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*Pedagogy, Pathology and Ideology: the production, transmission and reproduction of medical discourse.*

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# **Pathology, Pedagogy and Ideology: the production, transmission and reproduction of medical discourse**

## **Abstract**

The discourse of any institutional field is composed of a variety of different genres. In medical discourse, three prevalent genres are the research paper, the doctor-patient interview and the textbook. This paper describes how the textual, interpersonal and ideational metafunctions of each genre operate in relation to their institutional context of situation (Halliday, 1978; 1985). As a medical text is delocated and relocated from one institutional context to another (Bernstein, 1990, 1996), transformations take place with regard to: the ideational options of tense, transitivity and process, the interpersonal options of modality and speaker's comment, and its rhetorical organisation (Halliday, 1978; 1985). These transformations constitute the codes of the pedagogic device. These operate as a symbol system having two ideological effects (Giddens, 1979). First, certain medical texts are privileged over others as 'doxic' texts (Bourdieu, 1991); and secondly, subjects are variably positioned in the professional field depending on their command of the codes of the genres relating to different institutional sites.

**Keywords:** medical discourse; pedagogic discourse; pedagogic device; discourse analysis; codes; Bernstein

## 1. Introduction

Since the first wave of research into institutional discourse in the 1970s, few fields of discourse have attracted so much attention as that of medicine. However, this begs the question, "What do we mean when we talk about discourse?" Discourse in medicine, as in any other field, is itself variably constructed from two theoretical perspectives (Pennycook, 1994): sociological enquiry which regards discourse as incorporating a wide ranging set of social and institutional practices, and applied linguistics which views discourse as being restricted to a narrower set of communicative and textual practices. Wherever a study falls on this spectrum, it can also be informed to varying degrees by philosophy and critical theory. A central concern of both philosophical (Foucault, 1973, Jewson, 1976) and sociological (Armstrong, 1983, 1984; Bloor, 1976; Shilling, 1993; Silverman and Bloor, 1990; West, 1976) approaches has been with the ways in which the patient's identity is constituted within medical discourse and how medical discourse functions as a form of social control (Zola, 1972). The site in which the patient's identity is most immediately realised is when the patient is positioned *qua* patient through the transmission of medical knowledge. This paper will take the paradigmatic site for the transmission of medical knowledge as being the clinic, and the paradigmatic text of that site as being the medical interview. A central concern of both sociological and linguistic enquiry into the transmission of medical knowledge has been with the realisation of asymmetries of power between the doctor and the patient (Coulthard and Ashby, 1975; Bloor, 1975; Bloor and Horobin, 1975; Strong, 1979), and with features such as professional control (Hughes, 1982), social distance (Henzl, 1989) and doctor-patient dialogue (Frankel, 1984). MacClean (1989) also provides an overview of linguistic research on the medical interview in order to inform the training of non-native English speaking doctors.

Sociological research into medical discourse has also focused on the way in which the production of medical knowledge itself is socially constructed, classically at the paradigmatic site of the biological research laboratory (Latour and Woolgar, 1979). Applied linguistics research has also reflected social constructivism (Myers, 1990a) and has described how very specific subgenres of medical discourse function in this respect: e.g. research proposals (Myers, 1985) and review articles (Myers, 1990b). This paper will take the paradigmatic text for the production of medical knowledge as being the medical research paper. Certain rhetorical and linguistic features in the general field of scientific research writing which will inform this study have been classically described by John Swales (1981, 1986, 1990; Swales and Najjar, 1987). Applied linguistics has also focused on certain sociolinguistic, rhetorical and linguistic features of biomedical research writing for pedagogical reasons: e.g. the globalisation of English (Maher, 1986a), teaching English for medical purposes (Maher, 1986b, 1989), information structure (Bruce, 1984), discussion sections (Belanger, 1982; Hopkins & Dudley-Evans, 1988), author's comment (Adams Smith, 1984; 1987), modality (Vihla, 1999) and verb forms (Windgard, 1981).

From the above review, it can be seen that to date the story of medical discourse has been to say the least diverse, if not fragmentary. This lays the narrative open to two criticisms. First it has proved difficult to maintain a balance between the two levels of analysis - social and textual. Many of the studies which have taken the perspective of social theory could be criticised for not paying enough attention to specific features of medical texts; while more discourse analytical approaches could be criticised for not paying enough attention to the social and institutional context in which medical texts

circulate. Secondly, most textual studies have tended to focus on single genres of medical discourse. Thus, there have been few studies that have explored the relationship between genres or between genres and their institutional contexts. This has restricted our understanding of the ways in which different genres of medical text function collectively to constitute one discursive field; and the ways in which the discursive field of medicine operates (alongside other powerful discursive fields such as education, law, religion, finance and media) to create, maintain and reproduce certain social effects which we will argue (after Giddens, 1979) have an ideological function.

