approaches compatible with his and, I believe, with SFL that may offer further tools for such a task. In the sociology of education, for example, some of those working with Bernstein's approach are drawn towards what is called social realism or 'critical realism', a metatheory that underlabours other theories by providing a means of discussing and criteria for judging between theories on the basis of which are more or less empirically adequate. It is an 'underlabourer' because it describes what a theory would have to do, but not what that theory would say. This has had perhaps its biggest impact in economics, where mainstream economics has been strongly critiqued for being divorced from the real world and lacking fruitful empirical application, and the nature of theories required to make sense of the economic world are being outlined, underpinning the rise of what is being called 'post-autistic economics'.

### *3.4 SFL as metalanguage*

**Jim:** What does it mean to model discourse through the metalinguistic and metasemiotic prisms of SFL? As far as the professional discourse of knowledge production is concerned, this remains of course a linguistics exercise – and linguists need to keep in mind that this modelling involves recontextualization from one discipline to another, and that the amount of verticality a discipline deploys relative to linguistics will impact strongly on the nature of the recontextualization.

For pedagogic discourse, the impact of such modelling is even more challenging. For hierarchical knowledge structures like science, language educators seem to be suggesting that an additional language be introduced, in effect horizontalizing the school discipline. For horizontal knowledge structures like English or history, language educators have advocated introducing an addi-

tional language with far more verticality than the host discipline, in effect verticalizing it. I remain convinced that intervening across disciplines along these lines is the only way to make the knowledge structures schools were invented to transmit democratically available, across the range of coding orientations students bring with them. Is there any way of making these marriages of convenience more comfortable ones for the host and intervening disciplines?

**Joe:** What Fran and Mary have shown (this volume) is how the school subject English, by moving in Australia from what Bernstein called a performance pedagogy to a competence pedagogy, has had its knowledge structure rendered invisible. A central feature of competence modes is that they focus on the acquirer and her sensibilities, and it is the latter which are to be tutored and refined towards an end which is invisible to the acquirer. At the same time, hierarchy – that is, progression and progress – is rendered invisible, and the acquirers are stranded in the present tense of their own productions. The paper also shows that the only recourse for concerned pedagogues (like Mary and Fran) who wish to render verticality visible is to reconstruct a hierarchy in the metalanguage. For ideological reasons they are prevented from making verticality visible by retrieving a canon (making the knowledge structure visible), but, as they show, they can at least make it visible metalinguistically. The ‘knowledge’ option is blocked, but not the ‘metalinguistic’ option.

What this makes plain to me is that it is virtually impossible to speak about the knowledge structures of subjects in a competence mode because they are, in principle, invisible. To make them visible is to change the mode, which one can’t do unilaterally. Therein lies the difficulty in talking about English as a knowledge structure: under prevailing conditions, one literally can’t. Does that mean there is no verticality? No, it does not. Jim shows (this volume) that certain metalinguistic features are entailed by vertical discourse. Thus, by showing verticality in the metalanguage Fran and Mary show, by implication, that the knowledge structure must be vertical; it’s an inference, but a pretty well-founded one because, as Jim says, ‘if no grammatical metaphor then no verticality’, and vice versa. In this way, SFL allows one to circumvent the prevailing ideology, and becomes a powerful tool for intervention.

This clarifies for me the power of the term ‘verticality’; it applies both to the knowledge structure and to the metalanguage, and allows one to make inferences from one to the other.

It may be that all knowledges are virtual, and come to light only by conscious effort on the part of pedagogic recontextualizers. SFL researchers have done this in two ways: Jim Martin, Veel and others have reconstructed the metalinguistic structure of history and science, *inter alia*, from textbooks – that is, from already recontextualized texts, which they take for representative tokens of the knowledge structure. Fran and Mary have less to work with, and have reconstructed the metalinguistic structure of English almost from scratch. Their next step, I think, is to show that it holds up when measured by some or other equivalent representative token of the knowledge structure. This can’t be done through the current curriculum, because it is an invisible/competence pedagogy, hence radically under-stipulated. They might then try with some

older textbooks that do reference representative text types. Or from tokens from another national system; or even more powerfully, through a selection of tokens from a number of national curricular systems. All of this begs the larger question: what is the necessary and sufficient global archive of knowledge systems?

