A LITERATURE SURVEY OF GENRE-BASED APPROACHES TO EST READING
AND WRITING FROM 1960 TO 2002

by

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I declare that A LITERATURE SURVEY OF GENRE-BASED APPROACHES TO 
EST READING AND WRITING FROM 1960 TO 2002 is my own work and that 
all the sources that I have used or quoted have been indicated and acknowledged 
by means of complete references.

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SIGNATURE       DATE
(Mr A Harold)
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Abstract

The aim of this dissertation is to present a critical literature review and conceptual analysis of selected genre-based research materials from 1960-2002 on the theoretical and pedagogical issues involved in teaching reading and writing to students of English for Science and Technology. Methodologically, the comparative data-analysis is aimed at identifying commonalities and differences between the various data texts in terms of their definition, orientations, and pedagogical uses. Based on the analyses, suggestions are made for the additional practical applications of the approaches within a learning-centred, communicative framework. The main conclusion is that genre analysis is a fusion of textual-contextual orientations on a structural-linguistic, social-ethnographic cline, which involves simultaneous microlinguistic and macrorhetorical, social-ethnographic processing. Owing to the scope of genre analysis, it is suggested that a considerably expanded, in-depth investigation is needed to clarify the dynamic tensions between and within the individual genre-based approaches, as well as their pedagogical applications.
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CHAPTER 1
INTRODUCTION

1. Aim

The aim of this qualitative literature survey of genre-based approaches to English for Science and Technology (EST) reading and writing from 1962-2002 is threefold—that is, to provide a:

- critical overview of selected genre-based research materials on the theoretical and pedagogical issues involved in teaching reading and writing to EST students;

- conceptual analysis of the key terms used in the research literature and to clarify the linkages between them; and to give

- practical examples of how the insights gleaned from the various approaches surveyed in this dissertation can be implemented communicatively.

2. Research framework

The principal theoretical framework of this dissertation is a combination of two clearly defined and accepted research designs as outlined in Mouton (2004: 175-180): a conceptual analysis and a critical literature survey. As Mouton explains, a conceptual analysis determines the meaning of concepts and clarifies the linkages between them by means of classification and categorisation. A literature survey, by contrast, provides a useful overview and a better understanding of a certain discipline by analysing the salient trends and issues through inductive reasoning. It follows that a successful
survey is not merely a chronological presentation of the research contributions but is shaped and driven by a conceptual schema or framework (as set out in a research proposal, for example) which determines and constrains the scope and methodology of the overview. In addition to providing a conceptual analysis of the relevant key concepts, this dissertation aims to fulfil the requirements of a critical literature survey by analysing and explicating the essential issues, indicating linkages, and identifying inconsistencies or divergences in and between the main trends and paradigms.

2.1 Critical literature survey

In the following paragraphs, the theoretical, descriptive, and applied aspects of this critical literature survey will be outlined briefly. In Chapter 2, they will be discussed in more detail.

2.1.1 Theoretical aspect

The basic theoretical framework of this dissertation is first of all that of a critical literature survey of the progression of what is broadly termed genre-based materials for EST from 1962 to 2002. The reason for the period chosen for review is that the theoretical orientations and paradigms exhibited in the sample are roughly consistent with the overall development in language teaching from structural-linguistic to communicative methodology in general. Indeed, the actual materials surveyed can be classified into four main approaches: Systemic Functional Linguistics (hereafter SFL)\(^1\), Grammatical-

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\(^1\) As the research papers surveyed in this dissertation deal with the functional aspects of SFL, the systemic part of this approach will not be discussed. The basic distinction between the two parts is explained in Chapter 3, Section 1.1.
rhetorical Analysis (hereafter GRA), Discourse-based Approaches (hereafter DBA), and Genre-based Approaches (hereafter GBA).

Since this is also the historical background against which the divergence in the use of the central constructs referred to previously can be understood, it is hoped that this critical overview will help to clarify what initially appears to be a confusing range of diverse research perspectives on a complex pedagogical area of teaching and learning.

### 2.1.2 Descriptive aspect

The survey aims to describe the different orientations to or paradigms underlying EST text construction (writing) and ‘deconstruction’ or interpretation (reading). It will be seen that, on a cline ranging from structural-linguistic to communicative approaches, each of these approaches has its distinctive focus but cannot be divorced from the others. This is borne out by, for example, the overlaps between SFL and GRA. Similarly, it will be seen that a comprehensive genre-based approach to EST is a synthesis of top-down (contextual) and bottom-up (linguistic) methods of analysis and not simply the application of only one or two of the approaches in dealing with a specific text.

### 2.1.3 Applied aspect

The applied aim of the study is to make general recommendations for adopting a learning-centred approach to teaching English to students of EST within a communicative teaching methodology of EST. As will be explained in more detail in chapter 6, a learning-centred approach foregrounds the
learning experience in the teaching and learning situation; and a communicative teaching methodology seeks to develop simultaneously the linguistic, sociolinguistic, discourse, and strategic competences of the learner within a flexible and interactive teaching context in which the teacher generally facilitates rather than teaches.

2.2 Conceptual analysis

One of the difficulties confronting the reader of the research papers produced during the period under review is that of understanding the often imprecise and contradictory uses of the salient concepts of discourse and genre-analysis. The principal difficulty arises from the fact that the terms denote complex processes, are fluid, and are subject to historical reconceptualisation.

The second aim of this survey—and of a conceptual analysis per se, as Mouton (2004: 175-176) explains— is therefore to clarify and elaborate the various dimensions of meaning of the concepts and their interconnections. While this will be done in context, it should be emphasised that the shifting boundaries of GBA to reading and writing make accurate classification elusive. Chapter 2 will provide a more detailed discussion of the various problems associated with the uses of the two salient concepts referred to in the preceding paragraph.

It is hoped that the contextual analysis of the principal concepts used in the research literature will help to clarify them and lead to a better understanding of GBA to EST reading and writing.

3. Rationale for the study
Of the four core skills that lower-level foreign students\(^2\) in particular have to acquire, academic writing appears to be the most time-consuming, frustrating and difficult to master and teach within the often unrealistic time frames set by many EST-oriented departments and courses, which often allocate only six hours for writing instruction a week. The blank page becomes the battleground where difficult content, schematic structure and complex linguistic skills have to be integrated. Often this has to happen without the benefit of appropriate models or sufficient practice in translating theoretical sentence grammar into coherent and cohesive grammatical discourse, using semantic markers (transition signals) and context-appropriate syntax within a rhetorically structured context. Indeed, the major challenge facing the teacher is to integrate schematic structure and lexicogrammar communicatively, often in the absence of appropriate learning-centred materials.

Indeed, at some tertiary institutions in non-English-speaking countries, the problem for lower-level (pre-intermediate and intermediate) students is sometimes further compounded by sociolinguistically and culturally inappropriate commercial materials\(^3\). On the one hand, the texts are often

\(^2\) At most universities in the Arabian Gulf, new students are required to sit a Placement Test to establish their proficiency level in English and are then placed in either levels 2-4 (foundation or pre-intermediate) or in levels 5-6 (intermediate and advanced intermediate) of the Intensive English Language Programme. In the foundation courses, general English is taught while more content-based instruction is provided in levels 5-6. In these latter levels, each of which takes two months or 160 hours of compulsory classroom attendance to complete, the students are broadly streamed according to their future field of studies. These non-credit bearing courses are intended to prepare the students for the more specialised English Credit Programmes which run in conjunction with the discipline-specific instruction provided by the various colleges (for example, Science, Engineering, and English). Only students who pass the Placement Test with distinction are allowed to sit a Challenge Test to determine whether they should be allowed to proceed to the Credit courses directly.

\(^3\) In the absence of suitable, course-specific EST materials, some English for Science programmes in the Arabian Gulf would prescribe a text such as *Introduction to Academic Writing* by L. Oshima and A. Hogue (published by Addison Wesley Longman, 1997), which is perceived to be America-centric, allows contracted forms such as “he’s” and “won’t”, and uses colloquialisms such as “yell” and “scared”. In addition, this text contains essays on
produced for maximum gain by publishing industries targeting large, diverse
groups of students across cultures and course-specific objectives. On the
other hand, the labour-intensive in-house materials, while being more
content- and course-specific, are often inferior in that they have been
produced under the pressure of time constraints by teachers who are often
relatively untrained in materials-writing.\footnote{Teachers on the Intensive Programmes teach an average of twenty hours a week, have to be available for 10 hours of consultation, and attend to considerable marking loads and administration duties. On average, release time for materials production ranges from only 6-10 hours a week.} In the writing component, where
the content-based in-house materials are too formulaic or inferior, Levels 5
and 6 Intensive Programmes (see footnote 2) are sometimes obliged to
prescribe general academic-writing materials instead. This means that,
instead of learning to write a content-based description of a structure, process,
and graph, the students have to write, for example, general opinion, cause-
and-effect, and comparison-contrast essays.

To compound matters, on first scrutiny, much of the relevant primary and
secondary research literature on English for Specific Purposes (ESP)/English
for Science and Technology (EST ) writing and reading produced over the
past twenty years appears confusing because of terminological inexactitudes
and an apparent lack of clearly demarcated paradigms or orientations. That
such orientations or approaches do, however, exist will be made clear in the
historical overview given in Chapter 2. It is therefore not surprising that, in
particular, genre-based approaches to academic writing in the field of EST are
often confused with the prescriptive teaching and slavish copying of various
text types instead of a comprehensive approach to producing an appropriate
form of discourse.

... euthanasia and the medical uses of marijuana, which are unacceptable practices in Islamic
societies.
Indeed, the very label “ESP” would seem to have given rise to a number of misconceptions and criticisms concerning ESP as it has been argued that ESP (and by implication its sub-field EST) as a discipline lacks validity, is too narrow in focus, uses a single-skill approach, lacks an own methodology and has been little more than a needs- and materials-led movement (see Johns and Dudley-Evans 1991: 303-305; Master 1998: 719ff). The discipline has moreover been accused of vulgar pragmatism—that is, of being reductionist, accommodationist and assimilationist (see Allison 1996: 86ff). Pennycook, while being aware of the complexity of the concept of pragmatism and the need for critical reflection, asserts that the pragmatism of English for Academic Purposes (EAP) [and by extension EST?] is “almost always …vulgar in the sense of being unreflective, prescriptive and subservient to institutional dictates, conventions and discourse practices” (1997: 256).

In view of these concerns, it was decided to conduct a critical literature survey of the research corpus in order to arrive at an informed and principled understanding of their uses, weaknesses and strengths, singly and collectively. Such a critical survey should help to provide a framework for a more structured and effective approach to teaching reading and writing to tertiary students in non-English-speaking countries; to select or produce appropriate, interesting materials for them; and to make them realise that writing is an achievable and valuable skill, which can be acquired in a structured manner.

This study is premised on the assumption that familiarity with the main approaches as outlined in this dissertation, and a comprehensive genre-based approach to academic writing, offer a solution to some of the problems teachers and especially learners of EST-writing currently experience at the lower (‘bridging’) levels.
4. Research design and methodology

4.1 Qualitative, heuristic design

Leedy points out that qualitative research approaches have not only been around for centuries but that today, “when a relevant theory base is inadequate, incomplete, or missing, a qualitative study can help define what is important—what needs to be studied” (1993: 155-56).

A literature review, whether critical or not, is by its very nature qualitative (non-empirical and related to examining qualities and opposed to quantities) and heuristic (using inductive reasoning and problem-solving techniques). Given that the research contributions in the sample are often divergent, speculative, contradictory, and terminologically confusing, a synthetic, qualitative design was chosen. Such an open-ended, exploratory design helps to make sense of this complex field and to arrive at a principled understanding of what the main issues and challenges facing the teacher and student may be. In view of the limited scope of this research project, no attempt has been made to subject the materials to a quantitative analysis.

4.2 Data collection techniques

The corpus of secondary research materials (textbooks and research articles) obtained from the University of South Africa is based on references culled from the various electronic databases and bibliographies consulted. No attempt was made to select the data on the basis of any preferred approach, research angle or method; instead, as comprehensive a corpus of secondary research data as possible was assembled (see Mouton 2004: 88-90).
4.3 Data analysis

The basic method of data analysis takes the form of what Seliger and Shohamy call the search for “commonalities, regularities, and patterns across the various data texts” (1989: 205) to induce categories of classification, sub-classification, and comparative analysis of the data in terms of their definition, specific orientations, prevalence, uses, and perceived value in assisting the student to read and write scientific discourse (also see Mouton 2004: 108-110). This should make it possible to identify significant developments in EST reading and writing over time, and to give an integrated account of the correspondences and differences in the different grammar-, discourse-, rhetorical-, and genre-based approaches as applied to EST texts. Given the heuristic nature of this project, it was decided not to formulate any hypotheses. It is hoped that this study reflects a consistent pattern of comparative analysis to use as a starting point for more comprehensive research in the future.

Given the low level of control in heuristic research in general, researcher subjectivity was minimised as much as possible by categorising the main data in the form of comparative tables in order to ensure a measure of consistency for the purposes of analysis, description and interpretation (see example in Frow 1980: 75). This in turn has helped ensure a consistent structure for the purposes of recording the research findings, drawing conclusions from them, and making suggestions for future research.
Finally, it is hoped that this heuristic inquiry will lead to a better understanding of which teaching methods would be best suited to developing a learning-centred approach to EST reading and writing. It is questionable whether a quantitative, deductive approach would yield the same insight into the challenges involved in the reading and writing of EST discourse.

As Leedy (1993:168) points out, despite the lack of agreement on the issue of validity and reliability in qualitative research, there is some consensus that the interpretive validity of a qualitative research study can be judged on the basis of its *usefulness* (how enlightening the report is to the informed reader); *contextual completeness* (how comprehensive a view of the situation is provided); *research positioning* (the researchers’ awareness of their own influences, such as possible bias, values and beliefs); and *reporting style* (the extent to which the “researchers’ reconstruction of the participants’ perceptions *must* be perceived to be authentic”). It is hoped that this project of limited scope will succeed on these counts.

Following Atkinson’s delimitation of the concept *science*, the term is used to include the natural sciences but to exclude the social or human sciences [that is, the ‘humanities’]; and the concept *scientific language* is taken to include “all language-in-use associated with the natural sciences, including those intended to teach and popularise science, but to exclude textbooks and other pedagogical materials” (1999: 193).

### 5. Chapter outline

The remaining chapters of this study are structured as follows:
Chapter 2 gives a brief introduction to the various approaches and the terminological problems associated with them.

Chapter 3 presents a largely chronological survey, interspersed with critical commentary, of the actual corpus of theoretical text-based research materials;

Chapter 4 follows a similar procedure to survey the context-based papers in the corpus;

Chapter 5 surveys those research materials which specifically address the pedagogical applications of the various orientations as discussed in the corpus;

Chapter 6 gives additional examples of how the various approaches can be implemented pedagogically, outlines the basic conclusions to be drawn from the survey, and makes suggestions for further research.

—o0o—
1. Approaches to genre-based analysis

As mentioned in Chapter 1, the four approaches to genre-based analysis show a progression from structural-linguistic to communicative methodology in general. Moreover, they reflect a lingering dichotomy between formalistic and contextual approaches to discourse- and genre analysis, which is neatly summed up in the following terms by Frow:

Recent analysis of discourse has been dominated on the one hand by a formalism which treats the text as an extension of the syntactical and logical structuring of the sentence, on the other hand by an embarrassed empiricism which, in attempting to take into account the role of context and enunciation in the shaping of text, finds itself unable to formalise the infinity of possible speech [and written] situations. In both cases the result is a renewal of the traditional dichotomy between text and context in which the former is seen as properly linguistic, and the situation of utterance is conceived as contingent, circumstantial, ‘subjective’, non-systematic (1980: 73).

On this cline, researchers differ in the number of different approaches and types of linguistic description that they identify. For example,

- Widdowson (1979: 51-61) and Robinson (1991: 23-27) identify only three approaches to language description: in the case of Widdowson, these are register analysis (hereafter RA), GRA,
and discourse analysis (hereafter DA); by contrast, Robinson specifies frequency studies, the rhetorical approach, and genre analysis (hereafter GA);

- Swales (1993: 2-8; 18) lists quantitative studies (or RA), grammatical-rhetorical approaches, and genre-analysis approaches, although he does mention the influence of GA on his own thinking;

- Hyon (1996: 693-722) confines his discussion of genre to the last two decades and distinguishes three broad “traditions”: ESP Analyses, New Rhetoric Studies, and Australian Genre Theories; and

- Bhatia (1993: 5-12), by contrast, in an exemplary survey of the developments within the field of GBA to reading and writing, distinguishes four levels of linguistic description that have developed over the past thirty years, a distinction which is also supported by the various research contributions surveyed in this study.

The following discussions follow the basic framework provided by Bhatia (1993) but include the SFL approach which Bhatia fails to mention.

1.1 Register analysis/Systemic Functional Linguistics

Register analysis (RA) was pioneered by Halliday et al. (Bhatia 1973: 5). Register, in linguistics, refers to the language choices (for example, vocabulary and syntax) language users makes in order to convey their message appropriately in a given situation or context. It follows that RA, which was
prevalent from about 1960 to 1970, investigates, categorises and quantifies the linguistic features of texts that are peculiar to it. As such, it is concerned with providing surface-level linguistic descriptions of the lexicogrammatical features of certain types of texts (see Barber in Swales, 1985: 1-14) on the assumption that ‘families’ of texts would all have essentially the same lexical and linguistic features. Consequently, by identifying these register features, course designers could make their courses more relevant to the students’ needs and speed up the specific language-learning process (see Hutchinson and Waters 1990: 9-10). Not surprisingly, Widdowson (1979: 54-55) and Robinson (1991: 24) point out that this (static) form of language description deals with text but cannot “indicate rhetorical relationships between different varieties [of language], either within or between languages” (Widdowson 1979: 55).

However, it should be pointed out that RA developed more or less simultaneously with the work of Halliday and his associates in the domain of SFL, the grammatical-rhetorical work of Selinker and his associates, and the early work of Widdowson in DBA to EST. Indeed, as Martin (2002: 52) points out, SFL has a longstanding interest in DA, stimulated register studies and has paved the way for GA. Hyon argues that, despite Halliday’s central concern with register, later developments in SFL, notably in the work of Jim Martin, “have developed theories of genre within a systemic functional framework” (1996: 697).

Because of the close connection between register studies and SFL, as well as the complex structural-linguistic nature of the earlier approaches to SFL, which culminated in the publication of Halliday’s (1985) massive functional grammar, this approach is discussed prior to GRA. The reason is that GRA
appears to represent the beginnings of a more top-down, structural approach to GA. Other researchers may disagree, depending on whether they take their points of view from the earlier or later stages in the long development of SFL.

Unfortunately, for the purposes of this study, only a few of the studies in the research corpus deal with EST reading and writing, the reason being that developments in SFL focus more specifically on primary- and secondary-school genres and non-professional workplace texts. However, SFL remains a valuable asset in the battery of tools provided by the various approaches discussed in this survey.

### 1.2 Grammatical-rhetorical analysis

As intimated, the early period of RA laid the basis for SFL, as well as for the grammatical-rhetorical analyses of Lackstrom, Selinker, and Trimble (1972, 1973) and others, which focus on textualization (Widdowson 1979: 57), the manner in which the linguistic system is used in the text to express meaning. Very generally, *rhetoric* denotes a process and the general rules language users have to obey to organise or structure their texts appropriately, and GRA investigates the close interrelationship between the grammar (lexicogrammatical features) of and rhetorical moves in a text. Trimble (1992: 10) glosses *organisation* to mean the manner in which items of information are sequenced in a text, as well as the kinds of relationships that exist between them. In a rhetorical process chart (1992: 11), he lists various levels of organisation such as the overall aim of the discourse, the general rhetorical
functions\(^1\) that develop the objectives, the specific rhetorical functions\(^2\) that develop the general objectives, and the rhetorical techniques\(^3\) that provide relationships in and between the previously mentioned units. In chapter 8 of his text, he specifically mentions the grammatical elements, which are closely related to the rhetorical functions of the text. This shows that linguistic forms are no longer assumed to be simply the quantifiable manifestation of, say, ‘the language of science’—in other words, the focus is no longer exclusively on the sentence grammar but on how writers deliberately use the grammar and sentence structure to make meaning. This further means that, in constructing text, the writer is simultaneously engaged in correlating bottom-up (micro-) linguistic choices with top-down (macro-) rhetorical processing and structuring of the information. This is necessary to ensure that the information and grammar in the text are organised effectively. Despite the advances signalled by GRA, Bhatia (1993: 7) believes that this approach yields only relatively little information about how scientific discourse is structured.

1.3 Discourse-based approaches

\(^1\) For example, Stating a purpose, Reporting past research, Stating the problem, Presenting information on apparatus used in an experiment, and Presenting information on experimental procedures (Trimble 1992: 11). These, as Trimble (13) points out, are usually found under headings and sub-headings which state the nature of the information in the section.

\(^2\) The five specific rhetorical functions in EST, according to Trimble (1992: 11) are Description, Definition, Classification, Instructions, and Visual-verbal relationships. If the rhetorical function is specific, “then the unit of text will consist of a paragraph (or series of closely related paragraphs) that contributes to the total communication by providing such information as definitions, descriptions, classifications, etc.” (13). These sections are seldom explicitly marked but rely on the reader’s ability to identify and extract the information.

\(^3\) According to Trimble (1992: 11) these are the orders (e.g. time, space, causality and result) and patterns (e.g. causality and result, order of importance, comparison and contrast, analogy, exemplification, illustration) that bind together the information in a (EST) text. In fact, they are the semantic signals or markers that help to give cohesion to the text. An understanding of this level of rhetorical techniques is vital since they stand in a special relationship with the rhetorical functions mentioned previously. For example, as Trimble (1992: 115) points out, passives and statives are found mainly in the rhetoric of description.
The next level of linguistic progression that Bhatia (1993: 8-10) postulates is the “interactive” discourse approach (“interactional analysis”) to EST associated with the early work of Widdowson. This approach is based on the notion that, in constructing text, writers are not only concerned with the interconnection between language and rhetorical choices but with the constraints imposed by their knowledge or understanding of how the discourse will be received and interpreted by the reader, obviously within a particular institutional context. As such, discourse construction and interpretation (writing and reading) are assumed to be an interactive endeavour—in other words, the writer now has to adjust his/her style of writing for a specific readership.

1.4 Genre-based approaches

The fourth and final level that Bhatia discusses is that of GA, or what he terms “language description as explanation” (1993: 10-12). This level builds on the resources of the other three approaches while drawing on an ethnographically thicker evaluation of the sociocultural and psycholinguistic aspects of text construction to achieve “significant form-function correlations” (11)—that is, the what- and the how-functions of the text. In other words, an ethnographic thicker evaluation goes beyond the linguistic features of a text to consider how the writer constructs it within and for a specific institutional and social context.

2. Parameters of applied discourse analysis

These levels of linguistic description then, in turn, also map out the parameters, the distinguishing features or boundaries, of applied discourse analysis as discussed by Bhatia (1993: 1-5). The first, the theoretical
orientation, extends from grammatical formalism to a more ethnographic orientation to DA. The second marks the progression from a concern with general (e.g. narrative) discourse to specific written genres. The third level, application, concerns the pragmatic uses of so-called *applied discourse analysis*, ranging from the RA of Halliday (see Halliday and Hasan 1989) and the early work of Widdowson (1979) to the genre analyses of Swales (1993) and Bhatia (1993). The fourth and final parameter is that of the progression from surface linguistic analyses (‘thin’ descriptions) to deeper functional analyses (‘thick’, ethnographic descriptions) associated with, for example, Bazerman (1985), Berkenkotter and Hucken (1993), Bhatia (1993), Miller (1984) and Swales (1993). It follows that the concern with grammar *per se* has made way for a consideration of how it functions as discourse (language in use) in specific genres within their respective institutional and social contexts.

It is against the background of these levels of linguistic description, and of the various parameters of applied discourse analysis, that the terminological differences discussed so far become comprehensible. Indeed, once the reader is familiar with these orientations, subtler differences in usage and approach within each of the various orientations *per se* become clear and the field of GA correspondingly less daunting.

Finally, it should be reiterated that, rather than following a neat linear progression from one stage to the next, with clear cut-off points between the different approaches and stages, these developments signal a gradual evolution across fluid boundaries, with elements of one approach drawing on or anticipating other stages in the overall development pattern. To this day, as the research corpus reflects, these historical developments and approaches to textual analysis continue to underpin the variety of genre-based approaches to EST reading and writing in general.
Given these overlaps between the approaches, it will be seen that they target various aspects of textual construction and levels of detail, as will be discussed in Chapter 3. As such, they enhance our understanding of the multi-functional approaches that influence and underpin the production and interpretation of specific genres, in particular in EST. In the rest of this study, it will become clear that while, in essence, these various orientations developed more or less concurrently and diversified into separate and specialised fields of inquiry, they ultimately coalesce in and add to the richness of GBA approaches to EST reading and writing.

3. Terminological confusion

As mentioned in Chapter 1, the terminological confusion characterising the use of the concepts of discourse and GA adds to the difficulty of understanding this complex historical progression. The key concept used in the research literature is GA, the most recent development in the evolution of the various approaches to EST reading and writing. While the term is generally understood to refer to the formal (structural or organisational) features shared by texts with a similar specific communicative intent or function, it is a highly complex construct as this survey will reflect. Indeed, Swales a notable scholar in the field of ESP and in GBA approaches to ESP/EST in particular, points out that genre, though “highly attractive”, is an “extremely slippery… fuzzy concept” (1993: 33), which has attracted a variety of meanings; that “linguistics as a whole has tended to find genre indigestible” (41); and that it was only with difficulty that the concept could eventually be disentangled from register (41). Significantly, however, in the light of the terminological differences in the use of the key constructs as mentioned, he refers to “discourse analysis” and “discourse topics” such as
“given/new, theme/rheme, cohesion/coherence and background/foreground information” 4 (18) without mentioning their role in functional linguistics and RA as pioneered by Halliday and his associates. Candlin, in his General Editor’s Preface to Bhatia’s (1993: ix) volume entitled Genre Analysis, draws attention to the complexity of the concepts of discourse and genre and the problem of deciding what they mean. Bhatia (1993: 1-42) addresses these issues in his theoretical overview in Part 1 of his volume on GA.

Ironically, despite their cogent overviews of the various approaches to ESP, and/or their discussions of the terminological divergences referred to, notable researchers such as Bhatia (1993) and Hutchinson and Waters (1990) add to the proliferation of meanings by using the concept of discourse in a sense that reflects their own individual bias or orientation. For example, Bhatia (1993: 8) glosses the concept of discourse as “interactional analysis”, which denotes a process-oriented approach to discourse analysis as the use of language to create and maintain social relationships (see Brown and Yule 1989: 2-3). Hutchinson and Waters (1990: 10-12), in turn, equate DA with rhetorical analysis, without mentioning GA at all.

Several other researchers have commented on these terminological differences and added to the range of meanings; for example,

- Robinson (1991) correctly points out that Trimble (1992) sub-titles his EST course book a discourse approach when, in fact, it is

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4 The grammar of textual meaning organises the clause as message. The Theme is the point of departure of the clause and contains given or familiar information; the Rheme is that part of the clause which develops the meaning and gives new or unfamiliar information about the Rheme. Unpredicated (or unmarked) Theme backgrounds information in the sense that it contains the usual Mood structure of subject, finite verb, complement, and adjunct. Predicated (or marked) Theme, by contrast, foregrounds information by giving prominence to a clausal constituent that would otherwise not be emphasised.
concerned with GRA\textsuperscript{5}; and that “for some writers, ‘genre’ seems to be the same as ‘text type’” (1991: 24-25);

- Robinson (1991: 26) also refers to Swales’s use of DA and his top-down approach (which suggests that she could be conflating discourse and GA);

- Swales (1993: 6) argues that genre is a much broader [that is, an ethnographic] concept than text, which, he says, cannot account for genre fully;

- Martin, a prominent member of the Australian systemic-linguistics school, holds that genre is a system underlying register\textsuperscript{6} (in Swales 1993: 43);

- Cope and Kalantzis (1993: 7) categorically state that genres are social processes;

- Couture (in Swales, 1993: 43), by contrast, argues that genres are distinct from register in that they are “completable structured texts”.

Indeed, it would appear that Kress 1993 (in Cope and Kalantzis 1993: 32) is justified in asserting that “even the so-called genre school does not have a unified theoretical approach to the term”, as is paradoxically demonstrated in part by his own use of the term in a sense which is more or less consistent

\textsuperscript{5} Trimble (1992: 4), however, points out that rhetoric is not synonymous with discourse but rather “one part of the concept of discourse” [that is, subordinate to it].

\textsuperscript{6} See Martin’s excellent cartography of language and context in Cope and Kalantzis (1993: 132).
with Halliday’s use of the concept *register* (in Cope and Kalantzis, 1993: 14)—a term which Widdowson (1979: 22) claims is based on a double fallacy in that it confuses *language* and *a language*, as well as *form* and *function*. It is therefore clear from the available research materials that at least two of the seminal concepts, *discourse* and *genre*, are neither clearly defined nor demarcated, and that they are sometimes used synonymously.

However, on closer scrutiny, it becomes apparent that a careful consideration of the uneven historical progression from structural-linguistic approaches to EST in the 1960s and 1970s to contextually-based approaches in the late 1990s and early part of 2000 helps to resolve some of the terminological confusion associated with the field of GBA to EST. It is hoped that the contextual analysis of the key terms used in the research literature will help to clarify them and lead to a better understanding of the field of GBA to reading and writing.

The research papers surveyed in this dissertation have been roughly classified into text- and context-based approaches. In the following chapter, the first of the two clusters will be surveyed critically with specific reference to SFL and GRA. While an overall chronological procedure will be followed, it should be remembered that the boundaries between the various GBA are fluid, with significant correspondences and differences between and within them.
CHAPTER 3
TEXT-BASED APPROACHES TO GENRE ANALYSIS

The first of the text-based approaches or orientations to be discussed is SFL. While the basic principles of this compound approach will be discussed briefly, the main focus in this dissertation is on the functional aspects of the approach as explained in Section 1.1.

1. Systemic-Functional Linguistics

1.1 Brief overview

Throughout the relevant research literature, the emphasis on context owes a large debt to the early work of Halliday (see Halliday and Hasan 1989) in the field of RA, which laid the conceptual basis for the SFL approach to language description later pioneered by him. Since the surface-level, lexicostatistical analyses of the linguistic features associated with the early work in the field of RA in EST are not directly relevant to GA, they will not be discussed in this survey. Instead, this survey will start with the contributions to GA associated with SFL as pioneered by Halliday (1973, 1975, 1985).

The basic premise of SFL is that language is always embedded and used pragmatically in a social context—that is, within the contexts of culture and situation—to realise specific communicative intentions or functions, and that the linguistic choices the writer makes are largely determined and constrained by the three register or contextual variables of field, tenor and mode in the
context of the situation. Halliday’s emphasis on the importance of the social context has often been overlooked in the discussions or criticism of his work.1

The *functional* part of SFL, which is the principal focus in the contributions discussed, provides a comprehensive grammar for textual analysis for ethnographic, literary, educational and other purposes (Halliday 1985: xiv-xv). Indeed, Halliday points out that his classic text is intended as a functional grammar for the purposes of text analysis: the grammatical patterns of the language are analysed “in terms of configurations of functions” (1985: x) to account for the manner in which they are used to make meaning. His text is not concerned with the systemic description of language as *networks* of choices.

As Halliday (1985, 1989) and others (Brown and Yule 1989; Halliday and Hasan 1989; Swales 1993;) explain, the

- *field* of discourse refers to that which is happening specifically, the social participants involves in the situation, and the essential communicative role that the language plays in the exchange;

- *tenor* of discourse denotes the participants, their role relationships, statuses and roles in the discourse; and the

- *mode* of discourse concerns the part played by language in the particular situation and how the discourse is structured or organised to realise the communicative intentions of the participants or text.