This paper will analyse the textual relationship between three genres of medical discourse - research paper, textbook and doctor-patient interview; and the way in which they relate to their institutional sites of production. The study will compare four samples of each type of the paradigmatic text produced at each site at the level of genre and linguistic category. Underlying this study is the assumption (after Habermas, 1972; Giddens 1979; Bourdieu, 1991) that linguistic resources can be mobilised to construct a symbol system which has ideological effects. Two ideological effects of this symbol system are proposed in this study: the authorisation of certain texts as "doxic" texts (Bourdieu, 1991); and the legitimisation of the "sectional interests of different hegemonic groups" (Giddens, 1979: 188). In short, we will examine how "the relations of communication par excellence - linguistic exchanges - are also relations of symbolic power in which the power relations between speakers or their respective groups are actualised". In this way, they feed back into a more universal "existing order of domination" (Bourdieu, 1991: 37).

I will start by using Basil Bernstein's (1990; 1996) model of pedagogic discourse in order to map out the institutional structures which are articulated on medical discourse. I will then analyse medical discourse at two levels (Bhatia, 1993: 5-13). The first level of analysis focuses on the rhetorical structure of the different genres of text produced at different sites. Here, we will consider three different genres of medical discourse: the medical research paper, the medical textbook and the medical interview. The second level focuses on the grammatical relations of the text, in particular: process, transitivity, tense (Halliday, 1985) and 'speaker's comment' (Adam Smith, 1984). I will argue that these grammatical relations of institutional discourse function symbolically to create and maintain relations of power (relations between agents) and truth (relations between texts), both within and between the sites of the production, reproduction and transmission of medical discourse. I want to focus in particular upon the way in which these grammatical relations are structured differently in different types of text. This will enable us to understand more precisely the rules which govern the creation of certain types of text (Searle, 1969), the ways in which they function ideologically, and the nature of their ideological effects.

## **2. Pedagogic discourse**

Bernstein's papers on pedagogic discourse (1990; 1996) lay out a structural model of the discourse of education, which he suggests can also be applied to other discursive fields (Bernstein 1990: 171) . In the different versions of this paper, Bernstein proposes three sets of conditions which govern pedagogic discourse: distributive rules, recontextualising rules and evaluative rules. Of these, only the distributive rules and recontextualising rules are directly relevant for the purposes of this study.

## 2. 1 Distributive rules.

Bernstein identifies (after Durkheim, 1982) two orders of meaning within society. These have been variously described as the thinkable and the unthinkable, the material and the transcendent, the esoteric and the mundane. The social groups which gain access to the unthinkable/transcendent/esoteric order of meaning occupy a more powerful position than those groups which do not:

...the function of the distributive rules is to regulate the relationships between power, social groups, forms of consciousness and practice. Distributive rules specialise forms of knowledge, forms of consciousness and forms of practice to social groups. Distributive rules distribute forms of consciousness through distributing different forms of knowledge (Bernstein, 1996: 180).

In modern societies the right to 'think the unthinkable' is specialised to certain professions and to certain fractions within professions: to professors of research rather than doctors, to consultants rather than GPs, to doctors rather than to nurses. Access to one order of meaning rather than the other is highly regulated. Bernstein argues that there are certain rules which govern this asymmetric distribution of two fundamental orders of meanings.

One of the most powerful mechanisms for this regulation resides in the potential of language itself (Halliday, 1985). It is language potential which enables certain social groups rather than others to be able to 'think the unthinkable':

...elaborated codes are the media for thinking the "unthinkable", the "impossible", because the meanings they give rise to go beyond local space, time, context and embed and relate the latter to transcendental space, time, context (Bernstein, 1990: 182).

Bernstein's distinction between the elaborated and restricted codes has been controversial with respect to its function in schools (Bernstein, 1971). However, it is perhaps less problematic to suggest that a distinction between these two different types of code might help explain the uneven distribution of access to certain texts which positions the subject



as professional rather than client, or as belonging to a certain fraction within a professional group.

## 2.2 Recontextualizing Rules.

Recontextualising rules are the rules which govern the appropriation of a text from the discourse produced at one institutional site by the discourse produced at a different institutional site. For example, the findings of a medical research paper become summarised within a medical textbook; and during the interview between a doctor and his patient, the consultant or GP will articulate knowledge and procedures which he/she has acquired from medical papers and textbooks.

Bernstein identifies two different discourses which operate within a discursive field. One is a 'discourse of competence' which transmits certain skills. An example of this would be a pamphlet which describes a simple first aid procedure. Bernstein calls this 'instructional discourse'. The other is a discourse which creates specialised order, relations and identity. This is called 'regulative discourse' (Bernstein, 1990: 183) An example of this would be the inclusion of a description of this first aid procedure within a medical textbook. The primary purpose of regulative discourse is not so much to enable its reader to carry out the procedure, but to inculcate them in the knowledge that will one day enable them to 'think the unthinkable' alongside the other members of the social group on which this privilege has been conferred.

According to Bernstein, the principle which governs the embedding of an instructional discourse, a discourse of competence, into a regulative discourse is the pedagogic device. According to the principle of the pedagogic device, regulative discourse operates so that the discourse of social order always dominates the discourse of competence:

Pedagogic discourse, then, is less a discourse and more a principle for appropriating discourses from the field of production and subordinating them to a different principle of organisation and

relation. In this process the original discourse passes through ideological screens as it becomes its new form, pedagogic discourse (Bernstein, 1996: 117).