This brings to light the fact that knowledges do not exist naturally in a finished representational form. The object we call 'a knowledge' is virtual. The objects we have that we take for tokens of the knowledge are the product of various kinds of representational reconstruction. The SFL community has begun to construct metalinguistic representations, as we have seen. In logic, maths, some of the sciences, one finds propositional reconstructions – the order that one can see retrospectively (i.e. when doing pedagogic recontextualization) in terms of the necessary sequence of logical subsumption. There are probably other kinds of representational reconstruction too. None of these can sufficiently capture the entirety of the knowledge. Metalinguistic reconstruction; propositional reconstruction; pedagogical sequence reconstruction; there are probably other kinds as well.

This digression sheds light on why the question of knowledge arises in the light of the need for its pedagogic recontextualization. We can agree with Bernstein, and with Karl, that the knowledge structure is not curriculum structure, but it is only the question of curriculum structure that brings to light that there might be a knowledge structure worth bringing to light. For scholars at the cutting edge, the knowledge structure is old news not worth reporting on – until they put on their pedagogical caps and try to figure out how to teach the retrospectively accumulated store, as in: 'I know I stand on the shoulders of giants, but what exactly am I standing on?' To date, it is the SFL community that have given the most systematic answer.

**Fran:** Joe is right when he says Mary and I (this volume) have shown that in the unfolding of the English curriculum, there has been a decisive shift from performance to competence pedagogy. I am grateful to him for sharpening the discussion here, for we can at least say that the road is cleared to think about where we can go next (see my earlier comments about subject English above). I am excited by Joe's observation that 'all knowledges are virtual', and that they 'come to light only by conscious effort of the pedagogic recontextualizers'. It is indeed in coming to terms with issues of knowledge and curriculum structure in schools that we face not only the fact of recontextualization, but also – what is more difficult – what it is that is recontextualized anyway. If we confront the issue, 'what is the knowledge we seek to recontextualize for the purposes of school learning?', we are driven – as this book reveals – to revisit quite a lot of history (Muller, Moore, O'Halloran, Wignell, Christie and Macken-Horarik). Thus, echoing some of Joe's remarks to me by email, in revisiting history we 'pay regard to the retrospect and the prospect: where the knowledge has come from and where it is going'. This, Joe further states, 'illuminates the *communal* learning path traversed which in turn is the guarantor for the *individual* learning path that neophytes must traverse'. Does this – I ask myself – mean that the various models of English that Mary and I identify as all to some extent

jostling for position in the English curriculum – mean we have to (re)accommodate them all in whatever model we adopt anew? I think not, but following what Karl and Joe (joint chapter, this volume) argue, we should be able to establish which past theories of subject English (if any) can be shown to share some commensurable elements, making possible the articulation of a ‘more vertical’ model than presently applies.

**Karl:** I’m glad Fran and Mary’s chapter has come up, as it’s a real step forward to take an aspect of Bernstein’s discussion of knowledge structures (the way in which they progress through integration and subsumption of past knowledge or through segmental addition) and homologically transfer that to the study of curriculum and learning. This forms the basis of an insightful exploration of the different principles that have been underlying the recontextualization of knowledge into educational knowledge (to become subject English), and the consequences of these different principles for the form taken by transmission/acquisition in the subject area and the educational experiences of learners. As Joe rightly points out, the competence mode of subject English is associated with rendering invisible the principles underlying the form taken by the curriculum structure, if not the educational knowledge itself. Instead of a visible structure of educational knowledge we get a series of ideal knowers as the basis of recontextualization. In short, the educational knowledge structure is made less visible and the educational knower structure becomes the key. This knower code renders integrative and progressive learning of *knowledge* problematic.