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1 See Section 1.2.4 of this chapter.
Furthermore (see Halliday and Hasan 1989: 25), the contextual features of field, tenor and mode are expressed through the experiential (lexical and transitivity structures\(^2\)), interpersonal (mood structure\(^3\)) and textual (Theme and Rheme\(^4\)) functions of the semantics respectively, and generate the ideational, interpersonal and textual metafunctions of the text. These realisations take place simultaneously, not separately, at the level of the clause, the substance of Halliday’s seminal work *An Introduction to Functional Grammar*. In their volume entitled *Writing Science: Literacy and Discursive Power*, Halliday and Martin point out that genre theory, “as developed in SFL, has been particularly concerned with texts as staged, goal-oriented social processes which integrate field, mode, and tenor choices in predictable ways” (1993: 36). Frow (1980: 75) gives a rough tabular representation of the main kinds of discourse genres—for example, the languages of science and professional jargons (field); face-to face conversation (tenor); and oratory (mode), to quote only three—associated with the dominance of each of these three contextual variables and the intrications between them.

Halliday 1993 (in Halliday and Martin 1993: 54-68) gives a brief historical, systemic-functional overview of what he considers to be the prototypical features of ‘scientific English’. He defines register as a “cluster of associated features having a greater-than-random (or rather, greater than predicted by their unconditioned probabilities) tendency to re-occur” (162) and which he claims is easily recognised by anyone familiar with the field of science. He

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\(^2\) Transitivity structures are the clausal realisations of choices speakers or writers make to represent experience in a particular way. They show how the clause is used to represent experience through a number of process types (material, mental, verbal, behavioural, existential, and relational).

\(^3\) The Mood structure of the clause (the grammar of interpersonal meaning) encodes the grammar of propositions (things that can be talked about, affirmed or negated) and proposals (offers and commands).

\(^4\) See footnote 4 on pp.16-17 of this review.
examines these ‘easily-identifiable’ prototypical features in terms of the functional grammatical functions of Transitivity, Mood, and Theme.

As explained in his classic volume on functional grammar, Halliday (1985) interprets language, not as a formal system of more or less fixed prescriptive structures, but as a system of meanings that uses a variety of forms through which the meanings can be expressed. If language is based on choice, then the grammar organises the way in which the various meanings are encoded in the clauses, clause complexes, groups and phrase complexes, and cohesion within a text. In scientific discourse in particular, the rhetorical or organising functions of a text (e.g. description, definition, classification and instruction) are realised through specific, non-arbitrary grammatical choices (e.g. the specialised, context-specific use of the passive, universal present tense, specific modals, and the use of nominalisations to load the subject position of the sentence with nominal constructs).

While the connection between register and genre is unclear in the early work on SFL, in later work produced by the Australian school of linguistics, founded by Halliday, the connection is much clearer, if not explicit. As Martin and Rothery 1988 (in Ghadessy 1988: 147) point out, for example, specific genres “typically achieve their goals by organising their texts in stages” through rhetorical and grammatical patterning.

It follows that Halliday’s semantic, functional grammar of English signals a clear break with prescriptive sentence linguistics as pioneered by Chomsky and as reflected in the frequency analyses of Barber 1962 (in Swales, 1985: 1-16). Register, then, is a semantic category closely associated with the linguistic realisation of the situational or register variables of field, tenor and mode, and varies according to the function that the language is made to
perform. Hyland (2002: 119) actually substitutes the concept of *genre* for *register*, which suggests the close connection between the two. While the concept of *genre* is seldom used in the early work on SFL, it is clear that there is an embryonic connection between *register* (and *generic structure*) as used in Hallidayan linguistics and *genre* as used in GA. Indeed, as Cope et al. 1993 (in Cope and Kalantzis 1993: 231) argue, it was Halliday who provided the catalyst for the development of genre theory. It could, moreover, be argued that the insights and contributions of SFL are one of the cornerstones on which GA analysis is built, and that this close relationship accounts for the confusion of the two concepts as discussed by Swales (1993: 40-41). Indeed, as Martin, Christy and Rothery [“to appear”] (in Hammond 1987: 165) rightly argue, the difference between register and genre is essentially a question of how much emphasis is placed on social purpose as a determining value in language use. It is therefore not surprising, as Hyon (1996: 697) points out, that theories of genre in particular were developed within a SFL framework by Halliday’s students, notably by Jim Martin.

However, despite Couture’s helpful distinctions between register and genre as quoted in Swales (1993: 40-42), the interconnections between these two approaches continues to be complex due to the tension between and micro-linguistic and macro-rhetorical approaches to textual analysis. The significant contribution of the concept of *register*, and indeed of early register theory, to our understanding of the importance of contextual variables in the construction of specific genres, raises the question whether the relatively slight treatment they receive in the work of researchers such as Bhatia (1993: 5-6) and Widdowson (1979: 38) is justified.

1.2 Brief survey of SFL approaches to genre analysis in the research corpus
Despite the paucity of the overall body of SFL research in EST, the following brief surveys of some of the approaches to GA show that this particular analytical angle continues to make a valuable contribution to our understanding of the relationship between contextual variations and their linguistic realisations through the metalinguistic processes of transitivity, mood and theme.

1.2.1 The analysis of impersonality in a text

A recent paper entitled ‘Impersonality in the research article as revealed by analysis of the transitivity structure’ by Martínéz (2001) is a good example of an empirical study which adopts a SFL approach to GA in general and to the genre of the research article in particular. The paper is explicitly predicated on the assumption that language and specific genres vary contextually and grammaticalise the linguistic features of a text according to the language variety underlying a specific genre type as determined by a specific speech community. Martínéz argues, “The selection of linguistic forms is governed, not only by what the researcher wants to say, but also by how it should be said according to the style of the discipline” (2001: 227). She holds that genres are socio-cultural, goal-oriented texts which realise their functional goals through a series of regularised stages or moves. In the case of the research article, these stages are labelled Introduction, Method, Results and Discussion, and each of them has its own specific goals which determine how the linguistic features of the text will be grammaticalised in each section and within the genre of the research article as a whole. Martínéz further argues that the genre of the experimental research article is characterised by a contextually induced convention of impersonality and neutrality associated with the speech community of scientists; that it is the
“grammaticalisation of the neutrality, impersonality and objectivity that give the research article its character” (2001: 228); and that the analysis of transitivity in particular has not yet been sufficiently researched. It should briefly be explained, as Halliday (1985) demonstrates in his work on functional grammar, that it is through the metadiscursive transitivity system of the clause that experiential or extralinguistic meaning is expressed through a variety of process types (material, mental, verbal, behavioural, existential and relational) to represent extralinguistic experience linguistically. The purpose of Martinéz’s (2001: 229) paper is to examine the:

- transitivity structure of the specific sections of the research article to discover which clusters of features of the transitivity structure characterise the genre;

- connection between the sections of the research article and their specific goals; and the

- manner in which the presence or distance of the author is embodied in the transitivity structure.

Martinéz points out that her corpus of primary materials was based on representative periodical articles and book chapters culled from the physical, biological and social sciences, but she does not explain how representativity was established except to say that “the articles were selected from journals and book chapters … which experts recommended as being representative quality articles in their field” (2001: 234). She does not specify who the experts were.
In the concise commentary on the theoretical background to her paper and explication of the various process types within the grammatical system of transitivity, Martínez (2001) argues that verbal processes (involving three participants) and mental processes (representing thoughts, feelings and actions) figure prominently in the ‘language of science’, and that relational processes (which establish a relation between two separate non-human entities) actually characterise the ‘language of science’ (229-234).

Impersonality can be encoded through the agentless transitivity system of the grammar using passive-voice constructions, intransitive ergative⁵ constructions [e.g. the reaction took place], active verbs with inanimate subjects [e.g. the valve released the pressure], and nominalisations⁶ [e.g. the reaction to the agent].

The texts in her corpus were then analysed in terms of the various transitivity process types and the distribution of voice in the various sections of the research articles. The summary of the data was carried out by means of descriptive statistics, with inferential statistics being used for the significance tests in the contingency tables. The analyses showed that the concentration of voice and the process-type distribution differed from section to section, which led the author to conclude that the preference for impersonal linguistic constructions allows an author strategically to retreat to the background in order to foreground the findings. This readable and well-researched paper concludes with a number of valuable suggestions for applying the findings of

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⁵ Ergatives are verbs that can be used both transitively and intransitively, but the action affects the agent (or subject) rather than the object, thereby turning the agent into a patient. This explains why they are also called unaccusative verbs (that is, verbs without a direct object) and can be changed from transitive into intransitive without any change in meaning. For example, in The reaction stopped, the intransitive use of the ergative verb removes agency from the statement and makes it impersonal.

⁶ Nominalisation turns verbs and clauses into abstract nouns, thereby similarly (as in the case of ergatives) removing agency (and reducing personal responsibility) from the sentence (e.g. The interruption of the process rather than The researcher interrupted the process).
the study pedagogically in English for Academic Purposes (and by extension in ESP) to develop the student’s understanding of the linguistic choices that characterise the discoursal patterns of the research article. The pedagogical implications will be discussed in Chapter 5 of this literature review.

1.2.2 The analysis of organisational structure in a text

A paper which differs markedly from Martinéz’s (2001) study in terms of specificity, both in focus as well as in the research method adopted, is one entitled ‘Variation and Field-related Genres’ by Diana Adams Smith (1987). With reference to the systemic concept of field-related in the title of her loosely structured paper, it should be explained that in Hallidayan linguistics experiential meanings are realised through the field of discourse, which is “not only reflected in the vocabulary” but “also embodied in the transitivity structures in the grammar” (Halliday and Hasan 1989: 24-25); that is, in the various process types and their linguistic realisations. This was well demonstrated in Martinéz’s paper. Adams Smith’s (1987) paper, by contrast, appears to focus less on the specific functional, micro-linguistic grammaticalisations of experiential meaning than on the regularised stages or moves in the overall discourse organisation and the grammatical and lexical items that signal them. As such, her paper may be more consistent with the grammatical-rhetorical analyses of Selinker et al. (1978) and Lackstrom et al. (1973) than with the SFL approach of Hallidayan linguistics.

Consistent with her largely top-down approach, Adams Smith (1987: 10) argues that Halliday’s concept of register has considerable predictive power (also see Martin in Cope and Kalantzis 1993: 116ff; Halliday and Hasan 1989: 34ff); that linguistic structures can be predicted from the specific context of situation that generates a standard communicative event; and that the term genre has been attached to such an event. Adams Smith also draws attention
to the difficulties associated with distinguishing one genre from another, the
dangers inherent in “over-enthusiastic differentiation”, and to research
studies that have “questioned the assumption that different genres are
distinguished by consistent patterns of (linguistic) variation between them”

Adams Smith states that her research was based on a corpus of six pairs of
field-related scientific research papers and their corresponding popularised
versions to examine “features of field, such as lexical and syntactical choices,
lexical density and the framing of the subject matter” (1987: 13). She also
includes under the rubric of field the two other systemic concepts of tenor and
mode through which interpersonal and textual meanings are generated
respectively. It should be mentioned that the latter two systemic concepts
refer to the two other major grammatical systems operating at the level of the
clause, which, together with field, constitute the huge field of functional-
linguistic analysis. In a problematical statement of her research findings early
in her paper, she claims to have found “regular patterns of differences in
almost every respect, not only the surface features but also in the underlying
structural framework formed from combinations of rhetorical acts arising
from the communicative purpose of the text” (1987: 14); that is, in each one of
the six pairs of articles examined. However, the paper does not systematically
explain or quantify the constructs of “regular patterns of differences”, “every
respect”, “surface features”, and the “underlying structural framework”; nor
does it systematically account for how the “rhetorical acts” arose from the
“communicative purpose” of the texts examined. Hence, it ignores the
considerable difficulties involved in using communicative purpose to assign
genre membership7. Adams Smith further claims that “the pair of articles

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7 See Chapter 4. Section 9 for a review of Askehave and Swales’s (2001) paper in which these
difficulties are discussed.
discussed here is representative of all the pairs of sources and derived discourses studied” (1987: 29) but does not explain how such representativeness was established.

Next, she exemplifies these patterns of organisation, or “underlying reefs of discourse organisation patterning” (16), by means of nursery rhymes. She explains that some of the relations she had found in her research corpus did not fit the global structure of Introduction-Problem-Solution-Conclusion identified by Van Dijk 1977 (in Adams Smith 1987: 19), the main proponent of text linguistics and one of the researchers she had studied, and that she had then consulted her specialist informant. Unlike Selinker (1979: 189-215), Adams Smith (1987) neither identifies the informant nor explains the exact nature or scope of her consultations with him/her. Based on her research study, she concludes that linguistic variation among texts is not sufficient for the purposes of distinguishing between one genre and another, and that a more “promising approach to genre analysis is that which begins not with surface features but with ‘the characterisation of (rhetorical acts) … and the manner in which they combine to form coherent stretches of discourse’” (1987: 30).

Adams Smith’s (1987) sparsely referenced paper does not attempt systematically to describe “the relationship between the context in which language occurs and the actual language used” (Hammond 1987: 164) as a SFL approach to language does. Rather, it appears to be a largely heuristic, transitional approach (from SFL to GRA) which avails itself of a selected number of resources of SFL and RA. As such, it demonstrates the fluid boundaries between the various genre-based approaches to ESP/EST.
1.2.3 The analysis of textual realisations of register variables in relation to genre structure

A paper which, by contrast, establishes a more direct link between the textual realisations of the contextual register variables of field, mode and tenor and the genre structure of a text is one entitled *A Contextual Theory of Language* by J. R. Martin 1993 (in Cope and Kalantzis 1993: 116-136). As the author demonstrates in his discussion of a paper on innovative fisheries management (written by a W.R. Martin), SFL represents a social and pragmatic approach to language description in which the context of situation of the discourse is critical in shaping or organising the grammatical and discourse-semantic structure of the text, just as a fair amount of information can be deduced from the grammatical-rhetorical structure of the completed text. By briefly analysing the grammar of Theme and of the register variable of Field (the grammar of Transitivity in particular) in relation to the rhetorical scaffolding of the text, Martin shows how the author had constructed a hybrid *report* and *historical recount* genre. In so doing, the author of the fisheries document, W.R. Martin, had managed to “adapt the genre to the social occasion for which it is employed, forming a kind of bridge between the technical biological classification of whales and the more generalized interests of Canadian Wildlife Federation members” (1993: 122).

With reference to the grammar of the text, Martin 1993 (in Cope and Kalantzis 1993: 125-126) comments on the patterns of clausal theme in the paper that contribute to the structure of the genre. He notes that the section of the report that deals with whales contains no fewer than eleven *unmarked* topical themes. The whale text, he argues, “organises its sentence beginnings so that they help construct the report’s staging” (1993: 125) by introducing the topical themes in a series of passive-voice sentences. By contrast, in the historical recount...
section of the text, marked themes are used to give structure to the development of the text.

Finally, Martin 1993 (in Cope and Kalantzis 1993) briefly comments on another register variable, that of Field, in relation to the fisheries text. Availing himself of the useful SFL convention of diagrammatic representation, he examines the taxonomy of whales in the fisheries report, and shows how the scientific classification is realised linguistically and complemented with non-technical adjectival explanations to make the text accessible to lay persons in his audience. In conclusion, he points out that many pressures come into play and impact on the process of structuring and documenting information for a specific target audience. He argues that

… when W.R. Martin and his colleagues come to predict and distil, they have a specialized grammar at hand to do the job—a grammar that has evolved over hundreds of years, with science at its cutting edge, to construct the world in different ways than talking does. It is a grammar that organises text, that summarises and abstracts, that encapsulates ‘big’ meanings for use everywhere—a grammar for writing that nominalizes rampantly and turns the universe into a set of interrelated things: a grammar that counts (1993: 135).

The contributions surveyed thus far show the extent to which SFL approaches to GA shed light on how the lexicogrammar of a text contributes to realising the contextual register variables of field, tenor and mode in the linguistic and social construction of a genre text. However, the corpus of research materials on SFL approaches to EST reading and writing is comparatively lean. The reason is that, in Australia, SFL and GBA approaches to reading and writing were largely implemented in pre-tertiary education and became associated with non-professional texts (see Hammond 1987; Hyon 1996; Matthews 1995).
1.2.4 Halliday’s conception of genre

Finally, a crucial misunderstanding about the nature of Halliday’s conception of genre and his contribution to genre-based approaches to ESP/EST that should be dispelled is the accusation that his concern with linguistic structures led to a neglect of the importance of social context and to the reductive and slavish copying of supposedly representative text types. In a complex review of The Place of Genre in Learning: Current Debates edited by Ian Reid (1987), Threadgold takes issue with the anti-Hallidayan claims that Halliday’s supposed neglect of social context results in the production of “ideologically unsound” and “rigid and overbearing” reductive written texts (1988: 316). He points out that, in Halliday’s view of language, linguistic patterns in a text are not only constituted by social realities but are constitutive of them. Too often, Threadgold argues, “[the anti-Hallidayans] have been far too ready to jump on old bandwagons without actually ever really investigating what it was that any Hallidayan, let alone Halliday himself, might have to say on the matter [the complex issue of genericity]” (1988: 317). Indeed, in this regard, as Threadgold further points out, “in a whole set of assumptions implicit in Halliday’s view of language ... it has never been argued, for instance, that any context would always give rise to exactly predictable lexicogrammatical patterns” (1988: 317).

2. Grammatical-Rhetorical Analysis

A large body of literature on genre-based approaches to EST reading and writing focuses specifically on identifying the rhetorical structure of EST texts within specific genres, and on the grammatical functions through which they are realised. These texts show how the earlier concern with the narrower, surface-level linguistic analysis of certain ‘registers’ or functional-grammatical varieties of English has made way for a more balanced, integrated and
dynamic interrelationship between bottom-up (grammatical) and top-down (rhetorical) approaches. The early stage of this approach is represented mainly by Lackstrom, Selinker and Trimble (1972, 1973), Selinker, Todd Trimble and Trimble (1976), Widdowson (1974), and more recently by researchers such as Malcolm (1978), Williams (1996), and Wood (1982), to name but a few. A feature of the grammatical-rhetorical research contributions surveyed in this literature review is that, in their focus or individual orientations, they show a progression from ‘simple’ to more complex grammatical structures as determined by rhetorical considerations. As such, they differ from genre-based approaches to discourse analysis, which proceed from the structuring potential of content and formal schemata derived from psycholinguistic reading (and writing) theory and which frequently introduce overt sociolinguistic data to account for the formal structure of text.

Although the boundaries are fluid, and at the risk of oversimplifying, it could be argued that there appear to be two main orientations in the papers on GRA surveyed, consistent with the two adjectives describing the GRA process; but it is noteworthy that most of the papers deal with problematical aspects of grammar such as the ones Trimble (1992) discusses in chapter 10 of his text. However, the contributions of Lackstrom, Selinker and Trimble (1972, 1973) will be discussed first since these authors pioneered the field of GRA and because their contributions show the importance of rhetorical structure in text production.

2.1 The contributions of Lackstrom, Selinker, Todd Trimble and Trimble

The early contributions in the field of grammatical-rhetorical analysis derive from the pioneering work of Lackstrom, Selinker and Trimble (1972, 1973,
1974), members of the former ‘Washington’ school of EST and the first “serious and influential protagonists of English for Science and Technology within the United States’ academic world in general and within the numerous English Language Institutes attached to American universities in particular” (Swales 1985: 58).

2.1.1 The influence of rhetorical structure on grammatical choice

In a pioneering paper entitled ‘Grammar and Technical English’, which is also quoted in part in Swales (1985), Lackstrom, Selinker and Trimble (1972) introduced for the first time a strong emphasis on rhetorical considerations as determining grammatical choice (the English tenses, their time relationships, and articles)—an emphasis which “began a movement toward more purposive and organization-oriented writing tasks” (Swales 1985: 59), the province of genre-based approaches to EST reading and writing. In his annotated commentary, Swales refers the reader to the following definition of the concept rhetorical by Daniel Marder8, which deserves to be quoted in full:

[In technical writing,] rhetoric manifests itself in the techniques of organization and style that the writer employs. The organizational techniques are methods of solving various writing problems so that unity, coherence, and emphasis are maintained throughout the communications. These methods are used first to arrange the whole composition into related parts and then to arrange the parts for a total

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8 According to Swales (1985: 61), the original definition is to be found in The Craft of Technical Writing by Daniel Marder (Macmillan 1960, pp. 5-6).
effect of clarity and forcefulness… Style is the application of rhetorical principles to the smallest element of the composition—the sentence. It is the writer’s manner of selecting words and combining them into the sentences that constitute the paragraphs. The paragraphs in turn are organised according to some technique or combination of techniques to make up the entire composition (Swales 1985: 62).

In this quotation, the constructs of organisation and style can be glossed to refer to the influence of the (macro-) rhetorical organisation of a text in determining its (micro-) linguistic structure, or to what in Hallidayan linguistics could be termed the functional influence of the situation of context on the lexicogrammar of the text.

‘Grammar and Technical English’ by Lackstrom, Selinker and Trimble (1972) deals with:

- tense choices in relation to the core idea of the standard and conceptual paragraph;
- the choice of the definite article with reference to phrasal qualifiers;
- co-referentiality relationships;
- the choice of the indefinite article to denote any member of a class, a particular member of a class, a generic reference, a rhetorical determinant, also as determined by the specific subject matter; and
• grammatical choices dependent on statives.

The explanations given make extensive use of sentence pairs and are richly exemplified in each case to demonstrate how the grammatical choices discussed are governed by prior rhetorical considerations.

In their paper, Lackstrom, Selinker and Trimble (1972) argue that accurate grammatical choices in a written medium cannot be taught separately from considerations of rhetoric and subject matter. They demonstrate that in EST, in particular, the English tenses and their time relationships, as well as the grammatical choices involving the two articles, are dependent upon considerations of rhetoric and subject matter; and that “choices involving adverbs, aspect, agent phrases, and nominalization often demand contextual directives” (Swales 1985: 62). Their discussion shows that technical students need to understand the semantic, rhetorical and subject-related variables that determine lexicogrammatical and discourse-semantic choices. As the authors point out in their conclusion, rather than help, a sentence-grammar approach to writing which ignores grammatical-rhetorical dependencies will only confuse the (advanced) engineering student trying to write acceptable papers in his/her subject field. The solution, according to the authors, is to train not only the student but the trainer to raise consciousness and understanding of the grammatical-rhetorical complexities and interrelationships involved.

In short, by showing that grammar is subordinate to rhetorical and discoursal relationships in a text, and by opening the door to discourse analysis, ‘Grammar and technical English’ is indeed a crucial paper in the development of EST, as Swales (1985: 59) rightly points out in his introduction to the article. The reason why the paper included in Swales’s (1985) volume contains only
the first third of the original article is that in the rest of the complete article “the methods of argumentation adopted and the types of conclusion reached are really quite similar” (Swales 1985: 58). Since the authors do not explain the possible pedagogical applications of their research, examples based on their research will be given in Chapter 6 of this dissertation.

In a follow-up paper entitled ‘Technical Rhetorical Principles and Grammatical Choice’, Lackstrom, Selinker and Trimble state that, as they have been consistently criticised for not providing a clear description of the rhetoric of EST, the purpose of their paper is to describe “in a precise manner the rhetorical or organizational choices which appear to have important syntactic consequences” (1973: 128). Specifically, in their paper they examine the “interrelations between the various levels of the rhetorical process” (128) to show how each level of the rhetorical process influences the next and instantiates specific grammatical choices.

First, in discussing the “the basic rhetorical unit in the writing of EST”, namely the paragraph, Lackstrom, Selinker and Trimble (1973) distinguish between the traditional and the conceptual paragraph, postulating that the latter in particular is the basic rhetorical unit in written EST discourse. In an admirably clear rhetorical-grammatical process chart, and in their subsequent discussion of it, they show that the basic structure of the paragraph is the result of rhetorical decisions and organisational choices that the writer makes. The development of the paragraph, in turn, depends on what they call “relational rhetorical principles”, which fall into two categories: natural principles and logical principles. If, for example, the writer has chosen to

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9 The four levels which Lackstrom, Selinker and Trimble (1973: 129) postulate are: Level A: The purpose of the total discourse; Level B: The functions of the units that develop level A; Level C: The rhetorical devices employed to develop the functions of level B; Level D: The relational rhetorical principles that provide cohesion within the units of level C.
show the structure and workings of a piece of apparatus in an experiment, natural space and time-order principles and lexical signals will be used.\textsuperscript{10} By contrast, where the nature of the material does not enforce the use of lexicogrammatical expressions of causality, the writer may nevertheless choose to include such expressions to have the reader share his/her interpretation of the nature and sequence of the events.

Second, their paper specifically comments on the effect of the rhetoric on tense choice, stating that their analytical findings suggest that, in general, theory is usually presented by means of the future tense, and that apparatus used solely for a particular experiment is usually described by means of the past tense. These tense choices are made specifically at level B of their rhetorical process chart\textsuperscript{11}. An important concept which Lackstrom, Selinker and Trimble use in their discussion is that of generality, a rhetorical notion “based on the presuppositions the author makes regarding the amount of knowledge the reader will bring to the material” (1973: 135). While the writer would use the present tense to express general theory, any information that the writer gives in support of a core notion or theory would require the use of the present perfect tense where the writer does not want to commit himself or herself with respect to future events—in other words, where it is important to indicate a restriction on the overall generality of the assumptions made. Where no generality is claimed, the past tense would be used. However, the semantics of generality is not restricted to the making of tense changes but involves other grammatical choices such as indicating nominal plurality and

\textsuperscript{10} It is worth noting, as the research detailed by Urquhart 1984 (in Alderson and Urquhart 1984: 160-175) suggests, that suprasentential (rhetorical ordering), using time and space organisation, for example, improves students’ readability scores; in short, rhetorically ordered texts are easier to read and remember. Also refer to the experimental research paper by Davis et al. (1988).

\textsuperscript{11} These functions are Reporting Past Research, Discussing Theory, Stating Purpose, Describing Apparatus, Explaining an Illustration, and Stating the Problem.
modifying the use of the article. Unfortunately, it has not been possible to obtain a copy of the mimeograph\textsuperscript{12} in which they discuss the practical application of their research.

In the first part of a subsequent paper entitled ‘\textit{Formal Written Communication and ESL}’, two of the former authors, Selinker and Trimble (1974), continue their work on the relationship between grammatical choice and rhetorical function, once again with reference to tense choices in particular. As they explain, their research was motivated inter alia by the realisation that non-native speakers of English tend to apply native-language rules in written EST. On the one hand, the authors had to modify a linguistic view which attempted to deal with sentence properties decontextually—that is, in the form of isolated sentences—and a prescriptive rhetorical view relating correct sentences to technical paragraphs. As the authors argue and show in their paper, such approaches fail to do justice to the complex, dynamic relationship between grammatical choice and rhetorical function as influenced by shared presuppositional knowledge and the author’s intention in using one tense in preference to another in order to reflect the importance he/she attaches to the importance of the events being described or discussed. The pedagogical applications of some of their insights as discussed in the second part of their paper will be surveyed in Chapter 5 where the pedagogical applications of the three approaches in this literature survey are outlined.

\section*{2.1.2 The identification of implicit and explicit rhetorical information}

In the fourth paper surveyed in this sub-corpus, ‘\textit{Presuppositional Rhetorical Information in EST discourse}’, Selinker, Todd Trimble and Trimble (1976)

deepen the discussion of the interrelationship between technical rhetorical principles and grammatical choice as presented in the paper by Lackstrom, Selinker and Trimble (1973). While the earlier paper concentrates largely on level B of their rhetorical process chart, their next paper focuses on the next level (C)\textsuperscript{13} where the functions of level B are developed.

As Selinker, Todd Trimble and Trimble (1976) point out, non-native writers of English EST discourse have difficulty recognising the existence of implicit presuppositional (shared) rhetorical information which enables the experienced native reader to make sense of the total discourse. In their paper, they focus on two of the specific rhetorical functions—definition and classification—listed in their revised hierarchical rhetorical process chart since these are often implicitly embodied and explicitly stated in EST discourse. In Figure 2 (1976: 284), the authors give an example of a fairly typical, explicitly presented formal definition and classification (of a barometer) as contained in three indented physical paragraphs forming one conceptual paragraph. The definition explicitly names the object being defined, identifies the class or set of which the object is a member, and gives “selected essential characterising information about the differences which distinguish the concept from all other concepts which are members of the same class” (1976: 284). Their (conceptual) hybrid ‘definition-classification paragraph’, the authors argue, shows that the typical EST paragraph is a rhetorical mixture (containing in this instance the rhetorical functions of definition, classification; and physical and function description, in addition to using the rhetorical techniques of comparison and cause and effect).

However, as Selinker, Todd Trimble and Trimble (1976: 285-286) further show in their discussion of Figure 3, the rhetorical functions of definition and

\textsuperscript{13} These devices are Definition, Classification, Explanation, Description, and Argument.
classification can also be “buried” or encoded implicitly in the discourse. As such, the overriding purpose of the paragraph is usually not to define but to serve the purposes of another rhetorical function on either level B or C of their rhetorical process chart. In fact, they point out that definitional information is often buried in paragraphs written with the purpose of describing, explaining, classifying, or presenting information. In the next sample paragraph on chelation in medicine (Figure 4), the authors illustrate that the defining information is not presented in direct relation to chelating agents themselves, but “in relation to an unnamed class of drugs of which chelating agents is [sic] one member” (286). In other words, the implicit information has to be extracted from the supporting information in the sentences in which it is encoded. Finally, in Figure 5 (288) the authors show that, even when a paragraph contains fairly easily extractable implicit information, the overall rhetorical function of the paragraph may not be to classify. Sometimes the classification pattern is simple, but in other cases it could be complex and would have to be extracted on two levels. Where such a two-level structure was present in a paragraph, the authors’ students experienced difficulty in identifying and extracting the information correctly.

Pedagogically, as the authors argue, students should first be familiarised with explicit definition and classification patterns before being exposed to paragraphs in which the rhetorical functions are encoded implicitly. The latter stage would involve first teaching the student to identify and extract the information and then reordering the information into explicit form. However, as the authors point out, it is not yet clear to them what kind of input learners of different ages and in different technical contexts would need in order to improve their reading skills so as to access the full meaning of a piece of technical discourse. Since no clearly defined pedagogical approach is
articulated in this paper, these points are mentioned here rather than separately in Chapter 5.

2.1.3 Rhetorical function shifts in EST discourse

The final paper by Selinker, Todd Trimble and Trimble (1978), this celebrated team of pragmatic researchers in the domain of GRA, is entitled ‘Rhetorical Function Shift in EST Discourse’, a follow-up to their previous paper discussed above. As the authors point out at the outset, “non-native” students of EST need to understand the manner in which implicit rhetorical information is encoded in a paragraph so as to comprehend the total discourse in it. In their paper, the authors describe two methods of paragraph development: rhetorical process development and rhetorical function-shift development (312); the latter, they claim, is widespread in EST discourse. The first method refers to the manner in which a core generalisation and supporting information are clearly stated or clearly implied by an author, who has to make rhetorical decisions and organisational choices. While this process is widespread in EST paragraphs, it is not the only one. Indeed, the authors detail another kind of paragraph which they have discovered and in which core ideas are seldom explicitly stated or signalled, hence causing considerable difficulty for the student whose first language is not English.

What happens in practice is that an author would shift from one general rhetorical function to another within a paragraph without signalling the change to the student. This is well-illustrated in a sample paragraph (1978: 314) which they append to show how an initial focus on the nature of a particular kind of engine suddenly shifts to general theory and then back to the initial rhetorical function. The question arises whether clues to the final
shift are explicit or implicit, and whether the reader uses linguistic, rhetorical, or content information to decide.