The process of recontextualization, then, means that a text is stripped of its original context and repositioned according to the principles of the pedagogic device. These principles at once reflect and reconstitute the dominant principles of society. From this we can infer that the process of recontextualization is an ideological process in which "unmediated discourse are transformed into mediated, virtual or imaginary discourses"(Bernstein, 1996: 47).

### 2.3 Sites for the production, reproduction and recontextualisation of medical discourse

Bernstein identifies three sites, or 'contexts', in which the production, reproduction and transmission of discourse takes place in the field of education. For the purposes of this study, I am adapting these to the field of medical discourse.

*2.3.1 Primary context: production of medical discourse.* The production, or 'primary contextualization', of discourse within the field of medicine is located in two paradigmatic sites: the research laboratory where experimental research is undertaken, and the computer terminal where epidemiological analysis takes place. Primary contextualization "refers to the process whereby 'new' ideas are selectively created, modified, or changed"(Bernstein, 1990: 191). The paradigmatic text of primary contextualisation is the medical research paper. It creates the 'intellectual field' of medical epistemology, where knowledge is produced rather than reproduced.

*2.3.2. Secondary context: reproduction of medical discourse.* This is where the selective reproduction of medical discourse takes place (after Bernstein, 1990: 192). Within the

field of medical discourse there are two sites of 'secondary contextualisation': the GP's surgery, clinic or health centre, and the hospital. Here, the paradigmatic text is the medical interview.

*2.2.3 Recontextualizing context: relocation of medical discourse.* The third reordering within the field of medical discourse "is concerned with the movement of texts from the primary context of discursive production to the secondary context of discursive reproduction". This is what Bernstein calls the "recontextualizing context"(Bernstein, 1990: 192; 1996: 116-117). Within this context are a number of sub-fields which include State-run departments such as the Department of Health as well as local health authorities. The site which this paper is most interested in is what Bernstein calls the pedagogic recontextualizing field, the main site of which is the medical school. Here the paradigmatic text is the medical textbook.

It is the medical textbook which represents the selection, reproduction and condensing of medical knowledge from the primary context of the production of knowledge. As a text from the primary context is appropriated by the recontextualizing field, it undergoes a process of transformation. "The form of this transformation is regulated by a principle of *decontextualizing*. This process ensures that the text is no longer the same text". In this respect, the medical textbook, modifies primary texts by "selection, simplification, condensation and elaboration"(Bernstein, 1990: 193). Bernstein maintains that this regulation of texts by the decontextualizing principle is governed in turn by ideological principles which relate back to the dominant principles of society, largely under the aegis of the relevant departments of the State.

### **3. Code, context and meaning**

The output of the pedagogic device is a code through which the dominant principles of society are realised in the discourse of a particular field. In keeping with the model above, a code "is the principle of semiotic organization governing the choice of meanings by a speaker and their interpretation by the hearer" Codes are not part of the linguistic system, but they operate as part of a 'higher' order as "types of social semiotic, or symbolic orders of meaning generated by the social system" (Halliday, 1978: 111).

A code, then is a particular rule-governed example of behaviour which is selected from the whole range of actions that an individual can perform in a given situation. It is the behaviour potential of that situation. When a certain choice of behaviour potential, or code, is expressed in language, it becomes a realisation of the meaning potential of the language. A statement, or utterance, is an action which draws on the potential of language for the "linguistic realisation of the behaviour potential" within the lexical and grammatical system (Halliday 1973: 51).

As is well known, within a systemic-functional model of language the structure of any speech act can be interpreted semiotically as "a complex of three dimensions: the ongoing social activity, the role relationships involved, and the symbolic or rhetorical channel." (Halliday, 1978: 111). These are referred to respectively as field, tenor and mode. They are realised by three discrete modes of meaning, or 'metafunctions', within the text: the ideational, the interpersonal and the textual. In order to understand the way in which the code of the pedagogic device is realised within medical discourse at a linguistic level, and how particular aspects of the grammar of a text function in order to

have an ideological effect, our analysis of medical texts will use an analytical framework based on the linguistic

categories of systemic-functional grammar (Halliday, 1971; 1985).