As Fran and Joe discuss above, the key question is: what is to be done? Two things stand out for me. First the basis of the hierarchy in the curriculum as it currently stands must be rendered visible. There are, after all, means of judging success or failure in the subject and thus a basis of hierarchy. To not highlight this is to leave the knower code tacit, making it an extremely difficult position to get to grips with or change – it is all the more powerful for not being brought out of the shadows and into the light. Second, the alternative basis of a knowledge code can be articulated and made visible. This is what I think Fran and Mary are doing with SFL. As Joe puts it, they’re not doing it directly – the subject’s powerful knower code makes this difficult to do in terms of the knowledge structure. It’s an interesting move to do this via the metalanguage.

A question raised for me by all this is how the nature of English as a knowledge structure (not subject English but rather its field of knowledge production) shapes the form taken by the humanities and social sciences. If, as Kay O’Halloran shows so well in this volume, mathematics helps enable the integrative and subsumptive nature of science, does English help enable the segmental, proliferative nature of humanities and social science? Is English the key subject area for enabling more epistemologically powerful knowledge in other subjects that use it as the principal medium of expression? If so, then SFL has an extremely powerful role to play as an underlabourer, determining what is and is not the best means of articulating knowledge claims.

### 3.5 Values

**Jim:** From an SFL point of view the discussion of knowledge structure in Bernstein's work seems very ideational. But we know from work on appraisal in SFL that the way in which concepts are valued by members of a discipline are every bit as important as what these concepts are and how they are arranged – including consideration of how research is appreciated, how researchers are judged and how researchers and their apprentices are positioned emotionally. Karl's work on knower structures and Rob Moore's on judgements (this volume) is part of this picture – the kind of identity researchers and learners construct for themselves is an essential feature of disciplinarity. How might our discussion of knowledge structure be expanded to bring a concern with the disciplinarity of feeling into the picture?

**Fran:** I think the very notion of pedagogic subject positioning following Bernstein has consequences for a view of knower codes and knowledge codes as carrying values. It is in my view a relatively easy extension of both theories here to view all areas of the curriculum as involving the adoption of certain value positions. The study I did a few years ago (2002) of classroom discourse did not use appraisal theory, though with hindsight I see that it could have done.

**Joe:** Bernstein didn't speak directly about disciplinary identities, but in the last volume he does discuss both pedagogic identities and local (cultural) identities. As one might expect, for him, identities are the product of symbolic formation and they relate to the 'social base' within which the identity is embedded. It is not clear to me how this might dovetail with appraisal theory or ideation more generally, since for Bernstein identities of either variety are not self-constructed.

**Karl:** The notion of knower structures brings into the picture something that was tacit but already there in Bernstein's account of knowledge structures. I should emphasize that it's not the sole basis or equivalent of talking about identities. Basil showed how identity is shaped by different forms of knowledge structures and curriculum structures in various ways. So identity is already a part of the picture. But whenever talking about those structures of knowledge or curriculum that render knowledge less visible, then it was not clear what the basis of identity is. 'Knower structures' simply brings out what was in the shadows. There is always both a knowledge structure and a knower structure, where the latter simply refers to the ways in which knowing subjects are arranged by the discipline. For example, with physics one could say that alongside its 'explicit, coherent, systematically principled and hierarchical organisation of knowledge' (Bernstein 1996: 172) – its hierarchical knowledge structure – it is also characterized by a series of strongly bounded knowers, each with their own specialized modes of being and acting. That is to say, physicists represent a series of segmented knowers in terms of their (non-scientific) 'gaze' – it matters less who you are in terms of your social background, for example; they can be very different people, so long as they use the procedures of physics. Conversely, disciplines with horizontal knowledge or curriculum structures, such as that of English explored by Fran and Mary, may be characterized by a hierarchical

knower structure – the basis is who you are, your aptitudes, dispositions, attitudes, etc. based on your biological, social or cultural background.