The problem Selinker, Todd Trimble and Trimble (1978) set out to investigate was how a reader with the requisite technical information to understand a paragraph makes these rhetorical function shifts. To this purpose, they developed and tested a series of easily falsifiable hypotheses which, for reasons of economy, are not outlined here, except for mentioning that the authors were able to falsify three of their five main hypotheses, leaving them with two main research areas to investigate with regard to lexical presuppositional information: “concomitant with shifts in tense” and “shifts in rhetorical function without shifts in tense” (1978: 317). This also raises the difficult question as to what presuppositional information the experienced reader brings to bear on the discourse to make sense of it. They conclude that, in doing applied research, teachers should give due attention to “the most serious learners” (1978: 318) to try to understand the difficulties they experience and why they become frustrated. Future research, the authors conclude, should strive to find ways of integrating the two areas of rhetorical function shift; investigating whether there are other areas of EST paragraph development, also in other languages; and exploring and mining “‘universals’ in scientific and technical languages” (1978: 320) for their pedagogical value. The pedagogical implications of this complex paper are discussed in Chapter 5.

2.2 More recent contributions to GRA

2.2.1 Rhetorical structure and linguistic rhetorical structure

Wood (1982: 121-143), in a paper entitled ‘An Examination of the Rhetorical Structures of Authentic Chemistry Texts’, claims that the work Lackstrom,
Selinker and Trimble (1973) and Selinker, Todd Trimble and Trimble (1976, 1978) on the concept of rhetorical structure remains too general for research purposes and that the concept of rhetorical function should be examined more closely to find out what exactly it means. He makes a binary distinction between *rhetorical structure*, the functional division of a text, and the *linguistic rhetorical structure*, the linguistic form in which the rhetorical structure is realised, in an attempt to adopt a more balanced perspective on rhetorical approaches to EST reading and writing.

In the preamble, Wood (1982) comments on the complex issues of simplification and authenticity, pointing out that *adaptation* (simplification) and *recreation* (providing simplified accounts) have been proposed as pedagogical alternatives to the problems surrounding the use of authentic texts, but that these alternatives are not without their shortcomings. Whereas simplified texts might be suitable for beginners and authentic texts for advanced students, they would fail to serve the need of intermediate students. What is required is “an approach which combines the recognition that scientific articles are structured with one which realises that with less than advanced learners genuine texts often cannot be used” (1982: 122).

Wood’s (1982) discussion of the corpus and methodology, however, compounds the problems associated with the murky authenticity-simplification debate, raises questions as to the operationalisation of constructs, and possibly adds to the terminological confusion. For example, the author explains that the “simplified and genuine” texts constituting the corpus were chosen from the reader *Chemistry* by P.A. Ongley in the Longman Technical English Supplementary Readers series (1975), which contains “simplified versions of genuine chemistry texts” (1982: 123). This begs the question how the use of the coordinator “and” in the phrase
“simplified and genuine” is to be understood in its immediate context, and what, exactly, constitutes genuineness. It is further explained that 20 of the (supposedly genuine) texts from the chemistry reader “were versions of articles from specialised chemistry journals” (123), but without specifying the nature of the “versions”. Next, half of the 20 texts were chosen in their “original and simplified form” on the basis of their “usefulness and availability” (123), once again without specifying how the two constructs were operationalised for the purposes of the research. Finally, the ten texts were analysed to determine their discourse structure (using a “functional sentence perspective”), “scrutinized” to “work out” their rhetorical and linguistic rhetorical structure, and a “model text was produced on the basis of this analysis” (123). How the nature of the model text was established is not explained.

Wood returns to the rather complex and obscure simplification debate, arguing that, as a procedure, it could generate more problems that it resolves. The solution posited was to examine a series of texts (“simplified”, “genuine”?) to determine whether they reflected a consistent rhetorical structure, which would “define a text type, or genre” (1982: 126). Therefore, 10 of the two main (analysis and preparation) types of articles in Ongley’s reader were compared with their originals on the basis of functional rather than formal divisions to determine whether there was a common rhetorical structure, which could be said to define a text-type or genre. In the actual analysis, both types of article were found to follow more or less the same functional rather than formal rhetorical pattern, despite the presence of sub-headings in the original ones. The author concludes that it is rhetorical structure which is the first defining parameter of the scientific article.
As regards the linguistic rhetorical structure, Wood argues that surface syntactic forms can be “decomposed to form normalized texts” (1982: 128), thereby eliminating purely stylistic variations. According to Wood, every sentence in one of the variable forms has a normalised, paraphrased version. This means lexical and syntactic substitution is possible without altering the rhetorical-linguistic or discourse structure of the text. In the conclusion, Wood claims that the two kinds of chemistry texts have a typical rhetorical structure and, in the case of the preparation article, a typical linguistic-rhetorical structure.

Since the production of model texts, or having the teacher “rewrite the content of the type of textbook they [the students] are familiar with” (Wood 1982: 136), would be extremely time-consuming and fraught with difficulty, the possible pedagogical applications of Wood’s research will not be discussed in the following chapters.

2.2.2 The analysis of tense usage in EST

Malcolm (1987), in her paper entitled *What Rules Govern Tense Usage in Scientific Articles*, addresses the question whether tense usage in EST discourse is governed by rhetorical functions unique to a particular genre, or by some temporal meanings governing tense choice in general English. Like Lackstrom (1972), Master (1987), and Swales (1990), she concludes that tense usage is not merely a given grammatical structure to be taught in a decontextualised, discrete-point form, but that it is often context dependent. However, she appears to differ from them in that she believes a number of tense choices to be context independent.
Malcolm asserts, “… while tense choices can be correlated with rhetorical uses unique to the genre of a journal article, these correlations can be accounted for by the same temporal meaning and uses attributed to tense categories in general English” (1987: 31-32). She therefore believes that it is wrong to claim, “as has been asserted in previous [unspecified] research on EST discourse,” that tense choices are non-temporal and argues that our teaching loses “elegance and simplicity” unless our explanations are embodied in a broader understanding of “how English works” (41). Leaving aside the vexing question of how exactly English works and the issue of “elegance and simplicity” in teaching, it should be pointed out that, more than three decades ago, researchers such as Lackstrom, Selinker and Trimble acknowledged the validity of time-tense relationships in general English but cautioned against “an undue emphasis on time-tense relationship [which] may obscure what are often more crucial relationships” (1972: 5).

Malcolm’s (1987) article, which comments on an analysis of 20 experimental reports from the area of behavioural paediatrics, proposes the following hierarchical, sociolinguistic categories as a framework for the analysis of tense usage in scientific articles: components of the situation (context of situation in Hallidayan linguistics): rhetorical functions; and temporal meanings. The higher-level categories affect the range of categories at the lower levels. The first category, the components of the situation, includes aspects such as the medium, setting, purpose, and participants involved; the second level is said to comprise two separate levels (a referential or “what”-axis—field in Hallidayan linguistics—and a deictic or “how”-axis); and the third or lowest level refers to the temporal meanings affecting tense usage, with tense said to be a grammatical category forging a connection between the time of utterance and time of situation (33).
The first task Malcolm (1987) set herself was to correlate the tense of the finite verb in each clause with the rhetorical function it expressed; the second, to test whether these tense choices can also be explained by the time meanings ascribed to them in general English. In her analysis of the articles, she identified four deictic functions on that axis: statements of rhetorical intent, references to non-linguistic (charts, diagrams and tables, for example) information, the relating of information to the current discussion in the discourse (implied references), and summaries of what has been presented in the report. The referential functions were differentiated by means of a “generality continuum” (1987: 36). On the basis of this analysis, Malcolm (1987: 36) postulated three hypotheses:

- generalisations will be phrased in the present tense (e.g. Accurate referencing is a critical constituent of dissertation-writing);

- references to specific experiments will use the past tense (e.g. The experiment revealed that …); and

- references to areas of inquiry, in the present perfect tense (e.g. A precipitous increase in motor-vehicle accidents has been noted in …)

Based on her tabulated findings, Malcolm (1987: 37) argues that her “predictions” held true for the majority of cases. Finally, her article makes mention of a number of obligatory constraints and strategic choices operative during the writing process. As she explains, the obligatory constraints would allow only one temporal meaning, whereas the strategic choices would permit more than one.
In her Conclusions and Implications, Malcolm states that her study presents “a somewhat different approach” (1987: 41) from that reported on in other research papers on the same topic. She reiterates that, rather than correlating tense choice with rhetorical moves, she has attempted to include such correlations into a “broader time-related understanding of tense” (41). It should perhaps be noted that Malcolm’s study was based on an analysis of twenty experimental reports, but that no comparative analysis was made with a similar number of, say, popularised science articles using more general English—assuming such an analysis is feasible. A careful comparative study of her paper in relation to those by Lackstrom et al. (1972, 1973) is unlikely to show that her findings add significantly to our understanding of the complex field of tense-time relationships in EST. The pedagogical applications of her research will be discussed in Chapter 5 of this review.

2.2.3 The use of lexical verbs in EST discourse

The grammatical-rhetorical use of verbs in EST receives further attention in a complex statistical study of lexical verbs\(^\text{14}\) in two types of clinical and experimental medical research report by Williams (1996). He points out that studies of the verb in EST have focussed largely on the connections between “general temporal meaning, tense and communicative functions” (1996: 176), but that the contextual and semantic aspects of the verb have not been researched in any detail. The corpus of his study of these two aspects of the verb was based on two groups (clinical and experimental) of four standard

\(^{14}\) A lexical verb signals the main action in which the subject of the clause is involved and does not require a helping or auxiliary verb.
research articles, each of which was translated from Spanish and published in English, and three additional articles. In brief, the method involved counting all the finite and non-finite instances of lexical verbs, with hedging and main verbs counted as finite, and compiling lists of all the verbs occurring more frequently than four per 10,000 running words. Next, the verbs “were analysed in terms of their contextual meanings according to the following classification: reporting, observation, relations, defining, cause and effect, change and growth, and methods verbs” (177). The tabulated results of the frequency counts were then analysed statistically by means of the chi-square test. The rest of the paper contains a detailed statistical discussion of the findings relating to the classification of the lexical verbs. An important general finding is that, while some 28 verbs may be common to all medical research articles, 51 other verbs at the same frequency depends on the research type. The author concludes that the research findings suggest that “the differences in the communicative purpose and its textual realization between medical research types may be greater than previously assumed” (195), and that it is unreasonable to expect ESP students to read only the ‘best’ literature in their field at the expense of exploiting “acceptable” texts instead.

2.2.4 The use of the present-perfect tense in EST discourse

The use of the present perfect tense in the divisions of biology and biochemistry journal articles is specifically examined by Gunawardena (1989), with extensive reference to the work of Lackstrom, Selinker and Trimble (1970, 1973). She argues that the use of the present perfect tense in the Introduction, Method, Result, and Discussion sections of entire journal articles
in the area of EST has not been sufficiently researched, and that the purpose of her study was to determine whether the meanings expressed by the present perfect tense “are related to the rhetorical functions of each rhetorical division in biology and biochemistry journal papers” (1989: 266). Her small corpus comprised five journal articles from each one of the two specialisations; that is, 10 articles in total. The length of each rhetorical section was measured and it was found that the biology articles were slightly longer than the biochemistry articles, a factor which she acknowledges could have affected the frequency counts in this occurrence of the present perfect tense. The meanings expressed by the present perfect tense were then analysed in terms of a five-point classification (267) of meanings: a past experience with current relevance, a retrospective present, a repeated action, a completed action, and an expanded perfect. The frequency counts showed no significant differences between the two sciences per se but major differences between the four major rhetorical sections of the papers. In fact, the present perfect “occurs most frequently in the Introduction and Discussion sections of the papers, with a larger number in the latter; however, “the Introduction contains more present perfect constructions in terms of the length of the section than the Discussion” (268). It should be asked how relevant frequency counts are insofar as they cannot accurately reflect non-temporal choices, which are based on the researcher’s intentions as present in his/her mind only.

Gunawardena (1989) claims that her research findings make it impossible for her to accept “totally” Lackstrom, Selinker and Trimble’s (1970, 1973) distinction regarding the use of the past and present tenses for reporting past research; furthermore, that her research also does not support their claim that the present tense is used to express generalisation. Indeed, Gunawardena (1989) claims her research study revealed that the present perfect tense is used to convey the meaning of past experience relevant to what is being studied,
and that it occurs in both the Introduction and Discussion sections of articles in the two disciplines or specialisations examined by her. Furthermore, the present perfect forms “expressed three types of variation to the meaning of a past experience with current relevance” (1989: 271); that is, the retrospective present, the inclusive present, and expanded perfect. The extent to which Gunawardena’s research findings differ from those of Lackstrom et al. (1972, 1973) and Malcolm (1987) would require a detailed comparative analysis in relation to a number of factors (one of which is the exact meaning and implications of the concept of generalisation and its variants), which does not fall within the scope of this literature review.

Finally, it should be mentioned that Gunawardena’s (1989) research problem and findings are very similar to those recorded by Malcolm (1987: 36) in a paper which appeared about a year earlier than Gunawardena’s. Moreover, Gunawardena’s suggestion that tense choice—for example whether to use the past of present perfect tense—is also determined by the degree of importance a writer attaches to the research s/he is quoting was made some seventeen years before by Lackstrom, Selinker and Trimble (1972: 6-7; 1973: 134). Similarly, it should be asked why Gunawardena (1989) chose to claim that “a fact that emerged from this [my emphasis] study is that it is misleading to talk about only about time lines with regard to the selection of tenses” (1989: 272), which is the conclusion similarly made by Lackstrom, Selinker and Trimble who stated, “…an undue emphasis on time-tense relationships may obscure what are often more crucial factors” (1972: 5).

2.2.5 The notion of generality and the grammatical article

The problematic issue of ‘generality’ in relation to the grammatical unit of the article is explored in the literature review of a paper entitled ‘Generic “The” in
The author addresses the question as to what governs the generic *the* in English, and in EST in particular, in terms of a discourse hierarchy by asking, “Is it the article itself? Is it the noun, the verb, the context?” (1987: 166). In Master’s paper, the specific research question concerns the function of the generic *the* at the level of the sentence and higher. In the main, he (174) hypothesises that the generic *the* will occur:

- less frequently than *a* and *O*;
- with verbs expressing causality and/or definition;
- more frequently in subject position;
- in sentences at the beginning and end of a paragraph; and
- more frequently in the initial and final paragraphs than elsewhere.

These hypotheses were tested in a comprehensive analysis of eleven articles from a broad spectrum of topics from the *Scientific American*. Before Master (1987) could proceed with the frequency counts, three problems had to be confronted. First, it had to be decided what constitutes a generic noun; second, the problem of blurring the distinction between generic and specific usage by modifying instances of generic noun topic usage had to be addressed; and, third, it had to be decided which morphological forms should be considered generic. Finally, the author decided to count only the generic articles associated with the topic noun, non-modified instances of generic topic usage, and to ignore *the* plus a plural count noun (175).

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15 The article system particularises or generalises nouns. For example, when an article is used generically, it denotes a class, a member or all the members of a class.
All in all, the research corpus generated 269 unmodified generic nouns in a total word count of about 50,000. All the hypotheses were confirmed, except for the first and possibly the fourth in that a appeared to occur less frequently than O and the, and generic articles were found to occur more frequently in the medial than the initial or final position. However, the author points out that, if it is taken into account that “initial” and “final” only refer to one sentence each, as opposed to “medial” which refers to three to four sentences, then the fourth hypothesis was also confirmed. The author concludes that his contextual analysis shows that generic articles play a role at higher levels of discourse and that they deserve skilful treatment in ESP classes to assist the student in coming to grips with the grammatical-rhetorical uses of this difficult grammatical item.

As Master (1987: 165) rightly remarks, the article system in English is one that foreign students of English have considerable difficulty with—indeed, it sometimes attributable to the lack of the article system in the L1 of the learner. It could be argued that the reason for this is twofold: on the one hand, there is the inherently difficult problem of how the generic the is used in academic discourse; on the other hand, there are the difficulties and confusion caused by the well-intentioned but inexperienced teacher who has not come to grips with the problems involved in teaching the article system to students. In a small way, Master’s study should alert ESP teachers to some of the difficulties inherent in the article system and encourage them to confront the problem head-on in class to encourage “careful explanation and re-explanation…with numerous examples, both from students’ papers and from natural texts” (1987: 184). The purpose of Master’s paper is to provide the teacher with more information on the expected difficulties inherent in the article system, but it should be added that it does not provide a detailed account of how the teacher should go about dealing with the problem systematically. Since
Master’s article does not suggest specific pedagogical applications, this complex topic will not be further discussed in Chapter 5.

2.2.6 The grammatical-rhetorical role of personal pronouns in EST discourse

The interest in the grammatical-rhetorical (or perhaps sub-rhetorical) role of personal pronouns in EST is demonstrated by the quantitative-qualitative analysis of their use in 36 journal articles. By viewing written text as interaction, the author Kuo (1999: 121-138) captures the shift from an earlier concern with grammatical features to a social constructivist (contextual) approach to the communicative function of written scientific discourse. It should be noted that, while the use of the personal pronouns in the articles examined by Kuo is not determined by the macro-rhetorical structure of or overt rhetorical moves in the text, on a sub-rhetorical level they play a significant role in helping to realise the more ‘subliminal’ discourse functions of the text such as “explaining what was done, proposing a theory, approach, etc.; stating a goal or purpose” and “showing results of findings” (1999: 130), to name but a few. Moreover, unlike the study by Tarone et al. (1998), which concentrates on a GRA of the use of active-passive constructions in scientific writing, Kuo’s (1999) paper focuses on the communicative rhetorical-semantic role of the pronominal grammar in scientific journal articles.

Kuo’s article gives a brief survey of the historical development of scientific journal articles to indicate the extent to which they have become diversified, using a “varied and dynamic style geared towards the specific needs and requirements of each scientific discipline as a result of increasing professionalism… to “reflect the “complicated role relationships among a scientist as writer, his/her peer researchers as readers, and the scientific
community” (1999: 122). This challenges the belief in the supposed neutrality and impersonality of the research article as a genre (also see Swales 1993: 114, 125). Kuo’s (1999) study discusses a quantitative frequency analysis of the use of personal pronouns in a corpus of 36 scientific journal articles, and gives a qualitative interpretation of the frequency counts. He identifies five kinds of semantic pronominal references and discourse functions of *we*, *our* and *us*: writers, writers and readers, writers and other researchers, the discipline as a whole, and ambiguous. The inclusive use of *we* is largely confined to writers (65.5%) to explain what was done and to writers and readers (29.1%) to assume shared knowledge, goals and beliefs. Of all the occurrences of *us*, 56% refer to writers and readers; and 93.2% of the instances of *our* refer to writers themselves. It is noteworthy that the first-person singular pronoun is not used at all in the articles surveyed.

As Kuo explains in his conclusion, authors find themselves in the complicated situation of having to “emphasize the originality and importance of their research, while, on the other hand, they must humbly seek the acceptance and recognition of editors, readers, and the scientific-academic community” (1999: 135). The use of personal pronouns significantly affects and determines the manner in which this is achieved, as his study admirably demonstrates.

Significantly, Kuo’s research once again shows that grammatical decisions cannot be based on a body of prescriptive rules but depend on lexicogrammatical choices influenced by the specific communicative purpose of the discourse in each case. The nature of the discourse is socio-interactive, influenced on the hand, as Kuo argues, by the writer-researcher’s need to draw attention to the originality of his/her research in order to find a publisher, and constrained, on the other hand, to seek the acceptance referred
to previously. While Kuo does not address the pedagogical implications of his research, it is clear that grammatical-rhetorical consciousness-raising of the extent to which grammatical choices are constrained by contextual considerations would assist the advanced student in understanding the larger contextual framework in which discourse operates.

In a quantitative-qualitative study entitled ‘Humble servants of the discipline? Self-mention in research articles’ on essentially the same subject, Hyland (2001) gives a detailed discussion of the results a frequency-count investigation into the use of self-citation and first-person pronouns in 240 research articles in eight disciplines: physics, marketing, biology, philosophy, applied linguistics, sociology, electronic engineering, and mechanical engineering. The computerised frequency count was based on a corpus of 1,400,000 words and, according to the author, “all cases were examined in context to ensure that they were exclusive first person uses and to determine their syntactic position and pragmatic function” … and “all forms of we, us and our which referred to participants other than the writers were eliminated” (2001: 211).

The only disciplines in which the first-person singular “I” is used significantly more frequently than in any of the others are philosophy, applied linguistics, and sociology (35.6, 36.1 and 12.7 respectively per 10,000 words). As mentioned, no instances were recorded in the scientific research articles surveyed by Kuo (1999). Indeed, as Hyland points out, if text length is ignored, it appears that “some 69% of all cases of self-mention [self-citations, pronouns and others] occur in the humanities and social sciences, with an average of 38 per article, compared with only 17 in science and engineering” (2001: 213).
In his lengthy discussion of the data presented in his four detailed tables, Hyland argues that the inclusion or omission of first-person pronouns and self-citations is not merely a stylistic nicety, but that it plays a “crucial role in mediating the relationship between writers’ arguments and their discourse communities, allowing writers to create an identity as both disciplinary servant and persuasive originator” (2001: 223), subject to the conventions of their respective disciplines. It is once again clear that grammatical choices are not arbitrary but closely related to a writer’s rhetorical intentions and communicative purpose. The pedagogical implications of these findings will be discussed in chapter 5.

### 2.3 Approaches focusing on complex grammatical structures

These approaches target the use of conditionals, *that*-nominal constructions, and active-passive verb forms, which will be discussed next.

#### 2.3.1 The use of conditionals in medical discourse

The focus on complex grammatical structures is well illustrated by Ferguson’s (2001) examination of the use of conditionals in medical discourse. In a largely quantitative study entitled ‘If you pop over there: a corpus-based study of conditionals in medical discourse’, he examines the formal, semantic and pragmatic aspects of if-conditionals in two written genres and one spoken genre: research articles, journal editorials, and doctor-patient consultations. The descriptive framework of the study draws brief attention to the differences between logico-philosophical accounts of if-conditionals and natural-language conditionals. The latter, as Ferguson (63) points out, require a plausible relationship between the protasis (the first or introductory clause in a sentence) and apodosis (the concluding clause of a sentence), usually of a
cause-effect type. Given the number of different typologies of the conditional, Ferguson (65) identifies Athanasiadou and Dirven’s (1997) framework—course-of-event, hypothetical, and pragmatic conditionals—\(^{16}\) as being of particular relevance to his study. He readily acknowledges that the typology can be challenged on linguistic grounds, but argues that it is useful in his pedagogically-oriented description because of its wider range of types, the transparency or accessibility of the categories, and the relatively high frequency of the course-of-event type in the data. For reasons of economy, Ferguson (2001: 67) restricts his study to the following parameters:

- the frequency of conditionals across different [the three] medical genres;

- conditional types (viz. course of event, hypothetical, pragmatic) and their frequency of occurrence across genres;

- verb forms in conditionals in relation to degree of hypotheticality expressed, and their distribution across the genres; and the

- communicative functions of conditionals in the three genres.

Ferguson’s (2001) paper gives a numeric tabulation of the sample details, the distribution of types across the three genres, the verb forms in conditional sentences across the three genres, the distribution across the various sections of the conditionals in the journal articles, and the distributions between the

\(^{16}\) Ferguson (2001: 65-66) gives the following examples: [Course of event]: “If he doesn’t take the tablets, he feels dizzy”; [Hypothetical]: “If you come tomorrow, we’ll have a picnic”; [Pragmatic]: “If you are thirsty, there’s beer in the fridge.”
methods and discussion sections of the articles. Of particular interest and significance are the main findings and discussions (69-77), for example, of the:

- high incidence of course-of-event conditionals in scientific writing in general, and in clinical medicine in particular where clinical observation takes precedence over logical argumentation;

- preponderance of pragmatic conditionals in the consultation genre;

- differing verb-form patterns across the three genres;

- significant number of hypothetical conditionals in the discussion sections of the journal articles due to the argumentative and speculative nature of such sections;

- use of modals in the consequent clause of a conditional sentence to facilitate hedging;

- use of modals in journal editorials to communicate circumspection about predictions;

- presence of conditionals without an apodosis in a large number of spoken conditional sentences in doctor-patient consultations;

- distribution of protasis and apodosis across various speaker turns in such consultations; and the
use of the conditional in polite directives and for the purposes of prediction and prognostication in this genre.

In his conclusion, Ferguson (2001: 79-81) draws attention to the pedagogical value of the insights generated by his study (to be discussed in Chapter 5), acknowledges the limitations of the study (the consideration of only one construction and the relatively small corpus), and lists a number of topics worthy of further research.

2.3.2 The use of that-nominal constructions in EST discourse

The shift from structurally simple but contextually complicated grammatical items to complex grammatical structures in GRA is also marked by West (1980), in a paper entitled ‘That-Nominal Constructions in Traditional Rhetorical Divisions of Scientific Research Papers’. The author points out that, to date, verbs and articles have constituted the primary grammatical forms related to rhetorical organisation, but that “extensive work has not been done to relate complex grammatical forms to scientific organisation” (1980: 483). In particular, "no studies have related nominalization occurrence and scientific rhetorical divisions” (1980: 483), a structure which advanced ESL language students find difficult. His study was motivated by two main problems: the lack of empirical research into the connection between complex grammatical structures and scientific rhetorical organisation, and the pedagogical need to establish such a connection.

West’s (1980) corpus comprised a total of 15 randomly selected research articles, with four rhetorical divisions each, in the field of the biological sciences. The author determined the total number of T-units per rhetorical section in each section after deciding that a T-unit would be considered to
comprise one main clause with all the subordinate clauses attached to it. Next, the number of that-nominal constructions was determined for each rhetorical section in each of the four articles, and an ellipsed that-nominal in the second conjunct of two conjoined that-nominal constructions was counted in addition to the first.

Significantly, the results revealed a substantially higher total (32.83) of that-nominals per 100 T-units in the first rhetorical unit, the Introduction, compared with the number in the Results section. The Methods section contained a significantly lower number of that-nominals than any of the other sections, and the number of that-nominals in the Discussion section was not markedly different from the number in the Introduction and results sections. West (2001) believes that his results support the belief that grammatical-rhetorical dependencies exist in EST writing, and that his results similarly validate the existence of a hierarchy of that-nominal densities in the four divisions of research papers in the biological sciences. In his insightful discussion of his statistically-processed research results, West argues that, because that-nominalisation relegates statements to secondary position in other statements, “that-nominals realise claims made about other statements rather than simply making statements” (1980: 487). As he points out, the

- Introduction, the motivating section of the paper, makes claims about other research studies and therefore contains a large number of that-nominals;

- Discussion section has to explain the results of statistical findings in non-statistical language, which requires the use of that-nominals; and the
Results and Methods sections, by comparison, make few if any claims about other statements as they require few that-nominals.

It follows that the density of that-nominals is directly related to the rhetorical functions of the sections in research papers.

Pedagogically, West’s (1980) findings mean that that-nominals cannot be divorced from teaching and coordinating the functions of the rhetorical divisions of research papers (487), which in the experience of this reviewer is frequently not the case in practice. Important suggestions for further research in this area as suggested by West include the questions whether the infinitive equivalent of the that-nominal appears as frequently as the latter; how the specific forms of the that-nominals relate to the different rhetorical sections; and how specific vocabulary items (lexical verbs) are distributed in the scientific papers. Since West does not give examples of how that-nominals should be taught, a number of practical applications will be suggested in Chapter 6.

2.3.3 The frequency of active-passive verbs in EST discourse

Another complex grammatical structure, the frequency of the active and passive verb forms, is examined in a study by Tarone et al. (1998). In an analysis of two astrophysics journal papers, the authors show that, while ESP/EST writing in general exhibits a high frequency (46%-47%) of passive verb forms, this is not a universal feature of all scientific texts. The reason is that the rhetorical nature of a scientific text has a significant bearing on the grammatical structures used to realise its communicative function. Research articles, for example, describe either a specific study or an experiment and exhibit a particular schematic structure, together with the specific
grammatical forms needed to realise it, which has led to the mistaken belief that *all* scientific journal papers have, or should have, the same structure. Astrophysics journal papers, by contrast, are never based on experimentation but on logical argumentation; as such, the genre rhetorically resembles an inverted pyramid rather than an hour-glass in shape\(^{17}\) and demonstrates a high incidence of active instead of passive verb forms (115). Another notable exception to the hour-glass structure mentioned above is the medical text, where the active voice predominates.

Tarone et al.’s (1998) comparative empirical study of a very small sample of two astrophysics journal papers published in *The Astrophysical Journal* involved conducting an initial general survey to determine whether or not there appeared to be a preponderance of passive verb forms in the genre. After identifying a preference for the active form of the verb in the papers surveyed, the authors undertook an examination of the frequency of active and passive verb forms in the two papers, restricting their count to finite verb phrases (excluding bare ‘-en’ particles, verbs in footnotes, captions and charts, and disregarding the difference between passive and stative verbs). In addition to counting all the active verb forms, the authors also included first-person plural active verb forms. Next, they formulated hypotheses concerning the obvious rhetorical function which dictated or prompted the choices between the active and passive forms.

Tarone et al.’s (1998) count showed a highly significant (88.5% and 81.4%) incidence of active verb forms in the two papers despite the presence of some

\(^{17}\) In his discussion of the macrostructure of the Research Article, Swales (1993: 133-134) draws attention to its progression from the discussion of the general field or context of the experiment to the specific experiment itself before the focus widens again in the Discussion section in which the general implications are discussed. By contrast, Tarone et al (1998: 115; 120) argue, in astrophysics research papers, the movement is from general physics to specific physics and observations, specific equations, and specific solutions.
variations. The significant question the authors posed in their interpretation of the data concerned the rhetorical function of the active and passive verb forms in the two papers, and resulted in their formulating the following four generalisations in an attempt to account for the results:

- **Generalisation 1:** “Writers of astrophysics journal papers tend to use the first person active *we* form to indicate points in the logical development of the argument where they have a unique procedural choice; the passive seems to be used when the authors are simply following established or standard procedure, as in using accepted equations or describing what logically follows from their earlier procedural choice”;

- **Generalisation 2A:** “When these authors contrast their own research with other contemporary research they use the first person plural active for their own work, and the passive for the work being contrasted”;

- **Generalisation 2B:** “When these authors cite other contemporary work which is not in contrast to their own, they generally use the active form of the verb”;

- **Generalisation 3:** “When these authors refer to their own proposed future work, they use the passive”; and

- **Generalisation 4:** “The use of the active as opposed to passive forms of the verb seems to be conditioned by discoursal functions of focus—as when the author chooses to postpone or
to front certain sentence elements for emphasis—or by the excessive length of these elements" (1998: 127).

In their critical evaluation of these generalisations, Tarone et al. (1998) conclude that there is sufficient evidence to suggest that generalisations 1-3 are valid, but that generalisation 4 is valid of general English patterns as well as of the patterns used in the astrophysics papers. The authors have reason to believe that future research will validate their belief that their first three generalisations also apply to other astrophysics journal papers, as well as to all other scientific papers based on logical argumentation. However, they point out that more research is needed into the use of the active and passive verb forms in all kinds of research papers to counteract the commonly held belief that the use of the passive predominates in scientific research papers.

As Tarone et al.’s (1998) study demonstrates, understanding the function of the complex grammatical choices conditioned by certain rhetorical functions within specific genres leads to a better understanding of the text and the way in which it is constructed. But, as the authors point out (129), the picture is complex and does not easily translate into a pedagogical approach to teaching the use of the passive. Indeed, as they state, many issues would have to be addressed before the students could be given accurate information to help them to understand the interconnections between rhetorical function and grammatical choice. It follows that their paper contains no suggestions for pedagogical application of their findings, which should caution against making general assumptions about the use of the passive in scientific writing rather than examining its use contextually.

In the next chapter, the context-based approaches to EST will be examined. It is hoped that the survey will show how the concern with the essentially
structural, grammatical and grammatical-rhetorical features of EST discourse paved the way for broader communicative and ethnographic approaches to genre-analysis.