#### **4. Investigation**

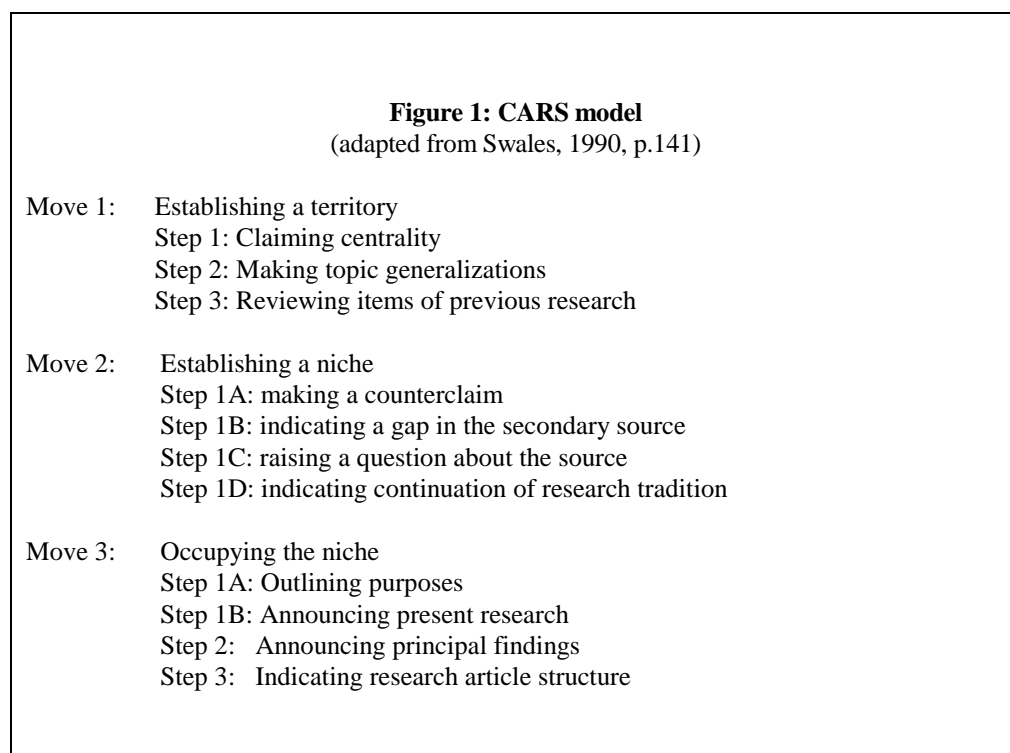
Four samples of each type of medical text produced at the three different institutional sites (described above) were analysed. Four medical research papers were extracted from the British Medical Journal (BMJ): two examples of epidemiological surveys - Text A (Verity et al, 1992) and Text B (European Study group on Heterosexual Transmission of HIV, 1992); and two examples of clinical trials - Text C (Greer et al, 1992) and Text D (Muijen et al, 1992). Four transcriptions of medical interviews (Texts E-H) were drawn from the database of an ESCR funded study into the ways in which epilepsy was diagnosed in children. Four extracts (Texts I-L) from medical textbooks were selected to provide a cross-section of the different subject areas which are defined within the medical curriculum: pharmacology - Text I (Rang & Dale, 1995); biochemistry - Text J (Stryer, 1995); physiology - Text K, (Guyton and Hall, 1996); and anatomy - Text L (Guyton and Hall, 1996). The lengths of the samples from medical textbooks were chosen to approximate the same length as the sampled medical research papers. Samples of medical textbooks ranged from 398-530 lines with a mean length of 472.25 lines.

#### **5. Mode**

##### *4.1 Field of production: medical research paper*

The medical research paper follows a format common to all the empirical sciences, consisting of four sections: Introduction, Methods, Results and Discussion. These four sections perform

different purposes. The Introduction and Discussion sections are the zones where the writer(s) negotiate with their peers for ‘research space’ (Swales,1990: 140) for their findings. Within the framework of the Methods and Results section, argumentation is elided and the writer appears to assume that he/she can take understanding of a range shared meanings for granted. Within the scope of this paper, we will limit ourselves to describing the Introduction and Methods sections of our research papers as their rhetorical features illustrate most clearly the difference between negotiated and non-negotiated parts of the papers.



The negotiation for the research space that takes place in the Introduction sections has classically been described by John Swales (1990). Swales describes a sequence of three moves with alternate steps that the writer of a research paper can take (Fig. 1). From our corpus of four Introductions, it was possible to identify an initial opening Move 1, with the different steps outlined in Swales’s model. However, some variability crept in with respect to the ordering of the different Steps. Move 1, Step 1 did not always come before Move 1, Step 2. This lead us to view Swales's Step 1 and Step 2 of Move 1 not necessarily

as sequential steps, but rather as alternate versions of the same step which might occur singly or in any order.

While the first two steps in Move 1 can be seen as being pretty much optional for the medical research writer, some sort of Step 3 literature review is obligatory. Typical discursive features of Move 1, Step 3 are the citation of the author (which may be either in the text or in parenthesis); the choice of verb to refer to the previous literature (Swales, 1990: 150) either from a class which implies support of the proposition in question (e.g. show, demonstrate, establish) or from a class which is altogether more tentative in its commitment (suggest, propose, examine, etc.); and choice of reference to the literature tense (Past, Present Perfect, or Present Simple). According to Oster (1981) the more 'presentness' that is implied by tense, the more current validity is attributed to the secondary research being referred to.

Move 2 of Swales's (1990) model consists of just one step, which can be selected out of four mutually exclusive alternatives (Fig. 1). The first three steps are usually indicated by an adversative sentence connector (*however, nevertheless, yet, unfortunately, but, etc.*) in which

the author will produce some sort of modulated statement regarding the relative limitations of their knowledge claims. Some form of realisation of Move 2 was evident in all four of our texts, although Text D had a highly condensed introductory section which actually conflated its Move 2 with the Move 1, Step 3 literature review.