If we don't get to grips with the knower structure, and especially the role it can play in humanities and social science subjects, then we'll find it difficult to understand why the existing state of affairs exerts such a powerful grip over many people. If they're not focused primarily on the knowledge structure or they render knowledge less visible, then what is it that they're focusing on? This is important not only for being able to understand what it is that different disciplines do, but also for reaching out to other disciplines, being able to see what is underlying their ways of working and so be able to speak across languages. It may help explain why it is difficult to get some academics and teachers to engage in discussion of ideas as ideas. The hierarchical knower structure of English, for example, has been the basis of criticisms of canons (see Moore, this volume) of the 'patriarchal', 'bourgeois', etc. basis of knowledge claims. It's also what makes many approaches so appealing – they seem to speak to the experiences of people, and they're viewed as warmer, more caring and sharing, more obviously human than cold, inhuman technicality. I have been recently working with Sue Hood on using appraisal theory alongside these concepts and it's becoming clear to me just how well SFL can get to grips with these issues.

### *3.6 SFL and hierarchical knowledge*

**Joe:** I have at times, perhaps mistakenly, discerned something of an apologetic tone in SFL discussions of 'abstraction' and 'technicalization', as if these terms were somehow politically incorrect. Yet everything in the theory tells us that discursive power is made available only by this route. The first part of the question is I suppose this: does this apologetic-ness stem from the neo-Marxist belief that abstraction and power are intrinsically tools of domination? Or is it rather allied to a more post-modern spirit of de-differentiation, as in the post-modern David Bohm's objection to an analytic that 'divides things into separate entities' thus distorting 'undivided wholeness', and his wish to denominalize scientific language ('which gives the basic role to the verb rather than the noun')? All of this I take to be quoted approvingly by Halliday (p. 108) in Halliday and Martin (1993). It is true that there are signs of a lingering progressivism in early Bernstein too (my students fight every year as to whether he is actually for integrated codes and against collection codes). But this is by and large gone by mid-period Bernstein, and by late Bernstein his colours are clear. Is this embarrassment about dealing with the necessary instruments of power something we should talk about?

**Fran:** I don't see that Joe's interpretation is justified. This discussion is very Hallidayan in character, in that, as often, he is interested in the relationship between language and the social construction of experience and the claims sometimes made that language can't always cope with the pressures of change, and of the meanings people want to make. It all points to another issue: is there another reality that language somehow only partly captures? I don't find anything particularly 'approving' about the ways Halliday quotes Bohm. In fact, he writes of Bohm and others that they may have overlooked one thing: namely

that 'you do not need to keep engineering a language in order to change it; it will change anyway – because that is the only way it can persist' (Halliday, *ibid.*).

**Jim:** I take Halliday's point as being that whereas language offers both more nominal (attic) and more verbal (doric) construals of experience, science has by and large adopted the attic mode, and has become, now and again, self-conscious about the limitations of this bias. Halliday is suggesting, *contra* Bohm, that it's not language which is at fault, but the language of science, and that language has the resources to serve the doric mode if scientists wish to take them up. This of course begs the question of whether science in the doric mode would recognize itself as science. I suspect not, since it is not at all clear how a hierarchical knowledge structure can be developed verbally, without the resources of grammatical metaphor developed in the attic mode.

I hope I have never expressed a distaste for abstraction and technicality in my own writing, since I have always seen myself as mounting a defence of such in the face of progressivism, constructivism, the plain English movement and so on. As Maton points out (this volume) hierarchical knowledge structures can be a great deal more democratic than horizontal ones, since what you know is privileged over who you are. I have always found the non-technical discourses of the various languages in horizontal knowledge structures far more elitist and insidiously dominant than discourses featuring verticality.

**Joe:** A follow-on to Jim: Halliday in the chapter just quoted goes on to speculate that Bohm might be heralding 'a new type of order' where 'communication' becomes of the essence – and perhaps linguistics can then become the new queen of the sciences ('Their coat-tailing days are over'). There is a similar kind of aspiration expressed at the end of Jim's chapter. Do your ambitions for linguistics rest on a similar foundation to Halliday's, Jim? That is, do you think that the future will be a de-differentiating one? Or do you think SFL will have to stiffen its spine somewhat (become a hierarchical knowledge structure) before it can challenge for pole position?