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CHAPTER 4
CONTEXT-BASED APPROACHES TO GENRE ANALYSIS

This chapter will deal with discourse- and genre-based approaches to EST, which are essentially a continuation of the earlier paradigms and not a separate, new orientation in the evolution of genre-based analyses.

1. Discourse-based approaches

While researchers such as Swales (1993), Hutchinson and Waters (1990), and Robinson (1991) do not consider DBA to constitute a separate entity or body or inquiry, these approaches distinguish themselves from the earlier ones in that in that they stress the communicative, contextual aspects of language use. This paved the way for the more schema-oriented approaches of GA. As such, they form a bridge between the earlier structural-linguistic and later ethnographic approaches to GA. Since a great deal of uncertainly about these approaches arises from the terminological confusion and variation characterising the field, these matters will be addressed first.

1.1 Terminological confusion and variation

The considerable confusion surrounding the multiple uses of the concept of discourse and its adjectival variants (for example, discourse-based, discourse-related, and discourse-oriented) can only resolved by accepting the inherent broadness of the concept and examining each of its many uses in context. From the research literature, it is clear that discourse is a much broader concept than genre; indeed, that it is a blanket term referring to language in use in a multiplicity of professional and other contexts, each reflecting a specific orientation or bias. Cook (1989: 156) glosses discourse as “stretches of language perceived to be meaningful, unified and purposive”, which neatly
combines the various exophoric (contextual), endophoric (text-internal), and communicative features and functions (discourse purposes) of language in use. The study of written discourse per se, as Atkinson 1991 (in Grabe 1991: 690) points out, is a fairly recent development which only goes back to the mid-1960s.

Broadly speaking, it seems that the various interpretations of or approaches to DA depend on whether a predominantly top-down (starting with societal relationships) or bottom-up approach (beginning with the microlinguistic units of sounds in spoken discourse and letters in written discourse) is adopted. These approaches are well illustrated by Cook (1989: 81, Fig. 8), who points out that the lowest level that falls within the domain of discourse is cohesion (127).

Widdowson (1979: 89ff), in discussing DA, narrows down the field by distinguishing between text (the formal, structural-linguistic approaches to language description, e.g. cohesion) and discourse (the illocutionary, communicative textualisation of meaning). The latter he glosses as “the use of sentences to perform acts of communication which cohere into larger communicative units, ultimately establishing a rhetorical pattern which characterizes the piece of language as a whole as a kind of communication” (1979: 98). He argues that both ‘text analysis’ and discourse analysis “are different but complementary ways of looking at language in use” (1979: 99). The definitional variations in the use of the concept of discourse analysis are briefly outlined below.

- Bhatia glosses DA very generally as “a study of language beyond the sentence boundaries” and argues that, in linguistics, it has evolved into a variety of approaches and
“...been given several names, such as text-linguistics, text analysis, conversation analysis, functional analysis, and clause-relational analysis” (1993: 3).

Bhatia makes a binary distinction between GRA and DA. He argues that the former is largely the *writer’s discourse* limited to the syntactical features of the texts; as such, it provides only “limited information on discourse structuring in scientific discourse” (1993: 7) besides giving rise to misleading generalisations about, for example, the privileged position of definitions in the rhetorical structuring of scientific texts. By comparison, DA (“interaction analysis”) is largely the *reader’s discourse*. It follows that he regards meaning as an interactive, negotiated event, which, however, tends to simplify the production and interpretation of discourse in scientific and other specialised discourses. The reason for this, according to Bhatia is that DA, or interactional analysis, fails to “pay adequate attention to the socio-cultural, institutional and organizational constraints and expectations that shape the writer genre in a particular setting” (1993: 10).

Schiffrin (1990: 3) argues that DA, while being the most far-reaching area of applied linguistics, is also the least well-defined since discourse itself has been described both as a unit of language larger than the sentence and as the use of language in general.
Swales (1990: 103) cites Tannen (1990) as saying that DA is a uniquely heterogeneous and “dismayingly diverse” sub-discipline of applied linguistics, and characterises this proliferation of approaches as the multiplication of fissiparity due to the increasingly large number of contexts in which GA is used. Swales (1990) states that his own approach reflects his reservations about the pedagogical value of DA as opposed to his preference for pragmatically concentrating on the *sui generis* features of specific texts.

Cook defines DA as the examination of how “stretches of language, considered in their full textual, social, and psychological context, become meaningful and unified for their users” (1989: viii). Later in the same text, he defines *discourse* as “language in use, for communication” and DA as “the search for what gives discourse coherence” (6). However, he cautions that formal links or cohesive ties in themselves, while going some way to explaining why a succession of sentences could constitute discourse, are not enough (21).

In his cogitations on RA and GRA (“text”), some fifteen years prior to the publication of Bhatia’s text, Widdowson (1979: 37-64) characterises them as largely structural, quantitative approaches to language description. These orientations are in contrast to his own DA approach which regards scientific discourse as the verbal and non-verbal realisation of the communicative system of science (43)—what he calls the “universal rhetoric of science” (52)—and which, he argues, is realised in scientific text through a process of
textualisation. His arguments will be taken up in more detail in the following discussion of his valuable collection of essays written between 1971 and 1979.

1.2 Widdowson’s contributions

Widdowson is indeed the major pioneering figure associated with discourse-based approaches to EST, and is, as Swales (1985: 69) points out, “the single most influential voice in the development of English for Science and Technology” prior to 1985. In the 1979 introduction to a collection of his papers, Widdowson (1979: 3) sounds the timely warning that the term communicative is not just another banner to march behind uncritically; that a communicative orientation should investigate the nature of discourse processing and interaction, as well as taking into account other significant factors such as learning styles and strategies, the development patterns of language acquisition, and the role of the learner and teacher. In the Preface to his paper on two types of communication exercise, he mentions that his article was written at a time when the concept of communicative or notional syllabuses was becoming the new creed in language teaching (63). This new approach held that it is possible to organise language teaching “in terms of the content rather than the form of the language (Wilkins 1977: 18). While Widdowson (1979: 65-67) finds himself very much in sympathy with such approaches, he cautions against readily adopting the radical new approach to language teaching, arguing that communicative acts are culture-specific and that there are no explicitly stated rules of communicative language use.

1.2.1 The distinction between usage and use

In ‘The Teaching of Rhetoric to Students of Science and Technology’, the first in his volume of papers referred to above, Widdowson (1979: 8ff) makes his well-known binary distinction between language usage and use. While the first
kind is used to exemplify grammatical structures decontextually, the second communicates situationally contextualized meaning. This distinction, which Swales (1985: 71) argues is both rigid and inconsistent with the realities of the English language classroom, leads Widdowson to argue that “... there is a need to shift our attention away from an almost exclusive concentration on grammatical competence and to give equal attention to communicative competence” (1979: 13), a concept which, as Askehave and Swales (2001: 199) point out, is difficult to operationalise.

Widdowson argues that, while grammar is associated with correctness, rhetoric is associated with appropriateness; consequently, there is no reason why the latter should not achieve the same degree of precision as the former. He defines scientific discourse as a set of rhetorical acts “like giving instructions, defining, classifying, exemplifying, and so on” (1979: 16), and argues that their linguistic linking in order to form larger communicative units depends on certain established conventions. The manner in which this is done, Widdowson (16) argues, would also be the best way to characterise different language registers. From this paper, it is clear that Widdowson’s thinking signals a shift in emphasis towards the communicative purpose of discourse. However, it should be borne in mind, as Swales and Askehave emphasise, that communicative purpose is “typically ineffable at the outset, or only establishable after considerable research” (2001: 197-199); hence, operationalising it as an instrument of categorisation becomes extremely difficult.

1.2.2 The supposedly universal structure of scientific discourse

In the next paper, ‘An Approach to the teaching of scientific English discourse’, first published in 1975, Widdowson (1979: 21-36) rejects the “questionable”
assumptions underlying Hallidayan register analysis, namely, that language use varies in terms of its functional application in different situations. He claims that the concept of register as used by Halliday is based on a double fallacy resulting from confusion between language and a language and between form and function. Ironically, he then makes the equally questionable assumption (for example, see Swales 1985: 71; 1993: 65) that underlying scientific discourse are “universal sets of concepts and methods or procedures which define disciplines or areas of inquiry independently of any language” (Widdowson 1979: 24). His anti-Hallidayan stance is further strongly suggested by his uncharacteristic use of dismissive attitudinal lexis in his reference in a later paper to register/general stylistic analysis “as preached by Halliday et al...” (1979: 94).

In contrast to Halliday, Widdowson adopts a neo-Chomskyan position by arguing that

- the linguistic features of a text are merely the surface-structure manifestation of the deeper structure of the text (1979: 23);

- that specialist uses of language are not contextually different functional varieties of language but “universal modes of communication which cut across individual languages” (1979: 23); and that

- the ‘deep structure’ of communication in, chemistry, for example, is the “universe of discourse which consists of the concepts and procedures” of the discipline in question (1979: 24).

This deeper structure, he holds, also includes ‘non-verbal’ modes of communication, such as tables and formulae, an argument he reiterates in the
third paper in the collection (42-43). In fairness to Widdowson, it should be pointed out that the hedging suggested by the repeated use of the phrase “[there] seems to be” in his further references (1979: 27) to the supposedly universal features of scientific discourse is consistent with the note of caution which, with the benefit of hindsight, he sounds in the introduction to the collection of papers, namely, that the nature of the papers in his collection should be seen as exploratory and illustrative in character, not as prescriptive and conclusive. The rest of the paper, which will be referred to again in Chapter 5, and which deals with the pedagogical implications of GBA to EST, attempts to show how Widdowson's view of the nature of language can be translated into exercises for students of English for chemistry.

1.2.3 The pedagogical differences between register analysis and discourse analysis

In the third paper, ‘EST in theory and practice’ (first published in June 1974) in his collection, Widdowson (1979: 42-43) once again takes issue with the “operational” view of EST by fleshing out what he believes to be the essential pedagogical and other differences between RA and DA. The former, he argues, defines language in terms of its functional linguistic properties, uses statistical analyses to determine the frequency of lexical and syntactic units, employs structural exercises and comprehension questions, and teaches form divorced from context. His characterisation of this approach, which culminates in the assumption embodied in the last item in his catalogue, is designed to contrast with his own discourse-based approach. EST, in his view, must develop the ability to process technical and scientific communication; scientific discourse must be defined as the verbal and non-verbal communication system of science; and discourse must be seen as “the process which creates and interprets it (the text) by a combination of
knowledge, imagination, reason, common sense and other attributes of the human mind” (1979: 38-48).

This thought-provoking metaphysical perspective, however, raises the question of how it should be operationalised, a concern Widdowson (1979: 49) readily acknowledges by stating that he has no idea what a model incorporating such a perspective would look like. It is perhaps for this reason that Swales, despite his explicit acknowledgement of the value of Widdowson’s theoretical thought, speculates that the latter’s position is “probably untenable in terms of scientific education” (1985: 71).

1.2.4 The nature of scientific discourse

Perhaps the clearest and most practical discussion of what Widdowson (1979: 51-61) assumes scientific discourse to be is found in his 1977 paper entitled ‘The description of scientific language’. He once again argues strongly in favour of scientific discourse as representing a “universal mode of communicating, or universal rhetoric, which is realized by scientific text in different languages by the process of textualisation” (1979: 52). In explaining his use of the concept textualisation, Widdowson refers to Lackstrom, Selinker and Trimble’s (1972) well-known paper ‘Grammar and Technical English’ in the area of GRA; to an early 1974 paper by Swales in which he discusses the textualisation of the pre-modifying participle given in scientific discourse; and to the textualisation of larger patterns of rhetorical organisation.

Textualisation, he explains, is a qualitative approach that indicates which aspects of the language system count as communication and how they express elements of discourse. Availing himself of the insights of speech-act theory, Widdowson argues that the (supposedly universal) rhetoric of science
should not only depend on specifying illocutionary acts but also on the “organisation of larger stretches of discourse which relate to the methodology of science as well” (1979: 61). Finally, he sums up his position by stating, “We can think of scientific discourse as analogous to universal deep structure, texts as analogous to surface variants in different languages, and textualization as analogous to transformational processes which mediate between the two” (1979: 61).

1.2.5 The difference between text analysis and discourse analysis

In section four, entitled Discourse, of his collection of essays, Widdowson continues the arguments discussed above by making further binary distinctions between text analysis and DA and by:

- extending his arguments to cohesion, which he defines as structural links between sentences; and coherence, “the illocutionary links between parts of a discourse” (1979: 96-98);

- defining discourse as “a dynamic process of meaning creation” (1979: 127,129);

- arguing that it is not the situation or context of language that creates meaning relationships but the mind of the language user (131)—his neo-Chomskyan perspective referred to previously; and

- introducing yet another binary semantic distinction, this time between rules and procedures (141-149), consistent with his distinction between linguistic approaches and DBA.
Despite the problems associated with some of Widdowson’s questionable assumptions, metaphysical speculations, his rigid binary semantic labels and arguments, and the relative paucity of his specific research in the field of EST in particular, the richness of his theoretical and pedagogical thought is indeed an important contribution to the evolution of discourse-based approaches to EST in general. As such, his volume of essays validates DBA and deserves serious study.

2. Genre-based approaches

The sheer complexity of the concepts of genre and GA, and the terminological confusion surrounding them, has been discussed briefly in Chapter 2, Section 3 of this critical overview. Much of the confusion readers experience when approaching—without a clear historical perspective on the evolution of the concept— the plethora of genre-based research materials relating to ESP/EST derives from the fluid boundaries between and contributions of the various fields of inquiry to the evolution of the concept and the specialised approaches which have evolved from them. This evolution across several disciplines has been discussed by two notable scholars in the field, Swales (1993) and Bhatia (1993) and will be summarised briefly to provide the essential background to the rest of the specific genre-based research contributions surveyed in this dissertation.

2.1 Swales’s comments on genre-based approaches

Swales (1993: 33-45), in Chapter 3 of his seminal work on genre analysis, surveys the uses of the term genre in folklore, literary studies, linguistics, and rhetoric. These fields will be discussed briefly in turn.
2.1.1 Genre in folklore

In discussing the first these orientations, Swales (1993) argues that, with few exceptions, folklorists hold onto the permanence of form. Some perspectives in this field view genre as a mere classificatory concept; others regard genres as forms. Genre, Swales argues, is treated as is a static archival or typological convenience, not a dynamic discovery procedure.

2.1.2 Genre in literary studies

In literary studies, by contrast, stability is often de-emphasized and justified on the grounds that authors break out of the mould of convention in the interests of originality. However, authors such as Todorov 1976, Fowler 1982, and Schaubert and Spolsky 1986 (in Swales 1993: 36-38) argue that

- genres do not cease to exist but simply transform older ones;
- genres provide positive support rather than inhibit the author;
- GA is clarificatory, not classificatory.

Indeed, genres function as open-ended sets within what Swales terms “social communicative processes” (1993: 38). It is noteworthy that the field of folklore displays a progression from narrow to more open-ended perspectives on genre, which parallels the later developments in linguistics.

2.1.3 Genre in linguistics

Swales (1993) points out that, in the early stages of linguistics, the concept genre appears to have met with considerable reluctance to give it the recognition it deserves, largely because of the prevalence of traditional, grammar-based approaches to texts and a disinclination to take over a term
derived from art. Indeed, as Swales (1993: 38) further points out, the concept is only given more attention by ethnographers and systemicists.

According to Swales (1993: 18-41), genres are variously seen as coinciding with speech events while remaining analytically separate from them, and as referring to the type of communicative event realised within a sociolinguistic context and containing data that cannot be based on *a priori* categorising units. In systemic linguistics, *genre* has only recently been disentangled from *register* with which it used to be confused or conflated. Finally, as Swales argues, until recently, there has been considerable reluctance to compromise the centrality of the concept *register* by making it subordinate to *genre*. However, linguistic contributions to the developing study of genre now increasingly acknowledge the role of *genre* as types of goal-directed communicative events, as having schematic structure, and as being distinct from *registers* or styles.

### 2.1.4 Genre in rhetoric

In rhetoric (what Bhatia terms *sociology and genre analysis*), according to Swales (1993: 42-43), scholars throughout the ages have tried to classify discourse into broad categories (such as expressive, persuasive, literary, and referential). These earlier attempts are essentially deductive, top-down in orientation and treat *genre* as a closed system of categories. By contrast, more recent approaches are anti-taxonomic and proceed along inductive lines, giving *genre* a more central place in rhetorical inquiry and criticism. Jamieson 1975 (in Swales 1993: 43), for example, in studying the historical development of discourses in their recurrent settings, has been able to demonstrate that antecedent genres have a powerful restraining power on a particular rhetorical response. Miller (1984) provides a complex ethnomethodological
perspective by arguing that the analysis of actual genres helps to clarify certain socio-historical aspects of genre that would otherwise be overlooked.1

2.1.5 Key denominators in the four fields

Swales (1993: 44-45) sums up his own pedagogically motivated overview of the manner in which genres are perceived in four different fields of inquiry by postulating six key denominators [quoted verbatim], namely a/n:

1. distrust of classification and of facile or premature prescriptivism;
2. sense that genres are important for integrating past and present;
3. recognition that genres are situated within discourse communities, wherein the beliefs and naming practices of members have relevance;
4. emphasis on communicative purpose and social action;
5. interest in generic structure (and its rationale);
6. understanding of the double generative capacity of genres—to establish rhetorical goals and to further their accomplishment.

2.2 Bhatia’s comments on genre-based approaches

1 In her seminal paper on genre as social action, Miller (1984: 151) argues that rhetorical criticism—by defining genres variously in terms of similarities in strategies or forms in the discourses, similarities in audience, similarities in modes of thinking, and similarities in rhetorical situations—has not provided any clear perspective on what constitutes a genre. She therefore believes that a rhetorically sound definition of genre should be based “not on the substance of form of the discourse but on the action it is used to accomplish” (1984: 151), issues which will be taken up again in the discussion of her seminal paper in Section 12.1 of this survey.
Bhatia (1993: 17-22) gives a brief overview of genre analysis in three orientations: linguistics, sociology, and psychology. These will be briefly discussed in turn.

2.2.1 Genre in linguistics

In his overview, Bhatia (1993) traces a progression from linguistic descriptions to grammatical-rhetorical analyses, arguing that these predominantly linguistic orientations and their analyses of functional varieties or registers reveal very little about the real nature of genres and how they achieve specific social purposes within particular (institutional) settings.

2.2.2 Genre in sociology

A sociological orientation, Bhatia (1993: 18) argues, highlights the constitutive power of a genre to define, organise, and communicate social reality. As such, it is not a self-contained, encapsulated unit divorced from its social context but interacts with it through an ongoing process of negotiation. Although the sociological dimension of GA sheds light on why members of certain [institutional and social] communities write the way they do, such an orientation should not be divorced from a predominantly linguistic orientation. Such a divide between linguistic and sociolinguistic approaches to genre analysis, Bhatia (1993) believes, is counterproductive and would profit from adopting an integrated perspective instead.

2.2.3 Genre in psycholinguistics

An orientation which Bhatia claims Swales underplays, despite the “good fusion between linguistic and sociological factors in his definition of genre” (1993: 16), is the psycholinguistic one. He argues that this approach comprises both a psycholinguistic and tactical aspect: the first reveals the
cognitive structuring of a typical genre text; the second, the specific strategic choices made by the writer to realise his or her intention. These choices can be either non-discriminative in the sense that they leave the basic communicative purpose of the genre unchanged, or discriminative in so far as they are responsible for generating sub-genres.

In general, the communicative purpose of a genre will be reflected in the interpretative cognitive structuring of the genre and reveal its typical organisational regularities. In so far as this cognitive structuring derives from the “accumulated and conventionalized social knowledge available to a particular discourse or professional community” (1993: 21), and not from the presupposed background knowledge an individual brings to bear on a text, this cognitive structuring process differs from schema theory. Bhatia does not make a distinction between the role of content schemata (background information) and formal schemata (knowledge of the way in which certain generic texts are structured rhetorically) but seems to limit his comments to the former at the expense of the latter. He, therefore, argues that the cognitive structuring in a genre is a property, not of the individual reader, but of the genre itself. Bhatia’s reservations are somewhat mystifying considering that Swales (1993: 83), by contrast, stresses both the rhetorical organisation of and moves in a text, as well as the importance of taking the role of psycholinguistic schemata into account. Indeed, it appears that, on the continuum of theoretical orientations, rhetorical (structural moves) and genre-based (schema-oriented) approaches to GA are closely interwoven and are often coalesced, thereby making classification difficult, if not impossible.
3. **Conclusions to be drawn from Swales's and Bhatia's comments on genre-based approaches**

From the integrated overviews which Swales (1993) and Bhatia (1993) provide of the various orientations within the field of GA, it follows that the central question as to the nature of a genre, as well as of GA *per se*, is answered differently by the traditional linguistic (rhetorical-textual) and various ethnographic (contextual) inquiries into genre identification as discussed by Askehave and Swales (2001).

Indeed, the broad, tentative distinction could be made that rhetorical approaches tend to focus more on the structural or functional aspects of text structuring and their linguistic realisations. By contrast, GBA adopt a macro-perspective, drawing not only on contextual and rhetorical considerations but also on schema theory—that is on a knowledge and examination of content (background information) and formal schemata organisation (knowledge of the way in which certain generic texts are structured rhetorically)—to account for the overall informational structure of a specific generic text (see Swales 1993: 83ff). As such, the two approaches differ in that the former is more text-bound and with a stronger pragmatic focus on textual analysis than the latter. This would account for the different approaches to and pedagogical implications of GA as found in the literature surveyed thus far.

4. **A brief overview of Swales’s and Bhatia’s seminal works on genre-based approaches to reading and writing**

Two seminal theoretical works on GA in ESP (to which reference has already been made and will be made further in this literature review) are *Genre Analysis: English in Academic and Research Settings* (1993, first published in 1990) by John Swales, and *Analysing Genre: Language use in Professional Settings*...
(1993) by V.K. Bhatia. The virtually identical titles of and structural similarities between the two publications are already to some extent indicative of the correspondences in approach and content between the two texts, as well as the extent to which the latter draws on the former.

4.1 Swales’s seminal text on genre analysis

Swales’s (1993) earlier seminal text is divided into three parts, which will be briefly outlined.

The first part provides a detailed, incisive overview of the origins of and influences on a genre-based approach to reading and writing scientific discourse from the perspective of numerous disciplines.

The second part contains a comprehensive, critical discussion of some of the complex key concepts in GA: discourse community; the concept of genre (in a number of different linguistic fields); the concept of the language learning task; and the concept of genres in relation to schemata and acquisition. In this part of his text, Swales’s social constructionist approach to scientific and other forms of discourse is once again evident from his discussion, which addresses the complex problems surrounding the issue of communicative purpose also discussed in Widdowson (1974, 1979) and in Swales and Askehave (2001). This part of Swales’s (1993: 58) text also contains his comprehensive and influential definition of *genre* (see Section 6), which is frequently referred to and discussed in other publications on the same topic.

The third and final part of Swales’s text contains a comprehensive discussion of the complex issue of what constitutes the research-paper genre, a genre of “enormous size” about which only “tentative conclusions” can be drawn.
given the current state of knowledge about the genre, as Swales points out (1993: 110). This final part of his volume also contains his personal observations on the pedagogical value of adopting a genre-based approach to research English; the importance of generic consciousness-raising; and the value of adopting an exploratory, interactive approach to genre-based reading and writing, as opposed to following the dictates of a narrow, prescriptive *sui generis* regimen.

Swales’s (1993) complex, comprehensive text on genre analysis is one that deserves close study as a conceptual guide or general ‘schema’, for reading and understanding the diverse, growing body of research publications on genre-based approaches to EAP and ESP/EST. It should also be read as a continuation of his earlier work entitled *Episodes in ESP* (1985), which surveys the main changes in the various approaches to ESP from the 1960s to the 1980s, as well as in conjunction with his 1990 paper entitled ‘Discourse Analysis in Professional Contexts’. Meriel Bloor (1998) provides a useful, critical thumbnail sketch of Swales’s text and contribution to the research literature on genre-based approaches to ESP/EST (see Section 7).

### 4.2 Bhatia’s volume on genre analysis

The other seminal text on genre-based approaches to ESP is Bhatia’s (1993) *Analysing Genre: Language Use in Professional Settings*. As suggested, it soon becomes evident that it is written in the Swalesian tradition and closely follows the structure of Swales’s earlier classic text which, as previously mentioned, was first published in 1990. Bhatia’s book is divided into three parts. The first part outlines a theory of GA, drawing on the variety of diverse disciplines that help the system define its key features, boundaries and methodology. In particular, it contains a systematic, theoretical
discussion of RA, GRA, DA or “interactional analysis”, and GA, all of which is helpful in clarifying some of the distinctions between these key concepts. The second part attempts to show how GA operates and focuses on texts from a wide variety of genres, with reference to the linguistic insights they embody and on the conventional aspects of genre construction. The final part illustrates the value of GA in language teaching, particularly in English for Specific Purposes, and in language reform.

Both Bhatia and Swales stress the importance of examining the communicative purpose of a text to identify its generic structure, and both authors also address the importance of cross-cultural variation between genres. It follows that the texts by Swales (1993) and Bhatia (1993) provide a valuable thick, theoretical discussion of the nature of and issues surrounding GBA to ESP/EST reading and writing.

5. **Swales's influential definition of genre and Bhatia's elaboration of it**

The most comprehensive definition of genre derives from Swales (1993), a seminal figure associated with GA in the so-called ESP movement. He defines genre as follows [italicised emphases mine]:

A genre comprises a *class of communicative events*, the members of which *share some set of communicative purposes*. These purposes are *recognized by the expert members of the parent discourse community*, and thereby constitute the rationale for the genre. This *rationale shapes the schematic structure of the discourse* and influences and constrains choice of content and style. *Communicative purpose* is both a privileged criterion and one that operates to keep the scope of a genre as here conceived narrowly focused on comparable rhetorical action. In
addition to purpose, exemplars of a genre exhibit *various patterns of similarity* in terms of structure, style, content and intended audience. If all high probability expectations are realized, the exemplar will be viewed as prototypical by the parent discourse community. The genre names inherited and produced by discourse communities and imported by others constitute valuable ethnographic communication, but typically need further validation (1993: 58).

This comprehensive, top-down, functional-pragmatic but non-prescriptive definition stresses the communicative, goal-directed (at the intended audience) function of the discourse as recognised or agreed upon by the parent discourse community or institutional context, and the effect of this function on determining the measure of homogeneity in or prototypicality of the content and the rhetorical-grammatical structure of the genre as *classes* of communicative events. In terms of this definition, genres are classes of more or less simultaneous, dynamic, macrotextual realisations of the communicative purpose of discourse events. As such, the term denotes a complex constitutive process and not simply the proliferation of individual texts slavishly following a set compositional formula or recipe.

Bhatia (1993: 13), in an ‘extension’ of Swales’ authoritative definition, paraphrases

- “expert members of parent discourse community” as “members of the professional or academic community in which it [the genre] regularly occurs”;

- “schematic structure of the discourse...” as “highly structured and conventionalized...”; and
• “constrains choice of content and style” as “constraints on allowable contributions in terms of their intent, positioning, form and functional value”.

Bhatia’s further ‘elaboration’ of Swales’s definition—his (Bhatia’s) argument that members of the discourse community can manipulate the discourse in the genre to achieve private intentions—begs the question whether this departure from standard practice should be paraphrased into a definition of genre at all rather than being dealt with separately. Swales does so in his detailed discussion of the research article, “this key product of the knowledge-manufacturing industry…so cunningly engineered by rhetorical machining that it somehow still gives the impression of being but a simple description of relatively untransmuted raw material” (1993: 125). Swales stresses that the research article is not an independent sui generic text but an end product “specifically shaped and negotiated in the author’s effort to obtain acceptance” (93). Given the importance and complexity of the research article as a genre, Swales’s chapter on the subject will be briefly surveyed.

6. Swales’s research on the research article

Swales’s (1993) detailed discussion of the research article, the longest chapter in his seminal volume on GA, is a comprehensive, implicit refutation of the claims that GBA to the writing of scientific or technical discourse are mechanistic, static and prescriptive (see Pennycook 1997: 256). Swales’s discussion demonstrates that the research article is a dynamic and constantly evolving genre, both rhetorically and linguistically. This brief overview will focus on only the first three sub-sections of Chapter 7 of Swales’s text: the various episodes in the history of the research article, the construction of the research article, and his textual overview of the research article.
In his episodic account of the evolution of the research article, Swales (1993) traces the main stages in the roughly 300-year process from its humble origins in the predominantly epistolatory information-sharing tradition, involving the exchange of scholarly letters between scientists, to its highly complex current status. Two milestones in this development were the establishment of the first scientific periodical, *The Philosophical Transactions of the Royal Society* in 1665, and the work of Robert Boyle and his fellow-scientists in the decade preceding the publication of the first issue of the *Transactions*. Their strategies involved securing the testimony of witnesses; encouraging the replication of experiments; establishing facts by means of ‘virtual witnessing’—that is, creating a powerful image in a reader’s mind through detailed illustrations of apparatus, extensive accounts of both his successful and failed experiments, and the avoidance of hedges and philosophical speculation (111-112)—and trying to regulate scientific disputes objectively rather than in an *ad hominem* manner.

By the end of the eighteenth century, Swales explains (1993: 114), the research article had changed considerably. According to Swales, the only major study tracing the evolution of the textual research article in the current century is by Bazerman (in Swales 1993: 114-115), who noted that, with some fluctuations,

- article lengths have steadily increased; references now show an upward trend and are distributed throughout the research article;

- relative clauses have become fewer while noun clauses and temporal and causal subordinate clauses have increased in number;
apparatus drawings have made way for complex graphs and equations, which have also increased in number; and that section headings have become a regular feature of the research article.

Swales concludes that in his pioneering study

Bazerman (1984) assembles considerable discoursal evidence for a number of general trends: growing abstraction, the deepening integration of present work within the relevant literature, the increasing foregrounding of research as opposed to researcher, the increasingly uphill struggle to incorporate more and more information, and a steadily more focussed argumentation (1993: 116).

It should be added that, in the actual article, which does not warrant further discussion because of Swales’s authoritative commentary, Bazerman emphasises that, while “science is a rational, cumulative, enterprise”, it is realised through “linguistic, rhetorical and social means and choices” (1984a: 191). Hence, composition is a dynamic process based on choices which the individual writer often makes to mobilise the existing conventions to his/her own advantage. Finally, the evolution of such conventions in the spectroscopic article over the period of 90 years surveyed by Bazerman gives “information about the history and character of the discipline” (1984a: 191),
besides emphasising the social nature of the writing process within the context of a wider community of scientists.

The second sub-section in Swales’s chapter on the research article in English involves his discussion of the construction of research articles. As he eloquently observes, while “the continuum from a gleam in the researcher’s eye to the distribution of the published paper” (1993: 117) cannot be neatly compartmentalised, the processes could be broadly staged into pre- and post-submission phases which respectively involve internally and externally-moderated changes. A study of the complex process of preparing a research paper for publication dispels the stereotypical notion of a neat, linear process modelled on a set format or mould. Swales (1993) briefly discusses three book-length studies dealing with the construction of research papers. The first of these studies by Knorr-Cetina 1981 (in Swales 1993: 118) plots the complex process involved in the reshaping of rough laboratory notes into the first and final drafts of a research paper until the “straight-forward and somewhat dramatic unfolding of the first version has almost entirely disappeared’ (119). The final version displays cautiousness, considerable hedging, and rhetorical diffuseness. Swales concludes that what becomes evident is a process of “technical critique and social control operating both in the particular research setting and in a wider half-imagined world of ‘what other scientists will think’” (1993: 120). He quotes Knorr-Cetina’s (1981) strong claim (in Swales 1993: 120) that “the published paper is a multilayered hybrid co-produced by the authors and by members of the audience to which it is directed” [original emphasis].