The third move (Move 3) found in research article Introductions is when the research article writer indicates that he or she is about to offer up his or her own research in order



to fill the gap defined in the previous move. According to Swales (1990), it is virtually obligatory to carry out Step 1, in which the writer either indicates the main purpose of his or her research;

or describes what he or she takes to be the main features of their project. There are two linguistic signals for this move, that were all found across our sample texts: deixis, e.g. *this, the present, we, here, now* (Swales, 1990: 159); and use of the Present tense combined with a 'collapsed' sentence structure, e.g. *This paper reports* rather than *We reported in this paper* (Swales, 1981: 69).

*Methods.* Within the Methods section, the meaning of the text becomes very much less explicit as the reader works his/her way into the core of the paper. A considerable degree of shared meaning is assumed between writer and reader, and much of the meaning of the text is left implicit. The assumption of shared meaning is suggested by certainly regularities and elisions in the text, as listed in Figure 2.

**Fig. 2: Features of Methods Section**

- Tense: past - uniformity of temporal reference
- Mood: passive - agent largely elided by the choice of mood.
- Restricted verb choice (e.g. from 2 epidemiological research reports):  
*analyse, compare, base, compute, make, use, affect and to be*
- Elision of detailed descriptions of the method used entailed in an experiment
- Lack of anaphoric reference in the text
- Lack of 'linear' coherence
- Cohesion through collocational chains, e.g.:  
*Subscale scores...baseline values...randomization...Confidence values...t-distribution...p values...computed...non-parametric Mann-Whitney test...p values...confidence intervals...multiple comparisons...analysis of covariance (Text B)*

Thus, in the introduction to the research article, we can see that the research writer marshals the resources of the symbolic system expressed by the rhetorical structures of

article introductions in order to negotiate a space within a his field of research within the medical sciences. By doing this, writer is attempting to accumulate cultural capital in his/her competition for a dominant position within the social space (Bourdieu, 1991: 229-231) of the medical sciences. The production of heterodox texts is a characteristic feature of the primary context of medical discourse.

*4.2 Field of reproduction: medical interview.* Of our four sample texts, two texts (Texts E and F) are first outpatient appointments at a Bristol clinic for childhood epilepsy, while the other two (Texts G and H) are examples of follow-up appointments. In all four cases, the interviews take place between three parties: the doctor, the young patient who is accompanied by a parent who acts as a kind of 'broker' and consequently does most of the talking on the child's behalf.

The canonical model in British applied linguistics for the analysis of spoken discourse in institutional discourse is that established by the work of John Sinclair (1975) and Malcolm Coulthard (1985). Coulthard and Ashby (1975; 1976) applied this framework to the analysis of medical interviews. According to Coulthard and Ashby (1976) the medical interview can be subdivided into a number of hierarchical levels. At the highest level there is what Coulthard and Ashby call a transaction. A transaction "is a series of sequences or exchanges concerned with a single topic" (Coulthard and Ashby, 1976: 86). Conventionally, there are 5 transactions within the medical interview: a greeting, the verbal examination, the physical examination, the disposal and the closing salutations.

Each transaction within the medical interview is marked by a boundary exchange (Ashby and Coulthard, 1976). Each boundary exchange is likely to be indicated by some

combination of a frame and a focus. Essentially, the frame signals that a new transaction is about to begin. In our four texts, the frame that was most often used was simply *right*. The focus draws the interlocutor's attention to the business that is going to take place in the forthcoming transaction. In our sample the focus was most often a directive consisting of a practical command to the patient as an indication that the doctor was either about to change the tack of his questioning, or that he was going to 'recycle' some of his old ground, e.g. (Text F):

*Doctor (frame): Right.*

*(focus): You wait outside will you E - we'll arrange the X-rays*

The next level of the medical interview is the exchange. The form of the exchange is not unique to institutional discourse, as it is the basic unit of all verbal interaction (Coulthard and Ashby, 1976). Coulthard and Ashby (1976) identify three functions of the exchange which are also common to all forms of discourse: eliciting, directing, and informing. Unsurprisingly, the eliciting exchange proved to be by far the most common form of exchange within our sample. The eliciting exchange is most commonly initiated by a question and can have between two to five moves. Our sample yielded mostly two move exchanges. This form of exchange is especially terse at the opening of the first outpatient interviews, e.g. from Text F:

*Doctor (elicit): And was it a normal delivery?*

*Patient (reply): Forceps.*

The next most common form of exchange in our medical interviews is the directive. This had three main purposes: to mark a boundary in the medical consultation (see above), as an instruction during the physical examination, and to make comments while

issuing a prescription or sick note at the close of the interview. The least commonly found form of exchange in our medical interviews is the informative. Our interviews indicate that what informative exchanges there were generally functioned to offer information about medical procedures. Crucially, the informative move was rarely used to offer information about the medical condition or the diagnosis of the patient (West, 1976: 27-28).

*4.3 Field of recontextualization: medical textbook.* The genre which operates in the field of recontextualization of medical discourse is the textbook. This genre is only marked by its *lack* of rhetorical features. The medical textbook is a unitary, "doxic" text (Bourdieu & Passeron, 1977: 164 ff) apparently stripped bare of explicit rhetorical features. The very elision of explicit rhetorical devices within the medical textbook implies that what it contains is self-evident and its claims to validity can be unequivocally accepted. In this respect, the knowledge which is presented by the genre of the medical textbook can be said to represent the 'common sense' (Geertz, 1983) knowledge of the field of medical discourse. We shall look in more detail at the realisation of field and tenor within the medical textbook in sections 6 and 7.