**Fran:** SFL theory is often heard as being very imperialistic in that it is said to want to overtake everything else in its claims to offer ultimate explanations and/or ultimate accounts of experience. Well, that is a risk I suppose, but it misses an important point. Halliday and Bernstein were bold and ambitious in their scholarly visions, for both wanted to develop tools with which to explain the nature of social life. Both might well be accused of being arrogant because of the boldness of their visions – they did want to do nothing less than explain social experience! I think the very adventurousness of what they both aspired to do is part of their appeal, but also part of the intellectual power they both unleashed in the world. Theirs was a noble endeavour, and one that remains relevant in the twenty-first century.

**Jim:** The basic propaganda here as far as SFL is concerned is to argue that linguistics should not be modelling itself as the science of language, since science builds knowledge structures responsible for describing physical and

biological systems – and social semiotic systems are more complicated than these, having evolved out of them (their emergent complexity is of a different order). This means that the theories we build for social semiosis will have to be different in kind from those we've built before, and we can expect them to have more than enough power to interpret metalinguistically and metasemiotically what science has been saying about physical and biological systems all along. If this metasemiotic purchase makes linguistics the queen of sciences, so be it, long may she reign. But let me stress that this purchase will not make her a scientist, because her object of inquiry is discourse, not material reality per se.

I don't think linguistics has to stiffen her spine and become more of a hierarchical knowledge structure to achieve this, because becoming more like science as we know it is not going to do the trick. As I said above, we need prisms not pyramids, and so we need a theory that embraces complementarity alongside hierarchy. If complementarity as I presented it above can be construed as a dimension of verticality, as Joe suggests, then, OK, yes, linguistics does need to stiffen its spine. Currently, the main technological problem standing in the way is that we can't process data fast enough and deeply enough to foster the grammaticality we need to move on. In short, our computers can't do discourse analysis; they can barely do the kind of functional grammatical analysis we need in fact. So we can't see very well what we are looking at. This should change in another generation or so and then we'll begin to see which languages of linguistics have the right stuff.

**Fran:** I have not much to add here, other than to say that we are getting better at seeing what we are looking at. The next generation will no doubt do better still, but we are on the way.

**Karl:** One thing I'd like to add is to echo Fran's admiration for the boldness of the enterprise of SFL and Bernstein's sociology. In the contemporary climate of social science such boldness is easily denigrated as arrogance or imperialism. F.R. Leavis (someone often accused of all kinds of arrogance, not always mistakenly) once said that the only way to escape misrepresentation is never to commit oneself to any critical judgement that makes an impact – that is, never say *anything*. What began as a much needed dose of modesty became a form of intellectual cowardice. To always caveat everything as only being from our own knower perspective, as if we should only share our own individual story, leaves us where we began in terms of understanding the world. This has become an all too common strategy in at least my own disciplines of Education and Sociology. The image that always springs to my mind is of a tower of knowledge. The aspirations of SFL, it seems to me, are akin to a grand undertaking such as building a cathedral, involving many thousands of workers, taking many decades, where the original architect and most of those who laboured will not live to see its completion. In contrast, many other approaches are akin to the relatively rapid creation of suburban housing in a new development, each building being constructed quickly, requiring near-constant maintenance, with new members of the workforce moving rapidly to begin building the next house. Instead of a cathedral or tower, building upwards and aiming to last, this represents the

spread horizontally across the intellectual landscape of comparatively low-level, largely identical buildings. Hierarchical knowledge structures are intellectual creation as the building of towers; horizontal knowledge structures are intellectual creation as suburban sprawl. As John Ruskin put it, when we build let us think that we build for ever. One concern I would have though, concerning understanding knowledge and curriculum structures, is the possibility of linguistic reductionism, that is seeing these objects solely as comprising their linguistic features. Knowledge is more than the sum of its linguistic parts. Exactly how, and what form the interface between our approaches will take, are exciting issues to explore.