The second study Swales (1993) comments on is one by Latour and Woolgar 1979 (in Swales 1993: 122) which focuses on the role of the language processes involved in the operation of the Salk Institute in California, where the
“denizens of the institute spend the greater part of their days making or reviewing inscriptions”, coding, marking, correcting, reading, and writing to transform documentary activities into published papers. According the Swales, the authors erroneously assume that the laboratory’s operations on statements—“citing, borrowing, criticizing, and making stronger weaker knowledge-claims in respect of prior statements”—proves that “reality is the outcome of the settlement of a dispute” (1993: 122), that facts are constructed, and that substances only exist once they have been identified. This, according to Bazerman (in Swales 1993: 123) conflates fact with statement of fact. Unfortunately, Swales’s brief account is insufficient for a reader unfamiliar with Latour and Woolgar’s (1979) research to arrive a proper understanding of the real nature and import of their study within the context of the construction of the research article.

The third, and more illuminating, study that Swales (1993) discusses is one by Gilbert and Mulkay 1984 (in Swales, 1993: 123-125) who show that accounting for facts varies according to an author’s position in relation to a currently prevailing one (the tension between acknowledging the value of established research while protecting the author’s own research investment), and the tension between what they term the empiricist and contingent discourse repertoires (the tension between public and private statement). They provide a humorous list of such variable specimens, where, for example, the vague phrase “It has long been known” translates into the paraphrase, “I haven’t been able to remember where I read it” (in Swales 1993: 124). Swales makes the valid comment that their two-part division is in turn dictated by the dual nature of their investigation into formal papers and semi-structured interviews, which shows that language use is relatable and variable according to context (124).
In conclusion, as Swales observes, the three studies demonstrate that the research article is shaped by a large number of contextual and other variables, that “we find ourselves far away from a world in which it is expected that researchers will ‘tell it as it happened’” and “from a world in which power, allegiance and self-esteem play no part, however much they seem absent from the frigid surface of RA discourse” (1993: 125).

In the third sub-section of Swales’s (1993: 127ff) chapter on the research article, he provides a brief textual overview of this genre, stressing that

- process and product are separate entities—ultimately, whether a product succeeds depends entirely on its merits;

- the composition of the research article is a highly complex process or endeavour, with the result that few attempts have been made to provide a recipe or “procedural methodology” (128) for this genre; and

- the literature exploring the textual properties of the research article is not only extensive but it is characterised by substantial variation in analytical perspective on the microlinguistic-macrotextual cline.

What emerges from the available research evidence, Swales (1993: 136) concludes, is that linguistic and rhetorical features are differentially distributed across the various standard sections of the research article, with the most ‘unstable’ or variable sections being the Introduction and Discussion sections. In the next 37 pages of his chapter, Swales examines the main sections of the research article more closely in the light of these general findings. Owing to spatial constraints, his analysis cannot be surveyed;
instead, a brief summary will be given of his own review of this long and complex chapter.

In concluding this chapter on the research article, Swales (1993: 174) explains that he has attempted to bring together a number of distinct interdisciplinary approaches to research writing in order to broaden and deepen the general understanding of the linguistic and other conventions involved in the construction and deconstruction of this complex genre. He argues that, despite the occurrence of similarities in the various research samples, it is arguable whether such similarities are sufficient to prove the existence of a macro-genre. Furthermore, the research article varies from one discipline to another, for example from the so-called hard or exact sciences to the social sciences. Two interesting corollaries of this variation emerge: first, “the more established the conventions, the more articulated the genre” (1993: 175) and its divisions into standardised sections, with different rhetorical features; second, at the diffuse end of the continuum, the writing becomes more persuasive, surprisingly in the Method and Results sections of the research article in particular (175).

7. The development of the concept of genre into an articulated theory

In a most readable research article contextualising Swales’s considerable contribution to ESP and discourse analysis, Meriel Bloor (1998) draws attention to:

- Swales’s insistence on the importance of foregrounding communicative purpose in a genre-based approach to ESP;
his distinction between the *communicative purpose* of a text and the rhetorical features of the *communicative event*;

the nature of the pedagogical task and its principal requirements;

the role and importance of the parent discourse community in understanding the field of discourse as foregrounding the position of the writer and his/her communicative purpose in constructing text;

Swales’ attempts at clarifying the linkages between the social context of the utterance, the speaker or writer’s communicative intention, and the actual utterance with reference to the rhetorical function of the text and the lexicogrammatical choices that it realises (50-59).

This latter point once again demonstrates the interrelatedness of the various approaches to genre analysis as outlined in the first part of this chapter. Bloor significantly draws attention to the artificiality of Hyon’s (1996) identification of and distinction between three main approaches to the tradition of genre analysis: *ESP Analyses, New Rhetoric Studies, and Australian Genre Theories* (in Boor 1998: 55). She rightly points out that it is simply not true that researchers such as Swales, Dudley-Evans, and Bhatia focus on the formal property of texts at the expense of their social functions. Indeed, the same misrepresentation characterises the discussions of Halliday’s contributions (see Chapter 3, Section 1.2.4) and serves to perpetuate the notion that emphasis on the social function of the discourse is a sudden, modern insight.
rather than one that has grown organically throughout the tradition of genre analysis. Bloor’s paper will now be discussed in more detail.

As stated in her abstract, Bloor’s principal aim is to demonstrate that Swales has made a major contribution to the Firthian tradition “by developing the concept of genre into a fully articulated theory, thus allowing the analysis of language which is contextually situated not only in terms of field, but also of the participants in the discourse: the discourse community” (1998: 47). She draws attention to the confusion that reigned between register and genre; notes that Halliday recognised the importance of the generic structure of a text but that he did not develop the concept; and argues that Swales moved the difficult debate forward “by defining genre in terms of communicative events and communicative purposes” (54). Strangely, she makes no mention of Widdowson’s (1979) contributions to foregrounding the importance of the communicate nature of discourse; and, paradoxically, she comments on the concepts of communicative events and communicative purposes with reference to Firthian linguistics but fails to state what exactly they denote in Swalesian terms. However, her discussion of Swales’s concept of the discourse community, as stated previously, foregrounds the role of the speaker/writer and, by implication, the communicative purposes of the text, as well as the role of the rhetorical structure of the text in realising the speaker/writer’s communicative purpose. Bloor rightly argues that, by considering language in its context of situation, Swales continued the valuable work of Selinker, Trimble and others in the area of grammatical-rhetorical analysis (59).

Bloor (1998) further holds that Swales (1993), in his analysis of moves in academic research articles, chose to consider, first, the author’s intention in the text or move and, then, the question as to the linguistic forms used to realise the moves or the steps they involve. Indeed, this “difficult and
contentious activity” (Bloor 1998: 60) of working from context to form, rather than the reverse, marked a significant shift in the manner in which genres were being approached and possibly paved the way for research approaches that will help to bridge the divide between the contextual and linguistic aspects of discourse construction.

Finally, in her tribute to Swales, Bloor (1998) mentions Swales’s appeal for more research into ESP classroom practice and data-based investigations into the nature of specific language use. Swales’s (1993) pioneering work, she argues, should lead to the “type of slow cumulative ethnographic and text-based research to which many people can make a contribution”, the results of which should “find their way into the teaching materials and the classroom” (Bloor 1998: 62). This final argument or plea is consistent with her earlier reference (52) to Swales’s pragmatism and interest in bridging the gap between theory and informed classroom practice. Her paper is a most readable contribution to understanding the nature and extent of Swale’s contributions to the complex field of ESP/EST.

8. Structural-rhetorical approaches to genre analysis

Despite the enriching social perspectives provided by the later developments in GBA to reading and writing, and in EST in particular, many recent contributions, as discussed next, are concerned more with the generic or schematic structures and rhetorical functions in such papers. In this regard, it is noteworthy how many of such studies take their inspiration or points of departure from Swales’s (1993) influential GA model and discussion of the moves involved in the various schematic sections of the research article and other texts, as will be shown. It seems that all roads in this regard lead back to Swales.
8.1 Schematic rhetorical structure of texts

In his article on the schematic structure of popularised medical texts, Nwogu sets out to “extend” Swales’s work by expanding the theory of moves contextually to whole texts in the domain of popularised medical articles, or what he calls “Journalistic Reported Versions” or JRVs (1991: 111). He quotes Swales’s earlier four-move model for analysing article introductions—which, it should be mentioned, Swales (1993: 140-141) revised by scaling it down to three moves—and correctly points out that Swales’s model is not only concerned with identifying particular knowledge structures but also the linguistic features of each move (Nwogu 1991: 113). This is in line with Swales’s (1993: 136) statement that rhetorical and linguistic features are differentially distributed across the four basic sections of the RA.

Nwogu’s (1991) research corpus was based on 15 texts from the medical domain and selected from two popular science magazines and a leading British newspaper published between May 1985 and 1987. Unlike Swales (1990: 141), whose identification of rhetorical moves appears to be primarily based on their communicative function (and employing linguistic signalling devices such as semantic markers), Nwogu appears to define a move more linguistically by lexicalising it as “a text segment made up of a bundle of linguistic features (lexical meanings, propositional meanings, illocutionary forces, etc.”) (114). This is further borne out by his argument that, while “moves and their sub-elements are determined partly by inferencing from context” (114), this process is largely dependent on linguistic clues such as explicit prefacing expressions, explicit lexemes, various grammatical specifiers of content relations, discourse conjuncts, and different kinds of semantic markers (114). Next, he gives a comprehensive list of the standard
types of information most JRV texts appear to exhibit, the various moves and their constituent elements according to which the information is organised, and a discussion of the individual moves with reference to specific examples.

In the discussion of his findings, Nwogu’s (1991: 119) states that a “typical” JVR text [whatever that is] generally exhibits nine possible moves, and that the information instantiated by them is generally ordered hierarchically [my emphases]. These moves then appear to fall into three broad divisions: initial, medial and final. This puzzlingly ‘profound’ observation is reminiscent of Aristotle’s tongue-in-cheek dictum that a drama must have a beginning, middle and an end. More significant and specific is his claim that this division is also the way news is organised in the popular press by first describing, then explaining, and finally evaluating the news item being presented to their readership.

From his initial linguistic approach to the identification of moves, Nwogu (1991) relates his subsequent social perspective more specifically to institutional contexts in which texts are produced according to specific, appropriate schemata. He concludes his article by making reference to the pedagogical merits of using his findings in the teaching of academic reading and writing, but without explaining or giving examples of what the merits would be (121).

In a subsequent paper, which is structurally very similar to his earlier one on the schematic structure of science popularisations, Nwogu (1997) once again takes his point of departure from the GA model developed by Swales (1993) in an analysis of the structure and functions of the medical research paper (MRP). He points out that, similar to most experimental research papers, the MRP has a highly structured four-section macro [rhetorical] structure:
Introduction, Methods, Results, and Conclusion (Nwogu 1997: 119). His stated purpose is to “account for the schematic structure of information in the medical research paper” using Swales’s model, but to apply the model “beyond Swales’ introduction to the whole body of the research article” (1997: 120).

The Nwogu (1997) corpus numbered 30 texts selected on the basis of representativity, reputation and accessibility (121) from five influential refereed medical journals. In addition, the texts were all written by members of the medical profession, most of whom were first-language speakers of English. Rather than making use of a subject-specialist informant as Selinker (1979) did, the author held informal discussions with medical practitioners at the Birmingham University Medical School to clarify the essential principles underlying “some” (122) of the topics in the texts. After a preliminary analysis of the overall corpus, 15 texts were randomly chosen for detailed analysis.

As in his paper on science popularisations, Nwogu (1997: 122) once again defines Moves as “a bundle of linguistic features” (“lexical meaning, propositional meanings, illocutionary forces, etc.”), and once again explains that the various moves were both inferred from context and identified by means of the linguistic signals mentioned previously. Next (125), he gives a list of the eleven moves identified for the four sections of the MRP, as well as a tabulation of the distribution of the moves in his corpus of 15 texts followed by a detailed description of the moves and their sub-moves or constituent elements (124-134).

In this discussion of his results, Nwogu (1997: 134-135) argues that the typical MRP could comprise eleven moves, and he gives a tabulation of them.
together with their constituent elements. The essential difference between his study and that of Swales, he claims, is that his approach is based on “very clear and unambiguous labels to characterize Moves and their constituent element, and a more precise framework for the demarcation of Moves” (135). What is significant is his validated claim that MRPs in medical journals can be analysed in terms of a conventional schema and that the moves in their various sections are hierarchically ordered. While this is of obvious pedagogical value, Nwogu does not address this issue in his paper.

### 8.2 Identifying generic textual boundaries in a text

A paper which deals with the general issue of identifying generic structure or textual boundaries in text (albeit without specific reference to EST texts) is one entitled ‘Genre Analysis and the Identification of Textual Boundaries’ by Brian Paltridge (1994), which should be read in conjunction with Crookes’s (1986) earlier surveyed paper on the subject. In his paper, Paltridge refers to the insights provided by SFL (Halliday) and what he terms the area called “English for Specific/Specifiable Purposes” as represented by Swales and others (1994: 288). Paltridge argues that neither of the two approaches has made any significant inroads into discovering how textual boundaries are or can be established.

In particular, Paltridge (1994) draws attention to Hasan’s later work and more recent arguments that, rather than depending on cohesion, identifying the structural elements in a text depends on some semantic property or attributes; in particular, what she calls nuclear and elaborative semantic properties. He points out that, similarly, Martin 1986 (in Paltridge 1994: 293) has realised the difficulties inherent in attempting to use linguistic patternings for the purposes of identifying textual boundaries. By contrast, Swales (1993), Bhatia
(1993), Crookes (1986) and Hasan (1984) (in Paltridge 1994: 295) use categories based on content rather than on linguistic elements to identify textual boundaries. This leads Paltridge to conclude that such identification depends on non-linguistic, cognitive factors.

GA, as Paltridge (1994) rightly argues, therefore takes one into the realm of psycholinguistics and schema theory. In other words, linguistic realisations are situated in larger, external (extralinguistic) contexts, which coincidentally then also admit the social (contextual) elements of text production as surveyed in this chapter.

8.3 Validating text structure

In an article entitled ‘Towards a Validated Analysis of Scientific Text Structure’, Crookes (1986) argues that Swales’s earlier (1981) four-move model in article introductions is to a large extent based on informed judgement as opposed to empirically validated procedures to establish the validity of the moves postulated by him. In the preamble to his study, Crookes (1986: 57-61)

- refers to trends in the development of EST programmes and materials;
- suggests that experimental research papers may share a common schema;
- advocates the need for proper EST materials concerned with the research paper;
- notes the developments in and contributions of schema theory;
- briefly surveys the inadequacy of existing analyses; and
- argues in favour of a validated DA of such research papers.
Crookes (1986: 61) states that it is standard practice for units of analysis to be defined clearly so that a trained group of raters can record their incidence with a high grade of accuracy, arguing that this also holds for the analysis of texts. Noting the lack of empirical validation in Swales’s earlier (1981) discussion of the research articles and of the four-move structure\(^2\) he proposes, Crookes (1986) comments on an empirical investigation which he carried out to validate the accuracy of Swales’s model and counter the claims of subjectivity levelled against it.

Next, Crookes (1986: 61-62) briefly outlines in point form the 11 steps followed in his method. For the purposes of selecting a corpus, he explains that he adopted the same four basic categories (of scientific articles) used by Swales and culled the 96 articles to be used in his research from four 1980 and post-1980 popular journals. The articles were randomly selected, using a table of random numbers; and articles which appeared to have been written exclusively by non-native authors or those which were review or theoretical articles were discarded. Similarly, not more than one article by the same author was included in the corpus.

The raters were “individuals with some linguistic sophistication” (Crookes 1986: 62)—a pair of MA (ESL) students and the author—and not scientists or technical writers. The training sessions used the fully analysed article introductions and representative examples given by Swales (1981), as well as some other additional relevant and suitable article introductions. Since sufficient inter-rater agreement could not be arrived at, a somewhat amended model was developed by the group and units of discourse were relexicalised as *types* rather than *moves* (Crookes 1986: 63). The other procedures, which

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\(^2\) Swales (1993: 140-141) subsequently revised it by scaling it down to three moves.
also involved the training of a new group of raters, are carefully outlined by Crookes.

A detailed breakdown of the journals, text numbers, structure (text units), inter-rater agreement (kappa), and length of sentences is given in tabular form (64). Significantly, the general finding was that agreement of above 0.6 as measured by kappa could be reached in three-quarters of the sample, which, according to Crookes (1986), means that it can be cautiously concluded that scientific experimental-article journals do indeed reflect a four-move discourse structure, but more specifically in simple as opposed to complex passages.³

9. The problematical issue of communicative purpose in genre identification

From the earlier discussions of Swales’s contributions, it is clear to what extent communicative purpose is implicated in the genre-based discussions referred to thus far. Indeed, the construct communicative purpose, as Askehave and Swales (2001: 195) point out, has been used since the 1980s to determine the genre status or class of a particular text. The authors preface their paper on this complex issue with reference to many prominent discourse analysts such as Martin (1998), Miller (1984) Swales (1990), Bhatia (1993), and Johns (1997) who have either argued explicitly in favour of using the construct for the purposes mentioned, or drawn attention to its widespread use. The reason Widdowson’s considerable emphasis on the importance of communicative competence is not mentioned is probably that his writings precede these more recent developments.

³ Unfortunately, Crookes’s further discussion of his findings and the problems experienced cannot be included in this brief overview.
Askehave and Swales argue that, in spite of the development of more sophisticated and rigorous criteria for categorising genres and assigning genre membership, the real advances in the field of GA derive from the large number of studies which have “deepened and widened our understanding of the roles of discourse in contemporary society” (2001: 196). Furthermore, with the foregrounding of context and the social dimension of discourse, communicative purpose has come to be taken for granted, despite the fact that “the purposes, goals, or public outcomes are more evasive, multiple, layered, and complex than originally envisaged” (197). In consequence, the task of determining the communicative purpose of a text is no longer a simple matter, as indeed the many disagreements between genre analysts and experts in the field would suggest.

In the second part of their paper, Askehave and Swales (2001) give an overview of the various discussions of communicative purpose and the continued widespread use and influence of the concept despite the definitional difficulties associated with it. However, they caution that it remains an elusive concept which is difficult to operationalise; therefore, not even the overt statement of communicative intent in a document should be taken at face value, as they illustrate in the subsequent section of their paper with reference to a number of non-EST materials.

Finally, in the last section of their paper, Askehave and Swales (2001: 204-205) argue that, in searching for a way out of the dilemma, authors such as Halliday and Hasan (1989) prefer to dispense with the concept altogether in favour of the identifying obligatory structural elements which are defined in terms of the SFL variables of field, tenor, and mode. However, the dangers involved in this are that such obligatory elements are not always present in a text; secondly, such an SFL procedure would run the risk of “conflating genre
(rhetorical functions) and channel (mode)” (Askehave and Swales 2001: 205). Even if a ‘broad’ view was substituted for the former ‘narrow’ one by shifting the emphasis purely to the social purpose of the discourse and focusing on types, problems would remain since a single text could have multiple purposes. Variants on such approaches, the authors (206-207) argue, are also fraught with problems.

In response to the quandaries referred to above, Askehave and Swales (2001: 207) argue and demonstrate in their subsequent discussion that it would be unwise to think that communicative competence could be used as a quick way of categorising discourses generically. Instead, they propose two possible procedures which depend on whether the analyst adopts a linguistic (“text-first”) or ethnographic (“context-first”) approach to assigning genre membership.

The first of their two suggested approaches—a bottom-up, text-driven procedure for genre analysis (Askehave and Swales 2001: 207)—would involve the following sequential five steps: examining the structure, style, content and ‘purpose’ of the text; the genre; the context; repurposing the genre; and, finally, reviewing the genre status. For the sake of brevity, their explanation of the procedure and constructs enumerated is not discussed here.

The alternative approach, which Askehave and Swales euphemistically suggest is “a little more complicated” (2001: 208), would involve using a context-driven procedure for genre analysis. The six steps in this top-down analytical procedure would involve identifying a communicative (discourse) community; the values, goals and material conditions of the discourse community; its rhythms of work, horizons and expectations; its genre
repertoires and etiquettes; and repurposing the genres and examining the features of “genres A, B, C, and D” (208).

What the two procedures show, Askehave and Swales argue, is that the process of assigning communicative purposes to a complex of genres is not an initial first step but a late stage in the overall process. Furthermore, “the proposed procedures also offer promise of investigations that are sensitive to the evolving and dynamic nature of genres” (2001: 208). It follows that genre categorisation, as the authors argue, is an extensive and complex text-in-context inquiry rather than “straightforward textual or transcriptal scrutiny”, and that a multimodal research methodology is to be preferred to a narrow text-based analysis (209). In conclusion, the authors state:

We suggest that purpose (more exactly sets of communicative purpose) retains the status as a ‘privileged’ criterion, but in a sense different to the one proposed by Swales. It is no longer privileged by centrality, prominence or self-evident clarity, nor indeed by the reported beliefs of users about genres, but by its status as reward or pay-off for investigators as they approximate to completing the hermeneutic circle (2001: 210).

10. The role of schemata in genre theory

The role of schemata—which is based on schema theory, a psycholinguistic development within cognitive psychology (see Crookes 1986: 59-60)—is discussed in some detail by Carrell (1983) in her article ‘Some Issues in Studying the Role of Schemata, or Background Knowledge, in Second Language Comprehension’. She explains that schemata are interactive, cognitive knowledge structures involving simultaneous bottom-up data-driven and
top-down conceptually-driven processing at all levels. The first ensures that the listener or reader will be sensitive to the reception of new knowledge entering the mind; the second, that ambiguities are resolved or choices made between alternative interpretations of the new data. This kind of on-going processing is interactive and therefore takes place simultaneously (82).

Schema theory, Carrell (1983) explains, distinguishes between content and formal schemata: the first refers to background knowledge of the content area of the text; the second, to background knowledge of the rhetorical structure of different kinds of texts on which the reader draws in his/her attempt to account for a specific text. Of the two types of schemata, formal or rhetorical schemata are of particular importance in understanding and teaching EST reading and writing; but, as Swales (1993: 86) points out, both forms of schemata can contribute to genre identification and the production of exemplars. Since Carrell’s article does not deal with EST reading and writing, but with ESL, it is not discussed further here. However, her comments serve as a useful background to Bazerman’s (1985) ethnomethodological perspective on this topic as discussed in Section 12.3.

11. **Genre within a social semiotic framework**

In their paper entitled ‘Towards a Social Theory of Genre’, Kress and Threadgold (1988) offer a theory of genre within a social semiotics framework. Such an approach, they explain, is concerned with language not only as text, but as context, and involves detailed linguistic analysis within a theory of language which has a social basis (215). Indeed, they define genre as “the socially ratified text-types in a community, which make meaning possible by contextualising in a metagrammatical way …the actual linguistic or semantic patterns that constitute the lexicogrammar of texts” (216).
Kress and Threadgold (1988) draw attention to a number of “disparate” (218) disciplines in which the concept or category of genre features. These include work in the areas of systemic-functional linguistics, literature, film theory, and genre fiction, all of which valorise genre differently. For reasons of economy, the textual examples the authors give are not discussed here. The crucial point that Kress and Threadgold make is the following:

What all this work begins to make abundantly clear is that the question of genre involves much more than abstract systems or schema for action, of autonomous taxonomies or text-types….Genre is evidently part of a number of patterned processes by which systems of ideas and belief …are constructed, transmitted and maintained. These processes involve institutions, power relations, questions of access, and thus questions of the construction of social agents and subjects. They are not autonomous or objective scientific categories for the analysis of texts: they provide no answers by themselves (1988: 226-227).

This will be borne out in the survey of those papers which adopt a more social or ethnomethodological approach to genre reading and writing.

Finally, Kress and Threadgold (1988) reiterate that their approach treats all linguistic forms and processes as being inextricably interrelated with social structures and practices within which the “linguistic subject” (language user) is also socially constructed. Within such a complex, interrelated context, the authors argue, genre provides a degree of stability and inertia in so far as the text actually codifies existing social practices, which are however also sites of social contestation due to power differentials. Where power is strong, the
genre will exhibit some stability and conventionality; where it is not, the
genre will be less stable and subject to change. Their final comments
effectively counteract the claims of the slavish, mechanistic copying and
prescription of static forms levelled against this approach (see Pennycook
1997: 256).

12. Ethnomethodological approaches

To recapitulate, the two extreme ranges on the cline of GBA to EST are
linguistic approaches on the one hand and social, ethnomethodological
approaches on the other. As Crystal explains, ethnomethodological
approaches “replace the predominantly deductive and quantitative
techniques of previous sociological research, with its emphasis on general
questions of social structure, by the study of the techniques…which are used
by people themselves…when they are actually engaged in social…action”
(1996: 126). A discussion of the later type of approach with reference to genre
in particular is provided by Miller (1984) in her paper Genre as Social Action.

12.1 Miller’s seminal article on genre as social action

Miller (1984: 151) holds that, despite the profusion of taxonomic claims that
certain discourses form a genre, rhetorical theory has not yet specified what
constitutes a genre. The title and initial paragraphs of Miller’s paper make it
clear that a better understanding of genre depends on the social, situation-
based action it is intended to perform, not on a number of taxonomic
classifications centred only, for example, on substance (semantics) and form
(syntactics). She believes that genre study should emphasise the social and
historical aspects of rhetorical action (which would include both substance
and form). Such an inductive, anti-taxonomic approach, genres would perceive genres to be open-ended, dynamic and evolving phenomena.

While acknowledging the value of genre discussions based on substance and form, Miller advocates the pragmatic, ethnomethodological study of actual genres to “explicate the knowledge that practice creates” (1984: 155). Such an approach would have to clarify the “relationship between rhetoric and its context of situation”, arrive at an understanding of the manner in which “genre ‘fuses’ situational with formal and substantive features”, and locate genre on a “hierarchical scale of generalizations about language use” (155).

Miller (1984) therefore rejects materialist interpretations which attribute objective, ontological status to genres rather than viewing them as intersubjective, social, situation-based occurrences. She argues that, by bringing our existing stock of knowledge to bear on new experience, we are able to recognise the similarities that become constituted as a type. In terms of this mental process of typification, genres are based, not on fixed and objective forms, but on the reader’s construal of types or recurrent patterns of social action. In discussing hierarchical patterns of meaning, Miller argues that our understanding of genres “as typified rhetorical actions based in recurrent social situation” (1984: 159) does not, however, yet explain how the genre works as rhetorical action. The key to this problem, she argues, is provided by Campbell and Jamieson’s 1982 concept of generic fusion of the “substantive, stylistic and situational elements” (in Miller 1984: 159)—that is, of substance, form, and context. In support of this theoretical position, she proposes an extension which includes genre “at the level of complete discourse types based on recurrent situations” within an “interpretive context by form-of-life patterns” and as “constituted by immediate forms or strategies” (Miller 1984: 161).
Finally, Miller explains that the understanding of rhetorical genre she is advocating is “based in rhetorical practice, in the conventions of discourse that a society establishes as ways of ‘acting together’” (1984: 163). As such, genre is a “conventional category of discourse based in large-scale typification of rhetorical action”, “interpretable by means of rules”, “distinct from form”, “serves as the substance of forms at higher levels”, and as a “rhetorical means for mediating private intentions and social exigence” (163). It follows that genres are not fixed, materialist forms, but grounded in social action; as such they should be studied within their specific social context to arrive at a better understanding of how writers participate in the institutional context of the scientific discourse community to which they belong.

The principal value of Miller’s (1984) complex philosophical discussion of genre and social action lies in its informed questioning of many of the more static, taxonomic interpretations of this complex phenomenon, which is well illustrated in Swales (1993) and in the following overview of Bazerman’s (1981) philosophical essay on what knowledge does and in his (1984) discussion of the evolution of a specific research report.

12.2 Bazerman on the importance of context

In his essay on what written knowledge does, and in his analysis of three examples of academic discourse, Bazerman stresses the cardinal importance of examining the contexts in which “language operates and to which language refers” (1981: 361). In other words, all written knowledge is socially situated and constituted; for that reason, texts can be seen to reveal a great deal about themselves when examined in relation to the object under study.
(as reflected in the lexicon of the text), the literature of the field (explicit and implicit citations), the anticipated audience (“the knowledge and attitudes the text assumes the readers will have”), and the author’s own self (all the features that make the reader aware of an author or authorial voice in a text) (362-363). More broadly—that is, socially framed—these abstracted social contexts could be relexicalised as “language and reality; language and tradition; language and society; and language and mind” (364). To understand a text as a socially constructed meaning-bearing document, it is important to examine it in relation to all four abstracted contexts. Space does not permit of a detailed survey of Bazerman’s analysis of the three disparate texts chosen for analysis; however, Bazerman concludes that terms of reference used in the analysis suggest that “texts serve as dynamic mediating mechanisms, creating those elusive linguistic products we call knowledge”, and that they “bring together worlds of reality, mind, tradition, and society in complex and varying configurations…” (379).

Bazerman’s (1981) philosophical comments on and analyses of three academic texts clearly show the complexity and comprehensiveness of the compositional or textualising process, which Swales (1993: 118-121) also commented on in relation to the complex process of gradually reshaping rough laboratory notes into the final version of a research paper.

In ‘The Writing of Scientific Non-fiction’, Bazerman (1984b: 40-62) gives a further memorable ethnomethodological account of how a research report is constructed within a specific institutional setting (a laboratory). It examines “the material relations between the emerging text and the author/scientist, the relevant community, the prior knowledge, and observed nature” (40) and is based on the emergence of a paper entitled ‘Measurement of β-Rays Associated with Scattered X-Rays’ and written by Arthur H. Compton and his graduate
student Alfred W. Simon in response to the challenges to a major discovery paper that Compton had written previously. Bazerman’s data was not deduced or abstracted as in his other paper discussed above, but drawn from a photocopy of Compton’s notebooks containing notes, a draft, and revisions that paved the way for the publication of the final “measurement” article.

Contextually, the measurement paper was progressively produced and based on further laboratory research that Compton carried out in the light of such challenges to his theory by other scientists and in pursuit of his social interest in establishing the proposed phenomenon of the scattering of X-rays by light elements. According to Bazerman (1984b: 43), these challenges led Compton to design laboratory experiments and to report on them, which had an effect on the rhetorical structure of the paper in terms of how the procedures were described and the data reported.

Bazerman (1984b: 47ff) shows that Compton’s notebooks reflect a dynamic text-construction process involving several drafts and revisions. The three major tactics of revision which Compton used were postponing major subjects by revealing preliminary information first (structural revision); extending information for the sake of clarity or specificity (exemplification); and fine-tuning (linguistic revision). The first process, that of postponing subjects, is neatly suggested by Bazerman’s discussion of how Compton “begins to raise [an issue]...backs away”...then later “went back to check...then corrected ... then added”....and how he then “splits his first draft” (48). Secondly, Compton’s extensions reportedly reflect extensive reformulations and other changes as suggested by Bazerman’s indications where one item “becomes” (used six times) another, and where reasons and additional information are given in support of a claim. Finally, in fine-tuning the documents, Compton would make extensive use of word substitutions. What these three types of
revision show, Bazerman rightly observes, is that “the writer is moving through the imprecision and incompleteness of formulations to come to a more focussed, accurate representation of what he did, saw, measured, and thought” (1984b: 50).

Besides having had to control the more obvious representations of nature, Compton also had to control the “definition of the epistemic level of the discussion, the projection of his persona, and the relationship to his audience” (Bazerman 1984b: 52ff). The first level of control, for example, involved changing the sequence of phenomena by first discussing one in preference to another. The second entailed making increasing use of direct reference to mark authorial presence in the current work of the two authors as “thinkers, doers, and owners” (53), as well as making use of evaluative statements indicating the authors’ perception of the reliability of their claims, with the most direct judgements located in the concluding section of the paper. The third and final level of control involved the authors’ relationship to their audience which shows “almost no concern with trying to urge the audience” (56) and leaves it to the structure of the text to establish its own level of credibility.