## **6. Tenor**

Halliday describes speaker's comment as "one among the syntactic devices which together make up the interpersonal or social role component in language"(in Kress, 1976: 198). Particularly in the medical research paper, speaker's comment has been identified as a key realisation of the interpersonal metafunction (Adam Smith, 1984). Here, speaker's comment articulates the intervention of the medical research writer at varying degrees of explicitness with regard to the negotiation of new knowledge. Lexical

items which articulate speaker's comment can be categorised into three main groups. First, verbal modality can be realised by auxiliary verbs and choice of reporting verbs to indicate the writer's view of the thesis being proposed (e.g. *suggest* instead of *show*). Non-verbal modality can be realised by a range of adverbs (e.g. *frankly*, *generally*, *wisely*, *fortunately*, *officially*, *reasonably*, *personally*, *incidentally*, *doubtfully*, etc.), reporting nouns (e.g. *speculation* instead of *evidence*) and evaluative adjectives (e.g. *major* instead of *slight*). Finally, the research writer can use words and phrases to which Adams-Smith gives the label attitudinal markers: "these could not be codified as modals, either verbal or nonverbal, but they clearly functioned to indicate the writer's attitude towards the thesis" (Adams-Smith, 1984: 27).

*5.1 Field of production: medical research article.* In our sample of four medical research articles, predictably, by far the highest proportion of speaker's comment falls in the Introduction and Discussion sections (Table 1). Both of these appeared on average to have an equal ratio of speaker's comment, which means it occurs almost once every two lines. Both these sections contrast starkly with the much more factual Methods section in which on average the author intrudes into the text only about every sixteenth line. Table 1 demonstrates how this authorial intervention brackets the more objective component of the research paper, giving rise to "the abrupt, clear-cut breaks between the objective detached reporting found in the Methods/Results section and the more subjective author involvement in the discussion or comment section" (Adams Smith, 1984: 27). In this way, the presence or absence of speaker's comment is one of the defining features of the variation in style that makes the medical research paper a particularly hybrid text.

**Table 1**

**Incidence and mean ratio per line of speaker's comment  
by section of medical research article**

	Speaker's Comment	Lines	Ratio
Abstract	26	153	1: 5.88
Intro	57	113	1: 1.98
Methods	23	366	1:15.91
Results	129	598	1: 4.64
Discussion	259	514	1: 1.98
Overall	494	1744	1: 3.53

*Medical Interview.* Texts E and F, the first outpatient interviews, have more or less identical numbers of clauses (Table 2). As one might expect, the two follow-up interviews (Texts G and H) are slightly shorter. Although these do not display such a noticeable equivalence in length, it should be noted that Text H was a 'dysfunctional' interview with a coda at the close in which the parent challenges the authority of the doctor. This would account for its slightly extended length compared with Text G.

**Table 2  
Incidence and ratio per clause of speaker's comment:  
numbers of occurrences in medical interviews**

	Speaker's Comment	Clauses	Ratio
Text E	55	131	1:2.38
Text F	40	134	1:3.35
Text G	50	106	1:2.12
Text H	41	114	1:2.78
Total	186	485	1:2.66

In the medical interview, the doctor made some kind of evaluative comment on average once every 2.38 to 3.35 clauses. Unsurprisingly, compared with the other two genres, this does represent the type of text with the highest distribution of speaker's comment, comparable only with the Introduction and Discussion sections of the research paper.

*5.3 Field of recontextualisation: medical textbook.* We have already noted that textbooks are much more homogeneous texts than research papers. It was therefore possible to take each textbook sample as a separate entity in order to compare texts across the four different medical sub-disciplines of Pharmacology, Biochemistry, Physiology and Anatomy. Averaged overall, the textbook writer used some form of evaluative marker almost every five lines (Table 3). This was perhaps not as markedly different to the research articles as one might have initially expected. However, we can see that there is considerable difference in the distribution of speaker's comment across textbooks in different sub-disciplines in medicine. Our anatomy textbook had about a third less speaker's comment proportionate to the Pharmacology textbook. One possible reason for this might be that Pharmacology and Biochemistry are relatively recent sub-disciplines compared with Physiology, and particular, Anatomy. It may be that even when writing a textbook, authors in these more recent sub-disciplines feel more tentative about the veracity of their subject matter compared with longer established areas of medical science.

**Table 3**  
**Incidence and ratio per line of speaker's comment**  
**by textbook type**

	Speaker's Comment	Lines	Ratio
Pharmacology	173	530	1: 3.0
Biochemistry	93	406	1: 4.37

Physiology	71	556	1: 7.83
Anatomy	42	398	1: 9.48
<hr/>			
Total	379	1890	1: 4.98
<hr/>			

## 7. Field

We will go on to look at the ideational metafunction of medical discourse. We will look in turn at features of tense, transitivity and process type across our three genres, and will consider in particular the transformation that takes places as texts move from the primary field of production to the tertiary field of recontextualisation.