### *3.7 The frontiers of knowledge*

**Jim:** One final question I'd like to pose has to do with discourses that don't get mentioned in our discussions of knowledge structure. In our early 1990s work on uncommon sense, one such discourse we tried to tackle was the discourse of administration. This is full of grammatical metaphor, but in the service of proposals (directives, rules and regulations) rather than propositions (statements about the world). Are we suggesting that a procedural discourse of this kind is not a knowledge structure?

Another discourse we considered was the discourse of technology, which bridges between science and control of our material world. This turned out to be more like horizontal discourse than I expected, although knowledge in science industry clearly bridges across the horizontal and vertical discourse divide. What do we do about bridging discourses of this kind?

Perhaps my general point here has to do with what we do about discourses evolving in the service of other discourses. Kay O'Halloran (this volume) shows the crucial role played by mathematics for the grammaticality of science. This interplay in turn engenders the technology that manages material resources. Reasoning along similar lines, we might see the language of administration as a technology that manages people, as informed by humanities and social science.

In short then, what qualifies a discourse as our object of inquiry? Why are everyday conversation and traditional disciplinary knowledge in, and things like the discourse of technology and bureaucracy out?

**Fran:** The answer to this is surely social: it is a matter of what gains recognition and respect. I suspect that many of the discourses that evolve in the service of other discourses are often the most invisible (and like women's work, often least respected!). Their very invisibility is a source of their strength. In Bernstein's sense of the word 'pedagogy', the discourses involved in the service of science or of administration are profoundly important as sites for pedagogic practice. SFL theorists might well re-open this whole matter in the future.

**Joe:** Reading through Jim's comment above, it struck me that nowhere in the book do we discuss a key distinction Bernstein makes between knowledge singulars and knowledge regions. Our entire discussion has been assuming that all knowledges take the form of singulars, when they evidently don't. A region is an ensemble of singulars combined sometimes with segments of everyday or

procedural knowledge. Architecture is one example of a region. The various technical or technological discourses would be the same. Public administration, as a subject taught at university is also a region. What then is the discourse of administration? Bernstein's answer would be to ask: is there integration at the level of meaning – in which case it is a vertical discourse – or is integration segmental? I would say that it is probably segmental, which makes it horizontal discourse. However, it borrows a number of features from its recontextualized parent public administration, so that it exhibits features of a region. And so on. In other words, either we can deal with administration, and all types of discourse for that matter, with Bernstein's tools, or the theory is lacking. There can't be a question of leaving out this or that class of discourse.

What the question highlights for me is that although we may say: if no grammatical metaphor then no verticality, we can't necessarily say: if grammatical metaphor then it must be a vertical discourse.

**Karl:** As Fran and Joe suggest, I don't think the focus of our discussions has been to negate other discourses, such as administration and technology, as not being worthy of study. But Jim is right to highlight that these must be brought into the scope of the discussion. As the concepts are applied to such discourses they will undoubtedly be pushed to their limits, necessitating theoretical development, and raising further questions for us all to consider. The dialogue between the theoretical and the empirical will continue, as I hope will that between systemics and sociology. This, we could say, is not the beginning of the end, but simply the end of a new beginning.

## References

- Bernstein, B. (2000), *Pedagogy, Symbolic Control and Identity* (rev. edn). Lanham and Oxford: Rowman & Littlefield.
- Gamble, J. (2004), 'Tacit Knowledge in Craft Pedagogy: A Sociological Analysis'. Unpublished PhD thesis, University of Cape Town, Cape Town.
- Halliday, M.A.K. (1993), 'Language in a Changing World'. *Occasional Paper 13*, Applied Linguistics Association of Australia.
- Halliday, M.A.K. and Martin, J.R. (1993), *Writing Science: Literacy and Discursive Power* (Critical Perspectives on Literacy and Education). London: Falmer.