Finally, in his closing discussion of Compton’s text, Bazerman (1984b: 57ff) remarks on the gradual linguistic and structural (rhetorical) emergence of the text as constrained by a specific institutional context in which it was produced. The finished text, therefore, is not a simple representation of nature but ultimately a complex social construct, as Bazerman’s article reveals.

12.3 Bazerman on using ethnomethodological data to explore psycholinguistic reading processes
In the following year, Bazerman (1985) continued his constructivist approach to written texts with reference to the psycholinguistic reading processes involved in the understanding of a text. His paper is significantly sub-titled ‘Schema-laden Purposes and Purpose-laden Schema’, referring to the simultaneous, dialectical nature of the reading process. In his article, the author “reports on the reading processes of seven research physicists” on the basis of ethnomethodological data such as interviews and observations (1985: 4). The seven specialists were drawn from a variety of scientific and technological fields.

As Bazerman explains in his extract, “schema are … formed around the active research purposes of the reader”, and “purposes are framed within the researcher’s schematic understanding of the field” (1985: 3). First of all, the EST reader, for example, has a schema or deeply embedded dynamic body of knowledge of the nature of and developments in and around his/her field of inquiry which determines the speed of his/her scanning and text-selection processes. Words in the text that may trigger interest are the names of objects or phenomena, the names of approaches or techniques, and the names of individuals or research groups. The complexity of the reader’s schema is evidenced by the article selection process where the reader’s interest is first triggered by a single lexical item before moving to the next selection or rejection level. In Bazeman’s observations, only about twenty-five percent of the article titles triggered attention (8). When the information contained in the title is insufficient, unclear or misleading, the reader next turns to the abstract which “allows for a more precise placement of the article within the schema” (9), the second simultaneous stage in the reading process.
In other words, the process of deciding whether or not to select an article for closer reading involves a specific purpose on the part of the reader who now fits the article into his “personal map or schema of the field” (Bazerman 1985: 10). In the process, various degrees of importance are attributed to the information embedded in the text, which will determine the amount of attention it receives. In Bazerman’s words, “the reader will [now] process information that has significance for the existing schema and will view that information from the perspective of the schema” (11). As his further discussion of his investigation into how physicists read physics shows, the article-evaluation reading process is a highly selective, dynamic, non-linear one involving decisions as to what to read or skip over, where to start, what to give closer attention to, what to ignore, or what to return to later. The myth of a static text that is methodically read from cover to cover by a kind of generic reader is thoroughly debunked in Bazerman’s thought-provoking paper.

13. Berkenkotter and Huckin’s sociocognitive approach to genre knowledge

In another significant paper, Berkenkotter and Huckin adopt what they term a “structurational” and “sociocognitive” approach to genre knowledge in institutional cultures to support their striking metaphoric depiction of genres as “the intellectual scaffolds on which community-based knowledge is constructed” (1993: 500-501). As the title of their paper clearly suggests, genres are not the reified products of prescriptive taxonomic classifications but the media through which various disciplines communicate their knowledge-production activities. They clearly articulate their thesis that genres are “inherently dynamic rhetorical structures that can be manipulated according to the conditions of use and that genre knowledge is therefore best
conceptualised as a form of situated cognition embedded in disciplinary activities” (477). As such, genres are both constituted by and constitutive of institutional social reality.

Berkenkotter and Huckin (1993) characterise their theoretical perspective as “grounded in the professional activities of individual writers” and informed by a range of disciplines and writers’ theoretical constructs....[which include] structuration theory in sociology, rhetorical studies, interpretive anthropology, ethnomethodology, Bahktin’s (1986) theory of speech genres, Vygotsky’s (1978, 1986) theory of ontogenesis, and Russian activity theory (478). From this accumulated body of insights they have developed a five-point theoretical framework: dynamism, situatedness, (integrated) form and content, duality of structure (constituting and constitutive), and community ownership. They are careful to point out that their perspective does not amount to a full-fledged theory of genre, but that it provides a synthesis of perspectives on which a sociocognitive theory of genre can be grounded. Each of these constructs is discussed in the rest of their paper.

In connection with the first, the claim of dynamism, Berkenkotter and Huckin (1993) draw extensively on Miller’s (1994) social constructionist view of genre as articulated in her celebrated paper Genre as Social Action. Like Miller, Berkenkotter and Huckin argue that genres are “always sites of contention between stability and change [and that they are] inherently dynamic, constantly (if gradually) changing over time in response to the sociocognitive needs of individual users” (1993: 481). This explication neatly captures the fusion between the individual (cognitive) and social dimension of genre-based knowledge production.
Second, in their discussion of the situatedness of genres, Berkenkotter and Huckin argue that genres do not exist in isolation but are situated in the “communicative activities of daily and professional life” (1993: 482). Since professional genre knowledge is sociocognitively situated, it is not acquired through static prescriptions but through the writer’s immersion in the social milieu of his institutional culture; by contrast, undergraduate students learn genre conventions more formally as contextualised in classroom instruction and activities.

Third, Berkenkotter and Huckin (1993) argue that a dynamic view of genre requires an integration of form and content. The latter is deeply embedded in genre knowledge, draws on background knowledge (content schemata in psycholinguistic reading theory), and involves correct rhetorical timing (knowing the genre requirements of the day). Content is therefore not merely cast into a pre-existing rhetorical mould but dynamically implicated in the intertextual nature of sociocognitive knowledge production.

Fourth, in the theoretical perspective which Berkenkotter and Huckin (1993) propose, there are no radical dualistic separations between writer and text, form and content, and genre and social context: generic structures draw on and are to some extent constituted by their social contexts, just as they in turn influence the construction of social reality. Finally, genres are embryonically linked to or ‘owned’ by the communities in which they evolve; as such, they “signal a discourse community’s norms, epistemology, ideology, and social ontology” (497) through the academic textual practices of their readers and writers.

In conclusion, Berkenkotter and Huckin reiterate the structurational and sociocognitive nature of their theoretical perspective and stress that “full
participation in disciplinary and professional cultures demands ...informed knowledge of written genres [which are] the intellectual scaffolds on which community-based knowledge is constructed” (1993: 501). This requires genres to be both stable (slowly evolving) and dynamic (responsive to institutional demands and change) at the same time, which implicitly refutes the accusations of vulgar prescriptivism.

14. Conclusion

The contextual approaches reviewed in this chapter clearly demonstrate the dynamic and broadening perspectives in the evolution of genre-based orientations to EST reading and writing. As such, they caution against simplistic assumptions about the nature of such approaches and the supposition that they could be used in isolation in the teaching of reading and writing to students of ESP. In the next two chapters, pedagogical applications will be discussed.

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CHAPTER 5
PEDAGOGICAL APPLICATIONS

This chapter builds on the theoretical survey of the four approaches given in chapters 3-4 and outlines the specific but relatively sparse pedagogical applications of the research contributions as suggested by their authors. It also discusses a selected number of additional papers which deal exclusively with the pedagogical applications of genre-based approaches to EST.

1. Systemic Functional Linguistic Approaches

1.1 Raising awareness of impersonality in a text

The pedagogical value of the insights which SFL, and specifically Hallidayan functional grammar, provides is well demonstrated in Martínez’s (2001) discussion of impersonality in the research article as previously surveyed in Chapter 3 of this literature review. As Martínez shows, the functional-grammatical system of transitivity provides the tools needed to understand how voice is distributed across the various parts of the research article. In particular, advanced learners would benefit from having their awareness raised of “the structures that exhibit syntactic-semantic distance” (2001: 242).

In this regard, Martínez suggests a number of valuable consciousness-raising activities in the Appendix to her paper. The first of her two sample exercises is intended to “raise discourse-grammatical awareness about increasing abstraction in the Research Article, showing the way concepts expressed as actions in the Method section may be expressed as nominalizations in the Results section” (2001: 243). In the second sample exercise, the learners are encouraged to raise their awareness about the “impersonal nature of most of
the constructions of the research article realised in both active and passive voice structures” (244). This exercise also makes use of two valuable tables—one for the Introduction section and another for the Materials and Methods section of the Research Article—to encourage the students to identify the human and non-human subjects in a number of clauses, and the active or non-active voice in progress in each of them. Next, they are asked to compare and discuss the types of subjects and the use of voice in the two parts of the RA with a partner; and, finally, they are required to consider how exactly the general impersonality of the research article is evident from the two portions of text analysed.

Unfortunately, the other researchers whose contributions were reviewed in Chapter 3 of this literature survey do not comment on the possible pedagogical applications of their research in the area of SFL. For that reason, a number of additional applications will be suggested in Chapter 6. Perhaps J. R. Martin 1993 (in Cope and Kalantzis 1993: 135) is right in speculating that non-specialists find the grammar of SFL “hard to bring to consciousness and unpack”; and perhaps this would further explain the dearth of SFL research in ESP and EST as mentioned in Section 1.2. of Chapter 3 of this review. Even so, the insights afforded by Hallidayan functional grammar (and the grammar of transitivity in particular) becomes more than evident to anyone engaged in teaching EST, but it will require systematic future research.

2. Grammatical-rhetorical analysis

Some twenty-two years ago, Swales mentioned several reasons for the ‘under-privileging’ of the TESOL profession. One of these reasons is the “tough instrumental motivation that underpins ESP courses” in many parts of the world (1985: 58). Another reason that comes to mind in reading GRA is
the significant difference between so-called general grammar and the grammar of GRA. The latter draws attention away from “purely grammatical relationships to the attitudes and intentions of the writer and to the position of the sentence under discussion in its rhetorical relationships to the rest of the paragraph” (59). In short, it demonstrates that grammar cannot be considered in isolation as if it bore no extrinsic relationship to social context at all. The research papers surveyed show that GRA is highly subject- and context-specific in its pedagogical applications.

2.1 Teaching non-temporal, grammatical-rhetorical tense choices

In the third paper in the grammatical-rhetorical sub-corpus, ‘Formal Written Communication and ESL’, Selinker and Trimble (1974) give brief general information about the procedures they used in their EST courses at the University of Washington. They tried to relate their lessons on the specific rhetorical techniques to the grammatical descriptions they were developing (88).

First, they would explain the non-temporal factors involved in technical writing; then they would give the students written assignments in order to pinpoint the specific mistakes they make. In general, they found that non-native speakers fail to make the intention-specific (non-temporal) distinctions that enable experienced writers to make the appropriate grammatical choices. For example, a student writing a laboratory report would write the whole paper in the past tense, thus ignoring the significant grammatical choices prompted by extra-temporal considerations. While the sentences would be grammatically correct, they would be contextually wrong and perplex the technical course instructors, who would be unable to pinpoint why the papers looked right but sounded wrong.
In order to address the problems, Selinker and Trimble (1974) would meet individually with students in some instances and discuss problems of general interest in class context. A typical procedure would involve:

- discussing the rhetorical and grammatical-rhetorical principles in class;
- having the students analyse authentic sample materials from current technical writings;
- asking the students to locate similar materials in their technical-course readings;
- having them apply the relevant rhetorical techniques in a writing assignment; and, finally,
- providing direct feedback in the form of an error analysis to relate “the grammatical errors to inappropriately presented rhetorical techniques” (89).

Selinker and Trimble (1974) argue that they were able to show successfully how certain rhetorical techniques impact on the grammatical choices that have to be made, and that those areas of grammar are an essential part of the overall piece of writing.

Malcolm (1987), in turn, discusses the relation between rhetorical function and tense choice. Pedagogically, it seems that Malcolm’s research findings are only marginally different from those of Lackstrom, Selinker and Trimble
which raises the question whether her suggestions offer any new approach to dealing with tense choices in the classroom. Malcolm (1987) argues that the

- teacher should explain tense choices to the students, with reference both to their context-dependent and context-independent uses;

- students should be given a “general understanding of how temporal references affect tense choices” and how “the tense formula is constrained by features unique to the genre of journal articles” (41);

- students should be made to realise that, in the research process, the temporal locus of many references is only in the mind of the researcher and are related to the researcher’s rhetorical purpose (41).

It is unclear how exactly these minor variations on large bodies of research are supposed to find direct pedagogical application in the ESP classroom, where findings and procedures should be specific and easily understood by the struggling learner.

2.2 Teaching rhetorical function shifts

The last paper in the sub-corpus by Selinker, Todd Trimble and Trimble (1978), as discussed previously, deals with rhetorical function shifts in EST discourse. In outlining the pedagogical implications of their research, the
authors note that the overt teaching of rhetorical structure may slow down the students temporarily in their reading, in particular with the kind of function shift the authors have identified (318). In their teaching, they found that, at the elementary level, the students:

- are unsure about the rhetorical levels as set out in their rhetorical process chart (312-313);

- find the analysis of some paragraphs difficult since the division between labelled functions is to some extent arbitrary (for example, when does an example become an illustration?);

- err because of the possibility of “cross categorization” when, in a paragraph, for example, a series of examples may each be the cause of a certain effect (319).

In order to obviate confusion and frustration, they conclude, function-shift paragraphs should be taught explicitly; and rhetorical-process development paragraphs, as well as well-written examples of function-shift paragraphs, should be set for analysis.

2.3 A reading technique for grammatical-rhetorical awareness-raising

A text explicating a reading technique which would enhance the EFL student’s “awareness of the grammatical and rhetorical structure” of the target language is one entitled Analytic Syntax: A Technique for Advanced Level Reading by Berman (1975: 243-251). Significantly, this text, which was published after the groundbreaking work of Lackstrom et al.’s (1973) research
but refers to it peripherally together with several other articles in a footnote (Berman 1975: 243), deliberately ignores the vocabulary and general content of the ‘randomly’ selected article (244). This would explain why a 250-word extract was used and why no mention is made of the rhetorical structure of the original text as a whole. Except for a brief discussion of the importance of alerting the students to the “theme” of the text, which they have to infer from the example given, the article discusses the importance of:

- unpacking nominalisations (which is dealt with extensively in SFL and DA);

- filling in the content ellipsed from reduced relative clauses;

- teaching pronominal referencing (cohesion as dealt with in DA);

- rewording common intersentential semantic markers into less common ones (without commenting on their relation to the rhetorical-grammatical structural form of the passage as a whole);

- encouraging the students to transliterate X-Y arguments in their own language;

- teaching the devices for signalling negation in English;

- exploring the function of punctuation marks in a text; and

- drawing students’ attention to some of the differences between British and American standards of English.
While fairly general, Berman’s (1975) suggestions for promoting a better understanding of written sentences with the use of some of the standard tools of grammar and DA are useful.

2.4 Teaching the rhetoric of written EST

Specific strategies for teaching the rhetoric of written English for science and technology are discussed by Weissberg and Buker (1978) in their paper on the subject. They argue that the results of previous research into the grammar and ‘rhetoric of science’ have been applied mainly to the area of reading, but not to the province of technical writing, where the majority of students lack well-developed writing skills. Their article “describes teaching strategies employed in a technical writing course for Latin American students at New Mexico State University” (321).

Essentially, Weisberg and Buker (1978: 323) accept the basic validity of Lackstrom, Selinker and Trimble’s (1973) contention that rhetorical function determines grammatical choice and of their rhetorical-grammatical process chart. However, based on their specialised corpus in the fields of animal science, range science, agronomy, and agricultural economics (1978: 323), they chose to modify Lackstrom et al.’s hierarchy somewhat as set out in Fig. 2 of their paper (323).

In what appears to be a tightly structured programme, Weissberg and Buker (1978) provide their students with contextualised writing activities to help them identify the relevant rhetorical functions, analyse their linguistic features, and then practise writing reports on their own. The approach and exercises move from the specific to the general, from structured activities to
less tightly controlled ones composed of rhetorical form, vocabulary and grammar (324):

- In the first identification exercises, the students have to identify all the examples of generic noun phrases in the Introduction section of a report;

- secondly, in a fill-in exercise, they have to insert the plural –s or the articles a, an, or the where necessary;

- in the third exercise, they fill in missing information (clauses and phrases) in their own words where it has been deleted—at this stage, they move to “larger units of self-generated writing” (325) before embarking on more extensive writing involving application exercises which involve using various stimuli to write a particular report;

- next, once the students are familiar with all the sub-units of an actual research report, they are given integration exercises involving a larger number of rhetorical sub-sections and their relevant grammatical forms (325-6); and

- the final consolidation phase in this carefully structured rhetorical-grammatical writing programme requires the students to write an “entire, original research report” (328).

Weissberg and Buker’s (1978) programme appears to be based on the assumption underlying the earlier research of Lackstrom, Selinker and Trimble’s (1973), namely that there is a close correspondence between
rhetorical functions and their grammatical realisations. The value of this writing programme lies in its pragmatic focus on teaching such forms in a structured and carefully staggered manner.

2.5 Teaching the use of the personal pronoun

Hyland addresses the use of personal pronouns in scientific research articles but with specific reference to the controversial matter of self-mention, “a powerful rhetorical strategy for emphasising a writer’s contribution” (2001: 207). The author provides a scholarly commentary on the pedagogical implications of his research and specifically mentions the importance of rhetorical consciousness-raising to help students to “move beyond the conservative prescriptions of the style guides and into the rhetorical contexts of their disciplines” (224). Essentially, this means training students to experiment, explore, and reflect on the discourse practices of others, as well as on their own.

In his memorably clear conclusion, Hyland suggests exposing students to authentic models, giving them small-group frequency-count assignments, having them interview faculty members on their own writing practices and those of others, encouraging group-feedback sessions, and experimenting with their own academic writing (224). Since, as Hyland argues, “the relationships between knowledge, the linguistic conventions of certain disciplines, and personal identity, are fuzzy and complex” (2001: 244), the answer lies in rhetorical consciousness-raising. This, one could add, would provide an antidote to so much of the overtly prescriptive grammar teaching in evidence in English foreign-language contexts (see chapter 1), in particular at the lower levels where this kind of consciousness-raising should gradually be introduced.
2.6 Teaching the use of conditionals

In his quantitative-qualitative study into the “pragmatics of conditionals across genres”, Ferguson (2001: 61; 80) draws attention to the considerable variation in the use of conditionals in spoken and written genres, as well as less marked ones in editorials and research articles. In commenting on the possible pedagogical implications or applications of his research, Ferguson (80) cautions against the notion that there is a one-to-one transfer between descriptive insights and pedagogical materials.

Pedagogically, however, research into the use of conditionals should encourage the teacher to move from traditional prescriptive grammar to considering their pragmatic application in actual discourse. This could lead the ESP teacher of medical English to design appropriate genre-related activities for students. In spoken interactions, the students could be made aware of the use of pragmatic if-conditionals to express polite directives, event-conditionals when eliciting information from patients about their symptoms, and the use of conditionals in reassuring patients. In writing, the students could be alerted to the use of event-conditionals in the operational definitions given in the Methods sections of research papers (81). In general, research into the use of the conditional in medical discourse adds to the teacher’s knowledge base and encourages giving more specific attention to the varied functional or pragmatic uses of the conditional, rather than by abiding by the traditional grammatical descriptions of the conditional.

2.7 Teaching the use of lexical verbs
The contextual and semantic aspects of verb use in scientific discourse, as Williams (1996: 176) rightly points out, has received relatively scant attention in the literature. His study of lexical verbs in medical research reports, as discussed in Section 2.2.3 of Chapter 3, demonstrates the difficulty of translating some of the findings of grammatical-rhetorical analyses into pedagogical practice. Furthermore, he shows that restricting verb use to the connections between general temporal meaning, tenses and communicative functions (176) fails to consider the use of the verbs in context, and how their frequency and use vary across the various rhetorical sections of medical research reports. On the basis of his statistical analyses, Williams concludes that classroom practice, using single sentences or longer passage as examples, could concentrate on either the most common verbs in medical discourse, or on contrasting the use of a selected range of verbs in each of the categories discussed by him in that

- longer text segments or sentences could exemplify the main features of the individual verbs in relation to “rhetorical section, communicative purpose, and interpersonal and textual implications” (1996: 192);

- high and low-frequency verbs could be contrasted semantically and syntactically (192);

- the students could be given discrimination exercises based on lexical anomalies for “semantic, syntactic or textual purposes” or, later, for the purposes of error analysis—Williams gives a number of sentences to show how, for example, lexical verbs relating to reporting and observation could be confused, and
how syntactical problems could arise in the use and overuse of the passive (192);

- the students could rework some sections of selected texts using frequency and contextual research data “for lexical exercises on synonymy and stylistic variation” (195).

Given the complexity of Williams’ s statistical research findings, one cannot but wonder how many teaching contexts would support the kind of specialised teaching practice he has in mind, assuming that such contexts would be characterised by a high level of programme stability and teaching expertise in the often ‘chaotic’ field of ESP/EST instruction. Secondly, it would appear that complex subject-field-specific inquiries generate complex findings that would be of value where such programme stability and teaching expertise are in place.

3. Discourse-based approaches

Widdowson (1979), as suggested in the previous chapter, is a major figure in the development of the various approaches to ESP/EST reading and writing, and the most influential thinker in the transition from grammatical-rhetorical to discourse-based (communicative) approaches to the field. The second chapter of his collection of papers contains a number of practical pedagogical approaches to the teaching and learning of EST discourse which, it will be remembered, is said to contain both verbal and non-verbal elements or features.
3.1 Representing non-verbal information verbally

According to Widdowson, the supposedly universal deep structure of scientific discourse finds expression in the non-verbal features of the language—“formulae, tables, diagrams, and so on” (1979: 24). What the student of scientific discourse needs to learn is how the non-verbal features are realised through the linguistic structure of the language. The teacher is charged with having to “extend the range of the student’s communicative ability by making him aware of an alternative way of expressing the knowledge of science he already has” (28). Widdowson makes the critical point that teachers should present scientific communication, not as something separate from the students’ knowledge, but as an integral aspect of what they already know. This could involve getting them to express or realise scientific formulae linguistically in English by:

- using: table-completion exercises and variations upon them;

- expressing two statements in combined form;

- rendering equations (processes) in the form of statements in English; and, in more complex exercises;

- utilising a description of an experiment in order to label or prepare a diagram of it, or the reverse.

In section 3 (entitled Exercise types), of his collection of essays, Widdowson (1979: 63) once again stresses the importance of actively involving the student in the language-learning process, beginning, not at the description stage, but at the presentation stage. This
distinguishes prescriptive grammar-centred approaches from communicative ones, despite the controversial nature of the latter. The first type of communicative exercise Widdowson (70) recommends involves making clear the multi-functional nature of language use through a process of rhetorical transformation—that is, the transformation of one communicative act into another. For example, a set of simple statements or propositions could be transformed into complex instructions for carrying out an experiment, a general account, or a report. These verbal exercises could be followed by information-transfer activities involving both the verbal and non-verbal features of scientific discourse, as mentioned above.

3.2 Teaching by means of gradual approximation

An important pedagogical principle and procedure Widdowson (1979: 75) discusses in section 6 of his collection of essays is that of gradual approximation. This is a strategy of drawing and gradually building on the learners’ existing knowledge and experience to prepare them to use the target language authentically rather than in the form of contrived classroom activities. Widdowson (78 ff) exemplifies this strategy with reference to a diagram on the composition of the skin which the students have to transform linguistically into a list of different propositions or statements about the skin. To assist the students to produce coherent discourse, they might be given:

- an addition or amendment to the propositional content signalling subdivision of the content;
a gap-filling exercise to insert the correct forms of verbs given in brackets—once they have decomposed the diagram and written out the propositional content in the form of proper sentences;

the task of combining a number of sentences randomly arranged in two columns (the one containing a list of the various parts of the skin; the other, their characteristics or functions).

In order to help the students move from the sentence level to the incorporation of such isolated sentences in continuous discourse,

the sentences could be presented to them in, for example, three sets “corresponding to … three paragraphs….“ (82);

both the three sets and the individual sentences within them should be given in random order; and the

reader then has to combine the sentences within the three groups coherently using co-ordinate and subordinate conjunctions, as well as arranging the paragraphs in their logical order to create a passage of continuous, coherent linguistic discourse (81-82).

Widdowson (1979) rightly identifies and addresses the concern that the exercises suggested by him could be said to be mere devices in the teaching of reading and writing by pointing out that he does not consider them to be definitive; rather, they demonstrate the important principle of actively involving the students in learning to use the target language communicatively, and to discover “how discourse is realised through the
particular medium of the English language” so as to explore and extend their “own linguistic and non-linguistic knowledge and experience” (84).

The reasons for the absence of other discourse-based approaches are to be found in the confusion surrounding the meaning of the concept of discourse, which is a blanket term for a multiplicity of approaches (Swales 1993: 103); second, in the fact that essentially GRA and GBA are two sides of the same procedural coin as represented by the so-called Washington School in the United States and by Widdowson in Britain (see Hutchinson and Waters 1990: 10).

However, the less linguistic (structural) and more communicative approach represented by Widdowson, as exemplified by the pedagogical activities he suggests, clearly goes far beyond the level of the sentence. As such, it not only has considerable value in the teaching of written discourse in general and EST discourse in particular but distinguishes it from GRA. As Swales (1993: 58) indicates in his influential definition of genre, a genre comprises a class of communicative events, the members of which share some set of communicative purposes—however difficult the latter may be to deduce.

Given the paucity of pedagogical applications in the corpus on DBA, additional practical examples of their possible applications will be given in Chapter 6.

4. Genre-based approaches

Interest in the pedagogical applications of genre-based approaches to language, as Henry and Roseberry (1998) point out, has grown considerably since the mid-1980s. They rightly assert that such approaches are based on
the (contentious) issue of communicative purpose, that a genre is a text which serves a specific purpose in society, and that it is made up of obligatory and optional segments or moves which realise its communicative purpose. Pedagogically, a GA is a consciousness-raising attempt aimed at showing how these moves are rhetorically organised, which linguistic features the expert users of the genre have chosen in order to realise the communicative purpose associated with the genre, and how these choices can be explained in terms of their psychological and social contexts. The importance of these observations will become evident in the following survey of the pedagogical applications of GBA to EST reading and writing.

4.1 Explicit structural-rhetorical awareness-raising

A paper which leans heavily and builds on Swales’s (1993) discussion of his own study of 48 (genre-specific) article introductions is that by Hopkins and Dudley-Evans (1988). It strives to develop an approach to describing the organisation of particular kinds of text. The authors believe that an explicit description of the way texts (in their study, the discussion sections of research-based articles and dissertations) are organised will be valuable to learners and teachers alike. ESP work should therefore assist these students to learn to differentiate between different types of texts, and it should provide “useful information about the nature of different types of texts that is of pedagogic value” (1988:113). One of the problems affecting GA, the authors argue, is that many approaches differentiate between texts on the basis of similarity, but not in terms of differences. The system of analysis they propose should be both functionally delicate and comprehensive, and should adequately describe a communicative event with reference to its content, internal-logical organisation, and the ways in which “the speaker/writer takes
account of his audience” (114). This means that the students’ awareness should be raised of the

- content of the speaker/writer’s message;
- explicit and implicit logical structuring of the text; and the
- writer’s approach to his/her audience (114).

While acknowledging that the division of these functions is a heuristic rather than a representation of what is evident in the text, Hopkins and Dudley-Evans believe that their system of analysis is capable of tracking the shifting emphasis of these functions in a particular text or discourse. The challenge is to find pedagogically motivated models to assist the students. They believe that Swales’s four-move model is suitable for the purposes of selecting appropriate texts insofar as it takes into account “information content and structure as well as interactional features” (1988: 115).

Hopkins and Dudley-Evans (1988: 114-115) argue that well-known ESP series such as *Focus, Reading and Thinking in English* and *Nucleus* have been centred on the transactional or information content of language, whereas Swales’s analysis of article introductions, as said, takes into account the information content as well as the interactional features of the discourse. They demonstrate how Swales would characterise each of his postulated four rhetorical moves\(^1\) as well as showing how it is textualised, arguing that the moves he suggests more accurately reflect the writer’s purpose than the former traditional, general classifications have done. In addition, they contend that a particular merit of Swales’s work is that its fairly general

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\(^1\) As previously mentioned, Swales (1993: 140-141) subsequently scaled them down to three moves.
“sweep through text, unencumbered by the need for meticulous consistency of labelling, can produce tremendous insights and provide us with ways of characterising genre” (116). The arguments Hopkins and Dudley-Evans advance suggest that they are not interested in the ‘niceties’ of genre analysis, but that they prefer a pedagogically motivated functional-pragmatic approach to classifying text types to help the learner.

In discussing their own work on the introduction sections of MSc dissertations, Hopkins and Dudley-Evans (1988) note, however, that these introductions differ from those of the research articles examined by Swales (1993) in that they are significantly longer and reveal a cyclical pattern. Extending their research to the discussion sections, they found that the linear description proposed by Swales was no longer valid, and that in general the writer’s choice of moves revealed a clear cyclical pattern. They then suggest a set of 11 pedagogically useful moves for the discussion sections of articles and dissertations. Moreover, they argue that in the discussion sections of the MSc dissertations the choice of moves apparently depended on whether the student considered the result being reported to be favourable or not.

The authors acknowledge that the limited scope of their paper precluded a detailed discussion of a number of serious theoretical issues raised by their research, and they rightly point out that they cannot make any claims about how the descriptive framework they propose can or should be implemented. They conclude that not only are more than only four moves possible, but that for pedagogical purposes Swales’s model would have to be modified and further developed to take account of different genres and sub-genres in academic writing. Their final claim that their descriptive framework is sensitive to the speaker/writer’s communicative purpose should be considered in the light of Askehave and Swales’s paper on the complexity of
and problems associated with the use of this difficult construct as previously discussed (Askehave and Swales 2001: 199). Even so, the merit of their paper is its pragmatic emphasis on providing the student with suitable model texts and, therefore, a schema for understanding and producing well-structured texts.

Mustafa (1995) similarly supports the argument in favour of explicit text instruction and reports on a study conducted at Jordan University of Science and Technology, which involved raising the students’ awareness of the conventions of the term paper through formal instruction. In the course of the study, intermediate-level students received explicit instruction in term-paper conventions such as “the thesis statement, the table of contents, the introduction, the body including major sections and subsections, the conclusion and the references” (1995: 249) as a form of rhetorical consciousness-raising. Quoting Swales’s famous definition, he argues that the term paper qualifies as a genre with specific conventions such as he has reported on.

The data for Mustafa’s (1995) study was collected by means of interviews with the professors, a questionnaire completed by the students, structured interviews with a sample of students, and an analysis of sample term papers written by the students in Arabic and English. On the whole, the findings were conclusive that explicit instruction is beneficial but significantly more so when the subject professors specify and teach the conventions in addition to specifying criteria for their evaluation. At this point the ubiquitous terminological question once again arises whether Mustafa’s paper is an example of a rhetorical or a genre-based approach to EST writing, and whether the distinction between the two is not perhaps ultimately an academic one.
4.2 The effect of explicit text instruction on readability scores

A paper which deals with the question of readability is that by Davis et al. (1988). It reports on an empirical study in which intermediate-level college students of French were randomly assigned to an experimental group who received information on the rhetorical organisation of a journal article, and to a control group who received no such instruction. Both the control and experimental groups were randomly selected from among English first-language speakers studying French at the University of Minnesota. Half of the intermediate-level students from each of the two groups were then assigned to read a science-based article (adapted from a science magazine for non-specialists) which used canonical organisation while the other half read the same coherent article without the explicit canonical markers. While both of the French translations of the texts followed the basic format of scientific report-writing, a large amount of technical lexis had been edited out of the papers, and tabulated information and diagrams had similarly been omitted. In addition, explicit rhetorical-division markers had been removed from both texts which dealt with the biological consequences of pollution. For the purposes of quantifying the results, the texts were divided into idea units each of which “consisted of one predicate and one or more arguments” (1988: 208). In order to ensure inter-rater reliability, the idea units in the randomly selected protocols were independently scored by two raters and a high external reliability-coefficient of $r = .96$ was achieved.

Next, the students were randomly assigned to an experimental and control group respectively. While the one group received explicit instruction on the structure of experimental reports and was given eight pages of training materials conforming to such a structure to study, the other group did not receive any prior instruction at all. The students were then given 15 minutes
to read a text on a general health topic, with equal numbers of students receiving the text either in canonical or non-canonical format, and were then asked to complete a recall protocol. For reasons of economy, the authors’ detailed discussion of the procedures followed in scoring of the texts, and the statistical analysis of the results of their tightly controlled experiment, will not be discussed here. Of pedagogical significance and value is their general finding that the students who had received prior instruction had “significantly better recall than non-instructed readers” (1988: 211) where the text had a clear canonical format. As Davis et al. rightly conclude, these results suggest that text structure should be explicitly taught, especially at the intermediate level because “knowledge of structure can enhance comprehension” (213). This article is of particular relevance in so far as it sheds light on improving the student’s reading and writing skills in EST by means of explicit instruction in canonical markers.

4.3 The controversial nature of genre-based instruction

Kay and Dudley-Evans (1998) report on a multicultural workshop organised to discuss the extent to which genre-based approaches are successful in the classroom. As was to be expected, those participants working in the Swalesian tradition are involved in promoting good genre-writing practice to students at tertiary level, while those working in the Australian school pioneered by Halliday and Martin focus mainly on empowering school children to master those genres that will help them to function in society. Given the controversial nature of GBA, the participants’ views on the merits and demerits of such approaches were divided. Some believed that genre-based approaches are empowering, enable the students to participate fully in their respective discourse communities, promote an understanding of how texts are organised, encourage flexible thinking, and give them secure
guidelines to help overcome their academic fears and insecurities. Other participants, by contrast, expressed concern about the danger of prescriptivism, a lack of creativity and demotivation in the students, the possible product-centred nature of such approaches, and the disempowering nature of an imposed formula-type of teaching. Yet another group believed that the initial restrictions in genre-based instruction later outweighed the benefits to be derived from the transfer of knowledge of genre at the higher levels of academic writing (310-311). However, as the participants argued, the dangers of prescriptivism are avoidable if:

- genre-based instruction can prepare the students for real-life tasks;
- the communicative purpose of genre-based discourse is borne in mind;
- the texts are properly contextualised before being presented;
- a variety of suitable and authentic texts within a specific genre are used;
- lesson procedures facilitate rather than curtail interaction; and if
- genre and process-centred approaches are combined (311-312).

In conclusion, the authors argue that, despite the controversial nature of genre-based instruction, it is positive if it continues to stimulate discussion, debate, and a dialogue between researchers and teachers, as well as between teachers experienced in this form of instruction (1998: 313).
4.4 Acquisition versus learning

It is perhaps fitting to conclude this section with a brief review of a paper entitled ‘Show and Tell: the Role of Explicit Teaching in the Learning of New Genres’ by Freedman (1993). Indeed, this is the crucial issue that teachers in ESP/EST in particular are concerned with, not only when confronted with the many divergent approaches in GBA to reading and writing but in their daily classroom practice. Freedman’s paper is relevant insofar as it sheds light on the implications of Krashen’s acquisition theory for genre-based instruction in general, and by extension for EST.

As Freedman (1993: 222) points out, the notion of genre has undergone radical reconceptualisations, from the more restrictive earlier focus on regular textual features to a broader understanding of such features in relation to the social context in which they originate and operate. She makes brief mention of the influence of pragmatic speech-act theory, discourse theory, philosophic work on argumentation, the “socially based linguistics” (224) of Halliday, the theoretical work of Carolyn Miller within rhetorical studies, and the extensive definition of genre given by Swales. As she argues, underlying all these notions is the conception of genres as “actions, events, and (or) responses to recurring situations and contexts” (1993: 224). The fundamental questions that she poses are whether there is any sense in teaching regular generic textual features if they are secondary to communicative purpose or, “if genres are responses to contexts,” whether textual features can be learned out of context (224).

In order to address these questions, Freedman (1993) draws on writing research and theory, as well as on research into first- and second-language acquisition, and offers two hypotheses: a strong and a restricted one. The

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2 See Chapter 4, Section 5.
strong hypothesis holds that explicit instruction is not only unnecessary but largely impossible and even useless, besides involving the “danger” of overlearning and misapplication. Based on acquisition theory, it is consistent with the strong, older version of the communicative approach, which is based on the same tenets. The (slightly) restricted hypothesis shares the same suppositions but concedes that explicit teaching may be useful “under certain conditions for some learners” [emphases mine] (225). Consistent with the strong bias in favour of the theory of acquisition as represented by the two hypotheses, Freedman significantly offers no third hypothesis that explicit teaching is beneficial.

In theorising about the strong hypothesis, Freedman (1993) draws attention to a study which she and her research assistants had conducted in the mid-1980s to examine a large group of 7,500 school children’s control of narrative structure. Predictably, given her obvious bias in favour of acquisition theory, it was found that they displayed a remarkable mastery of the structure and ability to manipulate it since they had in all probability inferred the schema from their own reading of or listening to stories. Similarly, in another study it was found that undergraduate law students had achieved a remarkable level of control of the micro- and macro-structure of the essays they had to write in their law course. Significantly, they had not consulted any representative

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3 Not only is a third hypothesis excluded, but Freedman (1993) devotes about 14 pages to a discussion of the strong hypothesis compared with only about 5 pages to the restricted hypothesis (“a more qualified version of the [strong] hypothesis”). In this regard, the disclaimers and their subsequent negation are also significant; for example: “I do not intend to blur the distinction among the different linguistic processes [writing research and theory, and research about first-and second language acquisition]...however, there is enough that is analogous among...”; “Without quarreling with this [Phelps’s] characterization of cultural literacy [the omission by the so-called natural attitude of the role of craftsmanship and critical reflexivity], I would question...”; “My concern is not to argue against the possibility or the value of such reflexive, consciousness...My concern is rather to insist that...such consciousness is not in itself a means of enabling learners to acquire such genres’; “I draw on this [Ellis’s 1990] model not because I believe that the processes of second-language acquisition and the acquisition of written discourse are identical, but because there are enough important similarities...” (225-244).
models, the course texts were completely different, and they had neither received any explicit instruction nor attempted to formulate any underlying rules.

Freedman (1993) then theorises that the mastery referred to was consistent with acquisition theory and extensively refers to and quotes from Krashen (in Freedman 1993: 229ff) in support of her argument that the children and students had *acquired* the structures and that explicit teaching of generic structure may not be necessary at all. Next, Freedman (1993) ’refutes’ Phelps’s 1988 (in Freedman 1993: 235-236) counter-arguments and presents her own counter-arguments and conclusions that “the rules governing the intended form need never be articulated or formulated in language at all” (1993: 235), and that acquisition itself “is achieved though the intuition of rules at levels below consciousness” (236). Concerning the implications for teaching, she once again avails herself of Krashen’s theories to argue that “certain gross features” may be taught; that is, formatting or organisation, and usage and punctuation (236). Other than that, teachers should facilitate exposure, bearing in mind that “there is probably a threshold level of exposure” and that beyond that point “more reading is not going to make for better writing” (237). In addition, they should reduce anxiety, encourage motivation, and provide an “enabling context” such as lectures, readings, opportunities for asking questions during seminars and for using their linguistic knowledge (237).

The restricted hypothesis differs only marginally from the strong one insofar as it concedes the possibility that explicit teaching “may” under limited conditions enhance learning. The author bases her discussion on Ellis’s 1990 model (in Freedman 1993: 240-244), which makes an absolute distinction between explicit and implicit knowledge. The first involves form-focussed teaching of discourse features; the second, meaning-focussed instruction
(“reading and writing for meaning”). Freedman sums up Ellis’s theory by stating that, in very specific instances, explicit teaching may result in acquisition, and that it may raise awareness if the students are “immersed” in meaningful tasks (242) in close proximity to or in the context of authentic tasks.

Finally, with reference to Freedman’s (1993) paper, it could be argued that a largely immersion- or acquisition-based approach to EST reading and writing is not only based on outmoded theoretical, psycholinguistic speculations but is inconsistent with the pragmatic institutional realities of EST teaching and learning. While an acquisition-rich environment is an advantage, active learning is at the heart of the institutional EST context, and its success is evidenced and validated by, for example, the empirical research of Mustafa (1995) and Davis et al. (1988).

5. Conclusion

Of particular relevance for the purposes of this critical review are the indications that the progression from the structural-linguistic, grammar-dominated approaches of the 1960s and early 1970s to the grammarless approach advocated by the strong version of the communicative approach in the late 1970s to 1980s is also to a more limited extent reflected in the evolution of GBA to the teaching of reading and writing. The older approaches see genres as being comprised of bundles of linguistic and other structural features to be taught explicitly and prescriptively (Hutchinson and Waters 1990: 9-10; Swales, 1985: 1-14; Robinson 1991: 24; and Widdowson 1979: 54-55), or as texts to be classified taxonomically on the basis of substance and form (Miller 1984: 151).

By contrast, more recent contextual approaches are largely inductive, anti-taxonomic and socially based (see Bazerman 1981, 1984; Berkenkotter and
Huckin 1993; Miller 1984). However, many modern researchers take a middle position on this cline and achieve a synthesis by studying generic or schematic structures and rhetorical functions in such papers in relation to their institutional and social contexts (see Bhatia 1993; Hopkins and Dudley-Evans 1988; Mustafa 1995; Nwogu 1991, 1997; Swales’s 1993).

Chapter 6 will offer additional suggestions for active leaning in the EST reading and writing context and will provide pedagogical implementation of the research findings.

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CHAPTER 6
ADDITIONAL PEDAGOGICAL APPLICATIONS, CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

1. Theoretical perspective

The rich matrix of information provided by the four genre-based orientations to EST reading and writing provides a stimulus for considering how they could be further applied pedagogically to the advantage of the teacher and learner. To this purpose, this chapter will suggest additional pedagogical applications of the research findings based on the corpus using a learning-centred approach to EST reading and writing within a communicative teaching methodology. In addition, it will list the main conclusions of the review and make a number of suggestions for further research.

First of all, a learning-centred approach must be distinguished from language- and skills-centred approaches as discussed by Hutchinson and Waters (1990: 65-71). Essentially, it does not base the syllabus or teaching methodology directly on the specific linguistic features of the target situation, nor does it focus primarily on assisting the learner to process language information for current and future use as it would position the learner as a user rather than as a learner of language (70). Instead, a learning-centred approach puts the learning process in the centre of the teaching and learning situation. Therefore, as Hutchison and Waters argue, any communicative approach to ESP should be based on “a real analysis of students’ needs and expectations, on a real analysis of the ESP learning situation, and on real negotiation with the students” (1984: 112) so as to be truly learning-centred.
Second, if a communicative, learning-centred approach moves the learning process and experience to centre-stage, then it follows that the lessons and presentation of the course materials should:

- take the students’ needs, expectations, learning styles, and level of proficiency into account;
- consider the potentials and constraints of the learning situation;
- bear in mind the requirements (objectives) of the target situation; and
- identify those pedagogical approaches and materials that would motivate the students to give of their best.

At the heart of this paradigm is the need for the teacher to act as a facilitator, interact with the students, and take their concerns seriously. These considerations will determine the seating arrangements in class to facilitate group work, the composition of the groups, the amount of material to be covered in each lesson within the overall time span of the course, and the kinds of materials and activities to be used to achieve the required objectives. Clearly, this approach makes considerable demands even on an experienced teacher and will differ from context to context.

In this regard, it is important to bear in mind that the ‘weak’ or moderate version of the communicative approach to language teaching does not exclude explicit
teaching. While the older, ‘strong’ (extreme) version of the communicative approach appears to be premised on an acquisition- or immersion-based approach to language learning and holds that there should be no explicit grammar teaching at all, the ‘weaker’ (more moderate) version is different. The reason is that it clearly acknowledges the importance of properly planned, controlled and contextualised grammar teaching through grammatical consciousness-raising to help develop the students’ linguistic competence as part of their overall communicative competence (see Celce-Murcia 1991: 462; Buys and van der Walt 1996: 83ff; Dickens and Woods 1988: 623ff; and Odlin 1994: 124).

It should be clear from the survey and the overlaps between them that no single approach should be implemented in isolation. Indeed, the awareness or knowledge of their historical progression should encourage experienced teachers, in planning and facilitating their lessons for and within a specific institutional context, to draw extensively on the insights provided by the various approaches. Indeed, the application of a comprehensive genre-based approach will have to integrate the various textual and contextual approaches as the overlaps between the individual approaches will show.

2. Systemic Functional Linguistic Approaches

Despite the difficulty of Halliday’s (1985) functional-linguistic approach to textual analysis, a basic understanding of its essential features would serve a valuable consciousness-raising purpose by showing that grammatical choices are based, not on textbook rules, but on choices writers make to achieve their aim and include context in the grammar of the clause.
With reference to the grammar of transitivity, which organises experiential meaning in the clause by means of various process types involving participants and circumstances, it could be shown how a writer can present research impersonally (see Martínez 2001). However, for the purposes of ‘setting the scene’, the students should first be assisted to think critically about

- the research process involved in, for example, producing a research article (if that is what they have to learn to do);

- the institutional context in which it takes place;

- the reasons for publishing the research;

- the intended readership; and

- the manner in which the author chooses to present the paper.

While such a top-down approach is more consistent with the later contextual developments in GA, it would help the students to understand the assertion that (experimental) research papers tend to present information impersonally, neutrally, and objectively (see Martínez 2001). Although this supposition is not uncontested¹, frequency counts (see Martínez 2001; Hyland 2001) present substantial evidence for the varying

¹ See Swales (1993: 114, 125) and Kuo (1999) in his quantitative frequency analysis of the use of personal pronouns in a corpus of 36 scientific journal articles.
degrees of impersonality in research papers.² This is achieved, for example, by making use of the passive voice, stative verbs, and nominalisations.³

Since these complex structures are discussed in some detail in the section on GRA, the examples given next will only be of a fairly general nature to raise the students’ awareness of that fact that language is based on choice and appropriateness.

2.1 Impersonality by means of nominalisation

The students should first of all be asked to explain the concept of impersonality and give examples from daily life. Next, they could be given an unnominalised extract ⁴ such as the following one to compare with a nominalised version of it in order to debate which one sounds objective, which one is more personal, and in which contexts the two are likely to be found:

(a.) Extract (unnominalised)

I think people agree that most species survive in environments which meet their needs. Now, when you think about it logically, you will realise that if you put a plant that needs a lot of shade in

² Hyland (2001: 213) recorded a low self-mention [self-citations, pronouns and others] frequency-rate of only 17 per paper in science and engineering, unlike in the humanities.
³ Nominalisation is explained in Footnote 6 on p. 26; stative verbs describe states or conditions as opposed to processes (see Section 3.3).
⁴ The unnominalised version is an adaptation of an extract from an article by Julie Weiss which appears on p. 44 of Saudi Aramco World, Vol. 57, No. 6, Nov.-Dec. 2006, published by Aramco Services Company Houston, Texas USA.
the desert where there is a lot of sunshine, it is unlikely to survive. And a cactus, which needs very little water, probably won’t survive in a rain forest.

(b.) Nominalised version

There is agreement that the survival of most species is dependent upon environments in which their needs are met. Logically, the survival of shade-needing plants would be threatened by their exposure to the desert sun. The survival of a relatively water-independent cactus would similarly be in jeopardy in a rain forest.

The students should be guided to understand that neither one of the two is right or superior to the other, but that the choices are based on what would be appropriate in a specific context. Next, the teacher should assist the students to list some the grammatical differences between the two versions (as discussed in more detail in the section on GRA). They should be able to note the use of more nominals (underlined) and passive-voice structures, the absence of personal pronouns in the nominalised version, and the reduction of adjectival clauses to single adjectives (indicated by means of dotted lines).

It may also be valuable for the more advanced student to know that the use of nominalisations in, for example, ‘scientific discourse’, enables the writer to pack more meaning into the subject position of the sentence (to ‘load’ it, so to speak), background process(es), and turn concretes into abstracts, which then take on the
roles of agents. The overall effect is one of impersonality and objectivity. The nominalised extract could be used as a starting point for a general discussion of what nominalisation is and does. Then the following unnominalised extract (adapted from Swales 1975: 108) could be nominalised and the subject-position of the sentences loaded adjectivally (indicated by dotted lines) to show how meaning is concentrated in the sentence:

(c.) Extract (unnominalised)

In some parts of the world, sulphur is deposited too deep to be mined in the ordinary way. However, in about 1900 an American engineer called Herman Frasch developed a process which made it possible to extract this sulphur which lies deep in the earth. This was achieved by using three methods, which resolved the problem (56 words)

(d.) Nominalised version

The extreme depth of sulphur deposits in some parts of the world makes ordinary mining impossible. The three-method deep-sulphur extraction process [which was] developed by the American engineer Herman Frasch in about 1900 provided a solution to the problem (37 words).
The students should again be reminded that neither is better than the other but that each would be appropriate in a given context; however, they should be cautioned that excessive nominalisation makes a text difficult to understand.

Depending on the level of the students, the specific objectives of the course, and the amount of time available, the students could communicatively practise similar contextualised transformation activities in which, for example, verbal structures and clauses are nominalised as demonstrated. Imaginary scenarios could be used to contextualise the activities meaningfully to ensure that the students understand why they are making certain linguistic choices.

2.2 Impersonality by obscuring agency

The students should be reminded that impersonality depends on the use of more than one type of grammatical construction at the same time. Using the passive voice to obscure agency is yet another method that scientists and technicians sometimes use. Many amusing activities involving, for example, a ‘mad instructor’, could be used to encourage the students to act as ‘linguistic detectives’ to explain how the passive voice is used to obscure agency:

‘Professor’ Bumble’s report on a failed demonstration (which he had conducted)

A motor vehicle belonging to an apprentice motor-mechanic was chosen to demonstrate how a battery should be inspected. The vehicle in question was stopped, the engine [was] left running, and the handbrake [was] left unsecured. Next, the bonnet was opened
and secured by means of a piece of wood found nearby. No attempt was made to demonstrate how the corrosion on the battery terminals should be removed by means of a stiff brush, water and baking soda since it was deemed unnecessary. Instead the apprentices were encouraged to familiarise themselves with the texture and taste of the white-green substance [which was] deposited around the terminals. Next, the vent caps were removed, [were] placed on the vibrating battery housing, and a request was made for matches to inspect the level of the battery water. Unfortunately, the demonstration could not be concluded as the car was abruptly removed under misguided protest.

No doubt, the students should be guided to understand that the reasons for obscuring agency are many—for example, where the agent is self-evident, irrelevant, or unknown—and certainly not always for dishonest purposes. Similarly, they should be helped to consider how a passive construction moves the object to the subject position of the sentence to become the new Theme.

2.3 Thematizing key information by means of the passive voice

Indeed, a basic knowledge of the SFL grammar of textual meaning (Theme and Rheme) would further raise the student’s awareness of how meaning is organised in a text. As mentioned before, the Theme in a clause is the departure point; the Rheme, new information about it. In other words, what is put first (and last) in an English clause determines how the clause is organised as a
message. In each case, the transitivity function of the clause is expressed through a single topical theme \(^5\) which must be used in the initial position of the sentence. Thus the Theme of a sentence tells the reader what the writer is speaking about, just as a succession of similar topical themes will reveal how the text is organised thematically. The Rheme, on the other hand, is that part of the clause in which the Theme is developed and in which new information is usually presented.

As Martin 1993 (in Cope and Kalantzis 1993: 125) rightly argues, the passive voice—which moves the object or thing being talked about in the Rheme position of an active-voice clause to the grammatical-subject (Theme-) position of the sentence—gives it thematic prominence and gets the staging of ideas in the text right. Therefore, as he emphatically states, “This shows what utter nonsense it is to advise students to avoid the passive and vary sentence beginnings” (125). The following brief written text on welding (adapted from the correct original in Herbert 1996: 26) in which the active voice is deliberately used inappropriately should serve as an example. It should be explained to the students that the purpose of the textbook text is to explain the welding process and not to present operating instructions (which would require the use of the imperative) or information in a user’s guide. In the two texts, the topics or Themes are boldfaced and the verbs underlined:

(a.) **Inappropriate use of the passive voice**

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\(^5\) For the sake of brevity and simplicity, and since they are not directly relevant, interpersonal and textual themes are not discussed here. A simple table with examples is given by Martin 1993 (in Cope and Kalantzis 1993: 124).
We know that pressure welding is the simplest method of using two pieces of metal together [sic]. We heat the ends of the metal to a white heat in a flame. This temperature (1300ºC) causes the metal to become plastic. We then press or hammer the ends together and smooth the joint off. Moreover, we must take care to ensure that we clean the surfaces thoroughly first, for dirt will weaken the weld. If we heat iron or steel to a high temperature, it causes oxidation which [oxidation ] forms a film of oxide on the heated surfaces. For this reason, we apply a flux to the heated metal.

(b.) Appropriate use of the passive to foreground important thematic information

The simplest method of using two pieces of metal together [sic] is known as pressure welding. The ends of the metal are heated to a white heat in a flame. At this temperature, (1300ºC) the metal becomes plastic. The ends are then pressed or hammered together, and the joint is smoothed off. Moreover, care must be taken to ensure that the surfaces are thoroughly cleaned first, for dirt will weaken the weld. The heating of iron or steel to a high temperature causes oxidation, and a film of oxide is formed on the heated surfaces. For this reason, a flux is applied to the heated metal.

It should be more than obvious that the use of the passive voice in the second version makes it possible for the subjects discussed to be given thematic
prominence in the clause, which gives unity to the passage. The student could tabulate the subjects of the two texts in a comparative table to see which version has more thematic unity in terms of the process it discusses.

2.4 The use of marked Theme to foreground information

Students further need to distinguish between an unmarked (typical or usual) Theme and one that is marked (unusual or atypical). The former type is the traditional grammatical subject of the sentence which is being talked or written about (as in “The grammar of transitivity and textual meaning is difficult”) at the beginning of the clause. A marked Theme, by contrast, is “something other than the subject, in a declarative clause” (Halliday 1985: 45) which foregrounds the information in the clause (e.g. “What is difficult is the grammar of transitivity and textual meaning”).

In declarative (SVO) clauses, the unmarked (usual, ordinary) Theme is found in the clause-initial position (as in “They examined the coil”). If this is changed to “The coil is what they examined”, the unusual word order immediately draws attention to the Theme (subject) of the sentence and changes the meaning by emphasising that the coil and nothing else was examined. In addition, when circumstantial elements (phrases indicating extent, place, time, manner, cause, and purpose, for example), precede and conflate with the subject, the effect is one of foregrounding and marking something for the reader’s attention. The students could be given a few examples and then asked to foreground statements such as the following by moving the underlined circumstantial adjuncts to the subject or Theme-position of the sentence:
A marked Theme or Themes, if found within a pattern of unmarked topical Themes in a text, would indicate a momentary or significant thematic shift in focus in the structuring of the information, and vice versa. For example, the dual structure of the whaling text discussed by Martin 1993 (in Cope and Kalantzis 1993) is evident from the two main patterns of marked and unmarked Themes:

- the report-genre part of the paper is realised by no fewer than eleven unmarked Themes about a species of whales; and

- the historical-genre part uses eight out of twelve marked Themes to recount the history of high-sea whaling as distinct from the report-genre section.

The following brief extract adapted from Herbert (1996: 66) shows how the use of marked Themes in the second paragraph shifts the focus from product in paragraph 1 to process in paragraph 2 (unmarked Themes are printed in bold, and marked Themes in bold and italics). However, it will be seen that paragraph
2 contains both marked Themes to foreground the exact moment of the reaction, and unmarked Themes to show the result in each case.

**The Petrol Engine**

The *internal combustion engine* generates heat from the combustion of an inflammable charge inside a cylinder, and the *heat* is immediately converted into mechanical energy. Some *heavy internal combustion engines* use gas fuel or else Diesel fuel, and the *fuel/air mixture* may be ignited either by a spark or by compression of the mixture. Small *internal combustion engines* use a mixture of petrol and air, which is ignited by a spark from the distributor.

*When the mixture is ignited*, the products of combustion expand down the cylinder, which is fitted with a reciprocating piston. The *downward movement of the piston* is converted into a rotational movement of the crankshaft by means of a connecting rod. *As the crankshaft rotates*, the piston is driven upwards again, and the *exhaust gases* are expelled through the exhaust valve in the cylinder head. *When the piston nears the top of the stroke*, the inlet valve is opened and the *exhaust valve* [is] closed. *As the piston rises again on the compression stroke*, the charge is compressed and ignited and the cycle begins again.
In a teaching situation with advanced-level students, course materials containing factual information on a range of topics could be chosen as texts for the students to analyse in terms of the grammar of textual meaning (Theme and Rheme) used in them. This bottom-up approach could then lead to a discussion of the overall concern of the text and how the information is rhetorically organised in the different sections to achieve its purpose. Popularised scientific accounts could be used to contrast the way different genres organise their meaning; and simple, abbreviated texts could be given for restructuring by foregrounding and backgrounding some of the information using marked and unmarked topical Themes.

Finally, after these consciousness-raising activities, advanced students could be encouraged to write a short text with a hybrid rhetorical structure containing factual information on their favourite technical object on the one hand and an historical account or an advertisement on the other. The overall idea would be to raise their awareness of the specific thematic choices writers have to make to achieve the overall purpose of the writing.

It follows that an understanding of the grammar of textual meaning could be particularly useful in the reading of scientific texts, guiding the students to an understanding of how the grammar helps to realise the rhetorical (macro-) organisation of a text. In both reading and writing, this knowledge would foster an analytical understanding of how the grammar is based on choices that writers make in rendering meaning appropriately within a particular context. Finally, the functional grammar of SFL paves the way for a better understanding of
grammatical-rhetorical relationships in a text, the next set of approaches that will be discussed. It will be seen that these approaches take the evolution of genre-based approaches from the level of the clause (the main focus of SFL approaches) to the next level where the focus is on how the rhetorical organisation of meaning in a text influences or determines the grammatical choices writers make.

3. Approaches based on Grammatical-rhetorical Analysis

Writers need to ask themselves what it is they want to say, how the information should be organised or arranged across the various sections and within the individual paragraphs of the text, and how the available resources of grammar should be used to achieve the communicative intentions of the text. As grammatical choice is now based on contextual considerations, writers continually have to correlate the micro-linguistic choices with the overall rhetorical structure of the text in the course of the writing activity, however difficult this may be. In reading, it is equally valuable to analyse the grammatical-rhetorical structure of a text in the same way to arrive at a better understanding of the author’s meaning and intentions. If the programme infrastructure permits, the teaching of reading and writing should be integrated and treated as mutually complementary.

Lest this create the impression that traditional (prescriptive) grammar has now become redundant, it should be explained that it remains vital that the students first master the essentials of English grammar (for example, the parts of speech,

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6 In an ESP/EST context, the reading teacher is often not the writing teacher, and the reading and writing syllabi are usually unintegrated.
principles of concord, formation of passive-voice constructions, and sentence structure) to be able to read and write formal discourse. This knowledge could lead to the further realisation that the use of a specific tense, article, modal verb, or any other grammatical construction for that matter, is based on linguistic choices made contextually; that is, in relation to the rhetorical (organisational) structure of the discourse.

3.1 Raising awareness of rhetorical structure and functions

Students need to be assisted in arriving at a sound understanding of the meaning of the concepts of rhetorical (organisational) structure and rhetorical functions. Despite the danger of oversimplification, some clarification could be achieved by means of explicit consciousness-raising activities using simple analogies about familiar physical structures such as a house, however objectionable this may be to a theoretical linguist. The idea would be to encourage the students to think about the concepts of structure and function.

For example, just as a house is an organised structure based on a plan which determines the overall, functional arrangement of the rooms, a text is composed of a number of units which verbally or rhetorically organise the content coherently. Within a house, some of the structures have a general function (e.g. the passages and the rooms) while others within them (cupboards, doors, light fittings, and so on) have more specific functions. Similarly, to use this structural-functional analogy, a text has an overall objective (which is usually outlined in the abstract and introduction). Next, it has a number of clearly demarcated sections (signalled by headings and sub-headings, or thematic units) the function

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7 These functions were explained in the footnotes on p. 13 of this review.
of which, for example, is to develop the overall purpose of the text. In research articles, for instance, these units are said to be the Introduction, Method, Results, and Discussion. These are the general rhetorical functions of the text. Within each of these sections, there are specific rhetorical functions which achieve the aim of the section, for example, by means of description, definition, and classification. These functions are usually found embedded in a number of closely related paragraphs (see Trimble 1992: 10ff.). Finally, the realisation of the specific rhetorical functions depends on making appropriate grammatical choices, such as which tense to use or which grammatical structure to choose to foreground information syntactically.

As an example, the following text on global warming (Wikipedia 2007) has been annotated to suggest possible general and specific rhetorical functions; and subheadings in square brackets have been suggested for each of the sections [annotations mine]. In the text, tenses (excluding passives) are boxed, the obvious nominalisations underlined, and passive constructions indicated by means of a dotted line. Once the students have applied a top-down approach in reading an unannotated form of the same text, to form an idea of how information is organised rhetorically, they could be asked to suggest general and rhetorical functions for the text. Next, they could be asked to work through the text and identify the nominalisations, tenses, and passive constructions, using the notational conventions suggested. On successful completion of this task, they could be asked to discuss the reasons for the use of nominalisations and passives in the text. Once they have understood the principles of non-temporal tense use (which will be discussed in the following section), they should be guided to examine and comment on the functional use of tenses in the passage.
Global warming

1. [The nature of global warming]

Global warming is the observed increase in the average temperature of the Earth’s atmosphere and oceans in recent decades and its projected continuation into the future.

2. [Causes and results of global warming]

Global average near-surface atmospheric temperature [note adjectival loading of subject] rose 0.6 ± 0.2 Celsius (1.1 ± 0.4 Fahrenheit) in the 20th century. The prevailing scientific opinion [note adjectival loading of subject] on climate change is that most of the warming [which has been]...observed over the last 50 years is attributable to human activities. The main cause of the human-induced component of warming [note adjectival loading of subject] is the increased atmospheric concentration of greenhouse gases [note adjectival loading] (GHGs) such as carbon dioxide (CO₂), which leads to warming of the surface and lower atmosphere by increasing the greenhouse effect. Greenhouse gases are released by activities such as the burning of fossil fuels, land clearing, and agriculture.
3. [Future predictions]

Models [which have been referenced by the Intergovernmental Panel on Climate Change (IPCC)] predict that global temperatures may increase by 1.4 to 5.8 C (2.5 to 10.5 F) between 1990 and 2100. The uncertainty in this range results from both the difficulty of predicting the volume of future greenhouse gas emissions and uncertainty about climate sensitivity.

4. [Other consequences of global warming]

An increase in global temperatures can (in turn) cause other changes, including a rising sea level and changes in the amount and pattern of precipitation. These changes may increase the frequency and intensity of extreme weather events, such as floods, droughts, heat waves, hurricanes, and tornados. Other consequences include higher or lower agricultural yields, glacier retreat, reduced summer streamflows, species extinctions and increases in the ranges of disease vectors. Warming is expected to affect the number and magnitude of these events; however, it is difficult to connect particular events to global
warming. Although most studies focus on the period up to 2100, warming (and sea level rise) is expected to continue past then, since CO₂ has a long average atmospheric lifetime.

[The degree of future climate change] Remaining scientific uncertainties include the exact degree of climate change [which is] expected in the future, and especially how changes will vary from region to region across the globe. A hotly contested political and public debate [note adjectival loading of subject] has...yet to be resolved, regarding whether anything should be done, and what could be cost-effectively done to reduce or reverse future warming, or to deal with the expected consequences. Most national governments have signed and [have] ratified the Kyoto Protocol [which is] aimed at combatting global warming.

Follow-up activities could involve asking the students to find copies of texts they would be interested in analysing using the method suggested. Clearly, the nature, level and objectives of the course, as well as the interests and linguistic level of the students would have to be taken into account.

Once the students understand the general and specific rhetorical functions of a text, they should be assisted to understand how, at the lexicogrammatical level,
the information presented in the text is bound together by means of semantic markers (also known as cohesive devices or transitional words and phrases). For example, in the text on Global Warming, exemplification is indicated by the semantic marker “such as”; contrast by “however”; listing by “the main [cause]”; and concession by “although”. The students should now be ready to understand that the specific rhetorical functions also involve having to make grammatical choices, such as which tense to use, as based on non-temporal considerations; consider whether the active or passive voice would be appropriate; and grasp how the grammatical article should be used. Given the scope and complexity of English grammar and GRA in particular, only a few grammatical structures will be discussed in this section to suggest an approach to using the insights of GRA in teaching the grammar of the text.

3.2 Exploring non-temporal tense choices
Tense choices are difficult for foreign students of EST (Gunawardena 1989; Lackstrom, Selinker and Trimble 1972: 5-7; Malcolm 1987; Selinker and Trimble 1974: 83-88; Trimble 1992: 115) as they often depend on the rhetorical intentions of the writer, as the examples will show. This principle should be explained to the students and, before they are required to make the appropriate non-temporal tense choices in their writing activities, they should preferably be presented with authentic reading materials. These should be specific to the genre-based writing they are required to produce in terms of the course objectives. Preferably, texts with clearly demarcated rhetorical divisions (e.g. Introduction, Methods, Results, Discussion, and Conclusion) should be used so as to be able to relate tense choices to rhetorical functions.

Once again, the students could work in groups to familiarise themselves with the overall structure of the text, to ascertain how the main information is organised under specific headings, and to note how each one of the sections makes use of one or more paragraphs to present the relevant information in more detail. Having gained this top-down perspective, each group should now be asked to look at the part of the text where physical structures, functions, and processes are described and where tense problems usually arise. The students should provide feedback on the tenses used in this part and the possible reasons why one tense was chosen in preference to another. Given that the possible non-temporal choices as explored in the research corpus are subject to contestation (see Malcolm 1987: 41 and Gunawardena 1989: 271), it would be advisable to proceed with caution and see the exercise primarily as an interactive consciousness-raising one in which the students explore, discuss and debate the possible non-temporal choices underlying the tenses in the section with the assistance of the teacher acting as an informed and experienced facilitator. To assist them, the
teacher could encourage them to ‘brainstorm’ the notions (see Lackstrom, Selinker and Trimble 1972: 6-7, 1973: 133-136; Trimble 1992: 123-127) that:

- general, supported claims are made in the present tense;

- a core idea is rendered using the present perfect (if the writer wants to restrict the generality of his assumptions to the present) or the past tense (where no generality should be inferred);

- apparatus used in a particular experiment is described in the past tense, but apparatus used but not designed specifically for the experiment is described using the present tense; and that

- past research is presented in the past tense (except where it is directly relevant to the study, in which case the present perfect is used).

The following paragraphs (culled from Lackstrom, Selinker and Trimble 1973: 133-136) are examples of the kind of extracts from texts that could be used to show how non-temporal tense choices are constrained by rhetorical considerations:

(a.) Generality claimed
Plants to convert cellulose of pine sawdust into fermentable sugar and that into ethyl alcohol fail because sawmills can’t sell as much lumber as plans call for, and thereby curtail the alcohol plant’s raw materials supply.

(b.) Generality restricted to the present

Plants to convert cellulose of pine sawdust into fermentable sugar and that into ethyl alcohol have failed because sawmills haven’t been able to sell as much lumber as plans have called for, and thereby have curtailed the alcohol plant’s raw materials supply.

(c.) No generality claimed

A plant to convert cellulose of pine sawdust into fermentable sugar and that into ethyl alcohol failed because a sawmill couldn’t sell as much lumber as plans called for, and thereby curtailed the alcohol plant’s raw materials supply.

(d.) Apparatus designed for a specific experiment

The test section was constructed of a pure copper cylinder. Both ends of the cylinder were closed with removable Pyrex-glass and plates ¼ in. thick. A fluid port was located at each end of the cylinder.
(e.) Apparatus not designed specifically for the experiment

The tunnel is a blowdown-to-atmosphere facility operating over the Mach number range 0.2 to 3.5. Mach number in the tunnel is generated by fixing nozzle blocks at supersonic speeds. Speeds in the subsonic and transonic range are controlled by changing the area of a sonic throat downstream of the test section.

Next, each group of students could be asked to brainstorm an imaginary experiment and write three rhetorical paragraphs discussing their theory about it, stating the purpose of the research and, in the light of the notions examined, describing the apparatus used. In each case, they would have to account for tense choice in relation to the meaning they wish to convey by means of the three rhetorical functions. Overhead transparencies could be provided for the information to be presented to the rest of the class. Taking into account time and other constraints, the teacher could devise further reading and writing activities for the students.

Finally, it should be realised that a sound knowledge of the extent to which tense choices are often based on non-temporal factors would enable the teacher to assist the students collectively and individually (if time permits) to understand that temporal tense choices are often overridden by non-temporal considerations.

3.3 Teaching the use of active-passive and stative constructions
In Section 2 of this chapter, it was pointed out that a knowledge of the grammar of transitivity and textual meaning as used in SFL is valuable insofar as it shows that grammatical choice is related to meaning. GRA extends this knowledge by showing that there is a high frequency of passive constructions in scientific writing, although this is not universally true as the use of passive-verb forms is also conditioned by rhetorical structure (see Tarone et al. 1998: 113-132). As the rhetorical structures of astrophysics and medical texts using logical argumentation are different from their science counterparts, the incidence of passive-verb forms is lower.

It is noteworthy that, for the purposes of their research, Tarone et al. (1998) disregarded the difference between passive and stative verbs due to the problem of differentiating between them on the basis of context alone, and that they included stative forms in their count.

Before any attempt is made to describe the structural similarities between and uses of active-passive and stative constructions, the grammar of the passive voice should be taught or revised explicitly using single active sentences for conversion. The students should be told or reminded that passives are processes, and it should be carefully explained to them that one of the reasons a passive construction is used is that, in scientific and technical writing, agency is often indeterminate, with the result that the process should be foregrounded. Once they have grasped this fundamental distinction, they should be given a passage or passages in which the active is used inappropriately instead of the passive. The following passage on steam boilers—adapted from the correct version in Herbert (1966: 31)—in which the inappropriate actives are in bold print, should serve as an example. The instructions to the students precede the text:
The following extract on steam boilers (adapted from The Structure of Technical English by A.J. Herbert) contains a number of inappropriate active-voice constructions. Now:

- change the boldfaced active-voice clauses into the passive voice;
- make sure that the new subject and verb agree in number;
- discuss your changes with one or more of your fellow-students;
- think about why the passive voice would be more appropriate; and
- rewrite the passage with any corrections that may be necessary

Steam Boilers

Modern boilers which employ solid fuels are usually too large to be handstoked, and then mechanical stokers carry out the stoking, which ensures that something conveys an adequate quantity of fuel into the furnace at the proper speed. Jets or fans blow the fuel across the firegrate (Note: use the “by”-agent phrase at the end of the sentence). Something allows the correct amount of air to enter for combustion. The combustion of the fuel produces hot gases and something circulates the hot gases around banks of water tubes (Note that the last sentence contains two active-voice constructions and that that you should avoid unnecessary repetition). The water in the boiler absorbs a large proportion of the heat.
Next, it should be explained to the student that EST reading and writing also contains *stative* verbs which are similar to passive verbs and therefore easily confused with them. As Lackstrom et al. (1972: 11) point out, the major difference between passives and statives is that passives are *processes* whereas statives describe *states or conditions*; for example:

“The heat is *circulated* in the fuel-vapor zone” (Passive);

“The wells are *located* near the perimeter” (Stative).

Consequently, statives are generally not used with the progressive and do not occur together with adverbs such as *rapidly* which denote a process. Trimble (1992: 118) points out that, while statives may resemble agentless passives [passives without a *by*-phrase where stating an agent would be unnecessary], they are not interchangeable. Indeed, transforming a stative sentence into an active one would be “neither logical nor semantically acceptable as it does not provide the information the writer intended”; for example, “*The sensor is housed…*” (stative) cannot be semantically transformed into “*Someone housed the sensor…*” (116).

Once the students have grasped this distinction, they could be given a number of mixed active-stative sentence pairs similar to the ones quoted above to decide which denote processes and which show states or conditions. Finally, it would
be a valuable exercise in functional-grammatical discrimination for the students to be given a passage such as the following one quoted from Trimble (1992: 117) in which passives and statives are mixed in context (the passive verbs form are in italics and the statives in capital letters):

**A Canal Bottom Sampler**

A canal bottom sampler, used in Imperial Valley, California, canals, consisted of a brass tube 2.7 centimeters in diameter and 15.2 centimeters long. At the bottom WAS ATTACHED a sharp steel cutting blade. The upper end of the tube WAS THREADED into the base of a cone, the shoulder of which prevented the brass tube from sinking into the canal bed beyond the required depth. The upper end of the cone WAS ATTACHED to a handle of 2½-inch pipe, [which WAS] MADE UP of short sections [which WERE] COUPLED together so that the length of the handle could be varied according to the depth of the water. In taking a sample, the tube was pushed into the bottom deposit as far as the shoulder of the cone permitted. The handle was filled with water and a cap was screwed on the upper end. When the tube was withdrawn, a partial vacuum was formed, which held the sample in the tube.

Next, extracts from authentic texts should be given for the students to explore in groups, drawing on their knowledge of the use of passives and statives, and for
them to try to account for the differences between them. They should be reminded that passives denote *processes* and statives *states*. While some groups could be given extracts from scientific papers reflecting the use of true passives, other groups could be given extracts from technical papers in which stative verb forms predominate. The groups could then be asked to provide feedback to the rest of the class using transparencies to give representative examples and discuss the possible reasons for their use.

If it is any consolation to the teacher, it should be remembered, as Tarone et al. (1999: 129) point out, that the issues are complex, do not easily translate into a pedagogical approach to teaching the use of the passive, and that the state of our knowledge does not yet allow for the students to be given accurate information on the complex interconnections between rhetorical function and grammatical choice. However, assisting the students to think about and debate (‘brainstorm’) the essential distinctions between passives and statives and the manner in which they are used contextually, would serve a valuable consciousness-raising purpose.

The next step would be for them understand that the technical writer is sometimes faced with the problem of having to communicate information which involves an agent as well as a process as in “…if one compares Figs. 3 and 5…” (Lackstrom et al. 1972: 12-13). While the use of the passive voice (“…if Figs. 3 and 5 are compared…”) would represent an improvement, experienced writers would prefer to use a nominalised structure (“…a comparison of Figs. 3 and 5 shows…”).
Since nominalisation has already been discussed, what remains is for the use of *that*-nominals to be discussed next.

### 3.4 Studying the use of *that*-nominals

*That*-nominals are statements found in the subject position of a sentence and are used to make statements about other statements. Using the insights provided by West’s (1980: 483) research into the use of *that*-nominals, which he claims are the basic nominals in research papers, the teacher may facilitate a better understanding of how this grammatical structure relates to the main rhetorical sections (Introduction, Method, Results, and Discussion) of a research paper.

Once the students understand what *that*-nominals are and do, they should examine a research paper relevant to their discipline to explore how:

- in the Introduction section, *that*-nominals are used to make statements about other statements and contain the highest incidence of *that*-nominals;

- these nominals seldom make statements about other statements in the Methods section;

- the Results section also has a lower incidence of *that*-nominals insofar as it only describes the manner in which the data was manipulated; and how

- the Discussion section contains the second highest incidence of
that-nominals as the result of making claims about the research findings. The following examples culled from research papers used in this survey should serve to illustrate the use of this construction in the various parts of a research article.

### a. Introduction section

“Spack...claims that a general course...; Hutchinson and Waters...claim that there is no such thing as ...; They maintain that ‘there is a little justification’...; Tarantino...on the other hand suggests that expressions...; Halliday...suggests that a text is recognised as...; Work by Street...and others indicates that literacy...” etc. (quoted from Parkinson (2000: 369ff).

### b. Method section

It became apparent that...; It appeared that ...the only nouns...; It appeared that one of the functions...; The problem...is that the distinction...; The problem with ....is that” (only four instances in a section of approximately 480 words; examples culled from Master 1987: 174-175).
c. Results section

The results show that…; The disaggregated analysis shows that…; The high presence of is an indication that…; The distribution of voice showed that…; The data revealed that…; etc. (quoted from Martínez 2001: 238-239).

d. Discussion section

“The findings of this study indicate that the distribution….; The results also suggest that…; It is in these two sections that the tension….; It is through the grammar that agency….; the researcher has an implicit presence that….; The low proportion suggests that …. (culled from Martínez 2001: 240-241).

As mentioned, the examples of that-nominals and suggested activities should foster a better understanding of how rhetorical function and grammar are related. It is moreover hoped that the suggested pedagogical applications of the selected grammatical structures examined would provide a measure of insight into the possible applications of GRA in the teaching of reading and writing of scientific and technical discourse.

4. Discourse-based approaches

Science and technology students have to communicate information by, for example, writing reports on experimental procedures, drawing up or explaining diagrams, and writing operating manuals. Once again, the course content will
determine what the student has to learn to do using written English. The following stages should show how simple activities could lead to more comprehensive ones involving the multifunctionality of language in use.

4.1 Expressing non-verbal scientific formulae verbally

Widdowson (1979: 24) gives the following example to show how non-verbal information can be transformed into verbal information, which is an exercise in composition:

\[
\begin{array}{c}
\text{H}_2 \text{O} + \text{C} \text{O}_2 \\
\text{Hydrogen oxide} + \text{carbon dioxide} \\
\rightarrow \text{H}_2 \text{C}0_2 \\
\text{hydrogen carbonate}
\end{array}
\]

This chemical formula or equation translates into the following sentence variations:

- Water combines with carbon dioxide to form carbonic acid
- When water combines with carbon dioxide, carbonic acid is formed
- The combination of water and carbon dioxide forms carbonic acid
- Combine water and carbon dioxide to form carbonic acid
- Water and carbon dioxide react to form carbonic acid.

In turn, these can be transformed into the following definition: Carbonic acid is a compound which consists of water and carbon dioxide.

4.2 Describing the apparatus (‘product’) used in an experiment
This transformation of non-verbal into verbal information could lead to a
description of the actual apparatus used in a chemical experiment to practise the
various shapes (nouns and adjectives such as cylinder/cylindrical; cone/conical),
active- and passive-form verb forms (consists of, contains, is filled with, leads to) to
describe the relationship between the various components, prepositional phrases
(on the right, in the middle, near the end) indicating the location of the components
in relation to one another, and definite and indefinite articles.

The following diagram (in Bates and Dudley-Evans 1985a: 24) of the apparatus
for the preparation of sulphur dioxide could be used for the students to
transform into a paragraph (assuming that they are familiar with the apparatus
and process):
This diagram could be rendered verbally in the form of a paragraph as follows:

The apparatus used in the preparation of sulphur dioxide consists of a spherical flask, a thistle-shaped funnel, two delivery tubes, a cylindrical gas jar, a Bunsen burner, a tripod and a piece of gauze. The spherical flask is situated on the left, the bottle in the middle, and the glass jar on the right. The spherical flask, which contains sodium sulphite and hydrochloric acid, is supported by the tripod. Between the tripod and the flask, there is a piece of gauze. The thistle tube and one delivery tube are fitted into the neck of the spherical flask and held in place by a two-holed cork. The thistle
tube leads down into the hydrochloric acid and the delivery tube leads from the spherical flask to the bottle. The other tube leads from the bottle to the glass jar. The bottle, which contains sulphuric acid, is supported by a square block of wood. Sulphur dioxide is collected in the glass jar (adapted from Bates and Dudley-Evans 1985b: 64-65).

4.3 Describing the actual experiment (process)

Once these initial preparatory or limbering-up exercises have been successfully completed, with the students working in pairs or groups, they could be asked to describe such an experiment in three stages related to the setting up of the apparatus, the actual experiment, and the observed results. Two laboratory reports could be produced: one written in the past tense to describe an actual experiment that was conducted in the past, and another written in the present tense to explain how such an experiment is generally conducted.

4.4 Giving instructions

Another possibility would be to ask the students to prepare a set of instructions, using the imperative form, for guiding junior students to set up the apparatus for preparing sulphur dioxide (see Section 4.2). This would be yet another example of what Widdowson (1979: 70) calls rhetorical transformation. For example:
Ensure that you have a spherical flask, a thistle-funnel, two delivery tubes, a cylindrical gas jar, a Bunsen burner, a tripod and a piece of gauze;

Place the spherical flask on the left, the bottle in the middle, and the glass jar on the right;

Place a piece of gauze on the tripod;

Place the spherical flask on the tripod to support it;

Position the Bunsen burner under the tripod;

Fill about 20% of the volume of the spherical flask with sodium sulphate;

Fit the thistle funnel and one delivery tube into the neck of the spherical flask—ensure that they are held in place by a two-holed cork;

Support the bottle on a square piece of wood;

Fill about 40% of the bottle with concentrated sulphuric acid;

Check that the thistle tube leads down into the spherical flask, the delivery tube from the spherical flask to the bottle, and the other tube from the bottle to the glass.

4.5 Consolidating language-transformation skills

Once the students are familiar with these procedures and transformations, they could be given transparencies showing diagrams of the apparatus used in, for example, the preparation of sulphur dioxide, chlorine, ammonia, and the
distillation of alcohol. Next, they could be encouraged to give mini-group presentations to practise giving instructions (using the imperative), providing a general description (using the simple present tense), and detailing a report (using the past tense). Each presentation could be followed by a question-and-answer session and feedback from the other students and the teacher. The basic procedure in preparing the students for these more complex and comprehensive activities would be to work from the simple to the complex, and from the given (familiar) to the unknown (new information).

It is hoped that these brief examples will illustrate the value of Widdowson’s emphasis on the multifunctionality of language in use, as well as the essential difference between text-based (concerned with the formal linguistic manifestation of the language) and discourse-based approaches (involving the functional realisation of language in actual discourse).

5. Genre-based approaches

Given the intrications between the various genre-based approaches to EST, this section is prefaced with a brief theoretical perspective on the practical implications involved in adopting a composite text-context, genre-based approach to EST reading and writing.

5.1 Theoretical perspective

The theoretical text-context cline reflecting the progression from structural-linguistic to social-ethnographic approaches to genre-analysis clearly embodies the need for the students to understand that a text is both cognitively and linguistically organised within a specific institutional and social context.
Similarly, they need to realise that texts written with more or less the same general communicative purpose within a specific subject domain or sub-domain exhibit similarities in their cognitive and rhetorical structuring, as indeed evidenced by the macro-structural similarities of the research articles discussed in this literature survey. While the various theoretical research contributions have enhanced our understanding of genre in general, it should be remembered that the EST teacher and student operate within a functional-pragmatic, institutional context subject to many time and other constraints.

Just as explicit grammar instruction has an important place in communicative teaching (see Celce-Murcia et al. 1991: 462ff), it may be reasonable to assume that explicit teaching can be helpful in deliberately raising the student’s awareness of the structural genre conventions embedded in a specific discipline-related writing task. From Swales’s (1993) and Bathia’s (1993) discussions, it is clear that in general most ‘generic’ texts (e.g. Abstracts, Research Reports, Sales Letters) have a predictable structure, even though there will be individual variations within each genre. The reason is that they make use of similar moves. For example, Swales identifies three obligatory, structuring moves or text segments to be found in scientific research-article Introductions: “Establishing a Territory, Establishing a Niche, and Occupying the Niche” (1993: 141), each of which involves a number of steps. By contrast, Discussion sections can have many more moves; for example, Background Information, Statement of Results, Expected or Unexpected Outcomes, Reference to Previous Research, Explanation, Exemplification, and Recommendation (172-173). Pedagogically, it is important to raise the student’s awareness of textual regularities or prototypicalities, despite their individual variations, by using a comprehensive top-down, text-in-
context approach to the reading or writing task at hand. A simple example should suffice.

If the students have to learn to write a technical manual, then much more is required than to immerse them in an acquisition-rich environment—that is, if they wish to comply with the course requirements and if the teacher desires to keep his/her job. Communicative teaching involves explicit awareness-raising instruction which should not be confused with vulgar prescriptivism. Nor should it be supposed that immersion-based exposure will enable the student to absorb the requisite skills and knowledge naturally.

Similarly, however problematic the concept communicative purpose may be in the so-called final analysis, the student needs to understand that there is a practical reason why a technical manual is written, and why it is produced in a certain way. Indeed, much is to be gained by using a top-down (macro-) genre-based approach and contextualising the problem or task within the specific institutional context—for example, an electrical or mechanical workshop— with reference to the needs of a specific audience or target group. This could be related to ethnographic field work in the course of which the student has to (a.) interview a machine operator in the workshop, make notes, and report back to the other members of the class or group and (b.) consult a number of related manuals to consider whether or not they could address the needs of the operators for whom it was written, and to note the manner in which the manuals are organised.

5.2 Raising schematic awareness

On the textual level, the students should be encouraged to draw on their content schemata by thinking about what they know about manuals and the kinds used
in their context. Next, they could discuss and debate sample manuals—for example, a general safety manual, a reference manual explaining the advanced technical features of a particular machine or apparatus, or a general lathe-operating manual. Their formal schemata could be activated by considering, for example, how the main content of a specific manual should be sectioned; which structuring moves would be needed within each of the main sections, and whether or not simple technical diagrams would be useful. In addition, they should think about what the level of education and language proficiency of the intended readership or target group is likely to be.

This macro-perspective, with specific reference to what in GRA are called the objectives [or communicative purpose] of the overall discourse (Trimble 1992: 11), should naturally lead on to a much more detailed and systematic consideration of how the specific content should be (rhetorically) organised in the document across the different sections and sub-sections. That all this should be done communicatively, using whatever teaching resources are available, goes without saying.

Next, extrapolating from sample extracts from manuals, the students should consider the linguistic content of the manual—in other words, the kind of syntax and lexis (with or without contextual pictorial/diagrammatic/verbal glossaries) that will be used (e.g. declarative statements and imperatives). A process-centred approach, involving a range of communicative activities (including explicit teaching) and recursive writing, could lead to the progressive, small-group production of a ‘text-in-context’ manual.
Finally (adapting Mustafa’s 1995: 249 suggestions), the students could collaboratively think about the overall ‘packaging’ of the manual and determine:

- what kind of introduction would be needed;
- whether a table of contents would be needed and, if so, what should be included in it;
- what information should be included in the conclusion;
- whether an index would be of assistance to the user, and how it should be structured;
- what information the title page should contain; and
- how the topic should be formulated.

Clearly, even a small-scale genre-based approach could synthesise elements from both extreme ranges of the text-context cline and demonstrate the value of genre-based instruction.

In dealing with EST reading, the teacher should similarly proceed from context to text, work from the general to the specific, and strive continually to relate content and structure to context. The level of detail in which the text will be explored, down to the structural and discourse level of the earlier approaches, depends on the course content and objectives in each case. With the availability of electronic versions of texts, but subject to copyright restrictions, it has now become possible to manipulate the text structurally and linguistically, for example, by:
- omitting formal headings and sub-headings;
- randomising the paragraph order in the whole or part of a document;
- scrambling the moves in a text segment, removing the semantic markers;
- converting actives into passives;
- denominalising some of the lexis, and
- removing some of the cohesive makers.

Clearly, this is subject to the nature of the task at hand within a communicative learning-centred environment. Correlating the macro- and micro-elements of text at all times is crucial to the task and made possible by the insights to be derived from an understanding of the approaches to EST reading and writing surveyed in this dissertation.

Pedagogically, it is important to remember that students are faced with the specific challenge of how to structure the content of a document such as laboratory report, and teachers with the pragmatic challenge of assisting them in acquiring that skill. Swales (1993: 213-215) convincingly argues that the difficulty students have is often the result of bringing the wrong schema to bear on the task at hand and of not understanding the amount of rhetorical work that authors do before they announce their research results. What this means is that the students’ rhetorical consciousness of text as well as their awareness of context needs to be raised. In this regard, it may be a good idea to brainstorm the text-
context (text-in-context) cline with the students before considering each in turn. While some teachers would prefer to start with context first, others may first want to familiarise the students with the rhetorical structure to prepare them for their field work. For the purposes of exploring, for example, the dimensions of a laboratory report, the teacher could ask them to brainstorm the following general questions:

- What is a laboratory report?
- Who writes it?
- For whom it is written?
- Why is it written?
- How should it be written (subjectively, objectively)?
- What should be covered in the report?
- How should the rhetorical content be sectioned (with or without headings and sub-headings)?
- What should the introduction look like?
- What should the conclusion cover?
- Is a list of references necessary?
- Is there a need for a table of contents and a list of symbols?

5.3 Moving from text to context

Since the brainstorming session is a consciousness-raising exercise, it is crucial that the students reflect on the reasons for their answers in each case. Next, the students could work in groups to draw up an ethnographic plan of action and a
list of questions for interviewing a member of staff who has already published such a document. The purpose should be to arrive at a comprehensive understanding of:

- what motivated the experiment;
- how the experiment was planned;
- what methods were used;
- how the data was recorded and analysed;
- whether the report was written in one sitting, or recursively in stages; and
- the difficulties the author experienced.

Afterwards, each of the groups should report back to the class by giving a small group presentation.

5.4 Studying prototypical genre documents

Once the students have a broader perspective on the textual and contextual aspects of genre analysis, they could be given a number of prototypical examples of research articles or laboratory reports to compare in terms of their macro-rhetorical similarities and (minor) differences. They would soon realise that most of these documents have the following general rhetorical functions or sections: Title Page, Abstract, Introduction, Approaches and Procedures, Analysis, Results, Conclusion and Discussion, and References. More detailed discussions should clarify the position and purpose of graphs and tables, if any, in the reports.
These awareness-raising activities should prepare the students to use a table to compare, for example, the Abstracts of a number of Research Articles or Laboratory Reports to record their prototypical features. Although, as Swales (1993: 179-182) points out, the Abstract is both front and summary matter—which announces and tersely sums up the document that follows but with variations in the move structure and considerable differences in the lexicogrammar—a comparison of several Abstracts within a subject field should highlight their similarities.

In terms of their specific rhetorical functions, most Abstracts have an Introduction, synoptically state the Problem, identify the Method, discuss the major Results, and sum up the main Conclusion(s) to be drawn from the research project. The length constraints (ca. 100-350 words) should be obvious to the students, as well as the equal distribution of the content across the various sections and the absence of footnotes, graphs and diagrams. They should also note that the Abstract generally follows the rhetorical structure of the actual report (if available), but that it is written in the form of a single coherent paragraph without formal headings and sub-headings within the paragraph. The word Abstract is centred on the page.

5.5 Comparing Abstracts from non-refereed and refereed sources

At this stage, the students could be encouraged to compare two Abstracts in terms of their macro- and microstructure. For example, the following rather unconventional 125-word example (Rahimi, A. et al. 2005) quoted verbatim from an Internet website should be compared with an Abstract from a refereed journal
to demonstrate the structural rigour of the latter. With reference to the former, the students should be able to note the:

- inappropriate subjective value judgments and emotive lexis (e.g. “Among a fringe of community of paranoids”; “helmet craze”);
- lack of specificity (e.g. “radio bands reserved for government use”; “statistical evidence suggests”; “on average”);
- conflation of the apparatus and methods used and how they are despatched in seven words (“Using a $250,000 network analyser, we find”);
- sweeping speculative supposition at the end;
- use of the present tense to foreground the authors’ generality claims; and the
- choice of the present perfect in the last sentence to restrict the generality of their speculation to the present.

(a.) Example of an Abstract from an Internet site

---

**Abstract**

[Introduction] Among a fringe community of paranoids, aluminum [sic] helmets serve as the protective measure of choice against invasive radio signals. [Research problem] We investigate
the efficacy of three aluminum helmet designs on a sample group of four individuals. [Apparatus] Using a $250,000 network analyser, [Results] we find that although on average all helmets attenuate invasive radio frequencies in either directions (either emanating from an outside source, or emanating from the cranium of the subject), certain frequencies are in fact greatly amplified. [Conclusions] These amplified frequencies coincide with radio bands reserved for government use according to the Federal Communication Commission (FCC). Statistical evidence suggests the use of helmets may in fact enhance the government’s invasive abilities. We speculate that the government may in fact have started the helmet craze for this reason.

(b.) Abstract from a refereed online journal

The following 315-word abstract of the article *The effect of dietary supplementation of N-acetyl-L-cysteine on glutathione concentration and lipid peroxidation in cigarette smoke-exposed rats fed a low-protein diet* (Alhamdan: February 2005) has the advantage that the main rhetorical divisions or functions are clearly indicated in the original online source. For teaching purposes, these divisions—which are generally not found in printed abstracts—should be edited out to encourage the students to identify the divisions themselves. If needed, the paragraphs could also be randomised.
Abstract

Objectives: The aim of the study is to investigate the modulatory effects of dietary supplementation of N-acetyl-L-cysteine (NAC) on glutathione (GSH) concentration in liver and lung, and lipid peroxidation in cigarette smoke-exposed rats fed a low-protein diet.

Methods: Rats were divided randomly into 4 dietary groups; 8 per group. The control group (Group 1) was fed a normal-protein diet and received room air as a sham-smoke exposure. Group 2 was fed a normal-protein diet, Group 3 was fed with a low-protein diet and Group 4 was fed with a low-protein diet supplemented with NAC, and exposed to the smoke of 10 cigarettes/hour/day until the end of the experiment (4 weeks) period. Glutathione in liver and lung and serum albumin level were measured. Also, thiobarbituric acid reactive substances (TBARS) were measured, as an indication of oxidative stress. The study was conducted in the College of Applied Medical Sciences, King Saud University, Riyadh, Kingdom of Saudi Arabia, in the year 2003.

Results: Smoke-exposed rats fed with the low-protein diet had significantly lower hepatic GSH concentration compared to other dietary groups. Moreover, NAC supplementation to the low-protein diet, in the smoke-exposed rats, significantly increased hepatic GSH concentration compared to the corresponding animals fed the same amount of protein, but without NAC supplementation. No reduction in lung GSH concentration...
occurred in cigarette-smoke rats fed a low-protein diet supplemented with NAC. Cigarette smoking significantly increased the level of TBARS in serum in all dietary groups compared to the control. However, the elevation in the TBARS level was higher in the low protein dietary group.

**Conclusion:** The results show no significant reduction in the lung and hepatic GSH concentration in cigarette smoke-exposed rats fed a normal-protein diet compared with the corresponding control rats fed a same level of protein. The study indicates the efficiency of NAC supplementation in scavenging free-radicals and enhancing GSH concentration in smoke-exposed rats fed a low-protein diet.

Using a top-down approach, and drawing on their knowledge of GRA, the students should readily be able to identify the:

- more or less equal distribution of content across the rhetorical divisions or functions;

- absence of personal pronouns, and the extensive use of passive-voice forms in the Method section to thematize the key topics and create the effect of objectivity and impersonality;
• effect of using nominalisations for the same purpose and for concentrating meaning in the Results section;

• use of the past tense in the Methods section detailing the actual experiment to indicate that it had been designed for a specific purpose, and in the Results section to record past findings;

• the change to the present tense in the Conclusion section to generalise the findings; and the

• absence of subjective lexis throughout the abstract.

Finally, the students could compare the Introduction segments of a number of prototypical examples to see what they have in common. Working in groups, the students would no doubt be able to identify minor rhetorical variations and flesh out generic components or specific rhetorical functions such as the following: Problem, Objectives, Background, Relevance, and Specific Hypotheses or Experimental Design. The same procedure could be used for the other rhetorical sections of the sample reports.

5.6 The need for a holistic perspective

To conclude, the text-context progression in genre-based approaches points to the need to raise the students’ awareness of the rhetorical prototypicalities
between similar (genre-specific) texts, and to encourage them to do field work so as to learn more about the contextual or institutional