### 6.1 Tense

Three issues have emerged in the debate over the use of tenses in scientific writing: whether choice of tense is governed by general grammatical rules relating to time; whether it is subject more to nontemporal constraints relating to the higher level rhetorical function of the text; or whether it is related more to value judgments on the part of the interlocutor. Oster (1981) focuses on the evaluative choice of tense to express the author's point of view vis-à-vis past literature. She maintains with reference to the research paper that:

- The Present Perfect tense is used to claim *generality* about past literature. The Past Tense is used to claim *nongenerality* about past literature;
- The Present Perfect tense is used to indicate the continued discussion of some of the information in the sentence in which the Present Perfect tense occurs;
- The Past tense is used when it refers to quantitative results of past literature that are *non-supportive* of some aspects of the work described in the technical article. The Present tense is used when it refers to the quantitative results of past literature that are



*supportive or non-relevant*. The Present tense is also used to *refer* to past literature, rather than to *discuss* it.

The most striking feature in Table 4 is that by far and away the majority of the tenses in the research article - about three quarters - are in some form of past tense, while almost all the verbs in our textbooks are in the Present tense. In fact in our medical textbooks there are hardly any other tenses represented other than the Past. If we accept Oster's (1981) thesis that tense choice can reflect the degree of certainty with which a particular statement is written, it would appear that a transformation is taking place as medical research papers move from the field of production to the field of recontextualisation. In the medical research papers, the past tense is being used to problematize a particular statement or set of statements, particularly in the Introduction and Discussion sections, as the writer negotiates his/her way into the research space (after Swales, 1990). In the medical textbook, the present tense is now being used to claim generality with regard to the statement which is being made.

**Table 4**  
**Percentage distribution of 4 major tense types**  
**in medical discourse by context and genre**

<i>Context</i>	<i>Pres</i>	<i>Past</i>	<i>Perf</i>	<i>Fut</i>	<i>Genre</i>
Production	22.5	73.4	3.6	0.5	Research Article
Recontextualizing	94.1	4.1	1.7	0.2	Textbook
Reproduction	54.0	31.3	8.0	6.7	Interview

The implication of this is that the medical textbook has the authority to describe the immanent transparency of the body - without recourse to either intertextual (previous research) or intratextual reference (its own 'methods'). The pedagogic device operates

within medical discourse to delocate the discourse of the research article that is produced within the primary context and relocate it in the tertiary context within a different form of text. One way in which this delocation and relocation takes place is through a shift in the expression of relations of both time and space as realized by the modulation of past tenses into present. The temporal implication of this is that a statement is not true only at the moment in which a particular piece of research is carried out, but has now attained the status of veracity within the discourse community of medical scientists.

The distribution of tenses in the medical interview is also strikingly different from the other two genres. Proportionately, our four interviews had on average twice as many verbs in the Present tense than the research articles, but about half as many as the textbooks. However, around a third of the verbs were also in the Past, again contrasting markedly with both the other genres. While still a small number - less than a tenth of the total - the interview still had most instances of Perfect and Future tenses when compared with the other two genres.

I would suggest that the medical interview uses tense in more diverse ways than the previous two genres, largely by virtue of the fact that it is an oral rather than a written genre. Certainly, there will be instances where the doctor or consultant uses the present tense to state medical facts and the past tense to refer to previous research. However, I would suggest that these are in the minority. In the medical interview the Present tense more generally reflects the immediacy of the doctor-patient encounter. Examples of these would be when the doctor either elicits a statement from the patient about his/her existing condition or offers comment upon it; or when he/she utters a directive relating either to the physical examination or to the prescription or form of treatment. However,

the other tenses which are represented in the medical interview are used most often in the more conventional way as a reference to time. The instances of Past, Perfect and Future tense will generally be used to refer to events relating to the patient's condition which are situated in the distant past, the recent past or in future time.

## *6.2 Process type*

Halliday (1985) identifies six different types of process expressed in the verb group, which were found in all three modalities of medical text: relational, material, mental, behavioural, existential, and verbal. The most common process types found across three different types of medical text were the relational and material (Table 5 over). Relational processes constituted by far the largest and most consistent single category no marked variation between different genres. This bears out Halliday's observation that "... in many registers - various kinds of scientific writing, for example - relational processes tend to be the most frequent and perhaps the most informative of the primary clause types" (Halliday, 1985: 123-124). The implication of this is that we could expect all medical discourse, and possibly most discourse within the natural sciences, to contain 40-45 per cent of relational processes within the clause irrespective of genre. Slightly over 40% of textbook samples were material processes, around twice as many as the research reports and interview texts. This can again possibly be explained in terms of the verbal recontextualization of medical texts. For the medical textbook is most concerned with brute facts, the 'what' of 'what things do' rather than the 'how' of 'how things are perceived to do'. Thus there is a corresponding increase in the unquestioning materiality of the representation of biomedical processes in the recontextualized text which correlates with its positioning as a 'doxic' text.

Generally speaking, just as the linguistic expression of material processes increases across these different genres, so the expression of other process types decreases. This is particularly true again when a text moves from the field of production to the field of recontextualisation. The overall frequency of mental processes drops by about two fifths as the research paper is recontextualized within the framework of the medical textbook; and the expression in the text of overt verbal processes drops by about a half. This is in keeping with the elision of explicit discussion of the sources of the assertions made within the medical textbook. Furthermore, existential processes and in particular behavioural processes are virtually eliminated from the recontextualized text. Thus the selection of verbal process types within the language of the medical textbook contributes towards the construction of the unquestionable veracity of the recontextualized text. The text within the recontextualizing field exhibits a greater materiality or (after Geertz, 1983) 'concreteness' of process type within its clauses.

**Table 5**  
**Percentage distribution of process types**  
**in 3 types of medical text**

<i>Process</i>	<i>RA</i>	<i>Textbook</i>	<i>Interview</i>
Relational	43.3	45.7	44.5
Material	27.2	40.8	20.6
Mental	12.4	7.1	20.2
Verbal	12.7	5.6	2.9
Behavioural	1.2	0.1	5.5
Existential	3.2	0.8	6.3

In the field of reproduction (medical interview) the representation of material processes was lower than that in the field of production (research article), with a corresponding increase in the representation of the mental, behavioural and existential processes. The

representation of verbal processes was, however, lower than any other mode of discourse. The higher incidence of mental and behavioural processes could well relate to the ways in which the patient articulates the signs and symptoms of his/her condition, while the relatively high proportion of existential processes could again relate to the immediacy of the medical interview.

### 6.3 Transitivity

Table 6 represents the proportional distribution of Halliday's four categories of transitivity within each of the three genres of medical discourse: effective(E), middle(M), effective passive(EP) and medio-passive(MP). Here, from the perspective of an ergative interpretation (Halliday, 1985: 146) the incidence of the middle voice(M) is predominant at just over half, with the effective active(E) and the effective passive(EP) constituting about 15%-20% respectively; and the middle-passive making up the smallest category.

**Table 6**  
**Percentage distribution of modes of transitivity**  
**across 3 genres of medical discourse**

Transitivity		RA	Textbook	Interview
Effective	19.0	29.2	19.7	
Middle		53.2	48.8	78.2
Passive		14.7	14.7	1.5
Medio-passive		13.1	7.4	0.6

The main shift in transitivity that takes place as a text moves from the primary field to the recontextualizing field is an increase of about a fifth in the incidence of effective active(E) verbs. This can be attributed to the representation of the logical relations of cause-and-effect within pedagogic scientific discourse. These operate both at a semantic

level, i.e. the attribution of empirically observable reasons for pathological changes, and at a linguistic level where there about a third of all the verbs in each text (remembering also that well over a third represent material processes) have a clearly defined logical link between an Actor and Goal. This increase in the number of effective verbs is offset by a corresponding decrease in verbs in the medical textbook which are in the middle voice(M), and in particular in the middle passive(MP). However, the incidence of the effective passive in the textbook texts is exactly the same as that in our sample of medical research papers.

The oral context of the reproduction of medical discourse provides yet another contrast with the two written modalities of medical discourse. By far and away the dominant mode of transitivity in the medical interview (Table 6) is the middle voice, which represents more than three quarters of all forms of transitivity within the medical interview. This bears out Halliday's claim that the pattern of transitivity laid down by the middle voice is becoming very much the dominant mode of transitivity in contemporary English, especially in oral discourse (1985: 146). The other significant point about the overall distribution of voice in the medical interview as opposed to the written modes is the hiatus in the use of the passive voice. The immediacy of the clinical context means that the language does not lend itself to realisation in either mode of the passive voice.

## **Conclusion**

This paper has looked at ways in which Bernstein's (1990; 1996) concept of the pedagogic device is realised through different modalities of medical discourse. We have explored how in the field of medicine the device operates through the creation and

mobilisation of certain codes. Access to different codes contribute towards the positioning of subjects as members of lay or professional groups, or as members of fractions within a particular professional group. Features of the codes have been described using categories of Halliday's (1985) systemic-functional grammar, under the superordinate features of field, tenor and mode. Under field, the delocation and relocation of relations of time and space are realized by the modulation of the ideational resources of tense; also, the transformation of the relations of process and action are realized by a modulation of the ideational resources of transitivity and voice. Under tenor, the contextual shifts that take place in the interpersonal resources of medical discourse, are realised by verbal and non-verbal features of modality and attitudinal markers. Under mode, features of rhetorical organisation symbolically indicate the privileging of the truth claims of the unitary "doxa" of the medical textbook, (which operates in the tertiary context of recontextualization) over the heterodox textual resources of the medical research article (which operate within the primary context of production) and the dialogic encounter between the professional and lay discourses of illness (which operates in the secondary context of reproduction).

The symbolic function of pedagogic discourse resides in the meaning potential of certain coding values of syntax and rhetoric. These features of text realise a symbolic surplus of meaning which enables access to certain texts to authorize the utterances of their producers or users in particular social contexts. In this way we would maintain that pedagogic texts (in medicine as in education) do operate as a symbol-system which has the ideological effect of the creation and maintenance of the interests of certain hegemonic groups. Further research might fruitfully investigate a range of genres within

other fields of institutional discourse from the perspective of the articulatory mechanisms of the pedagogic device.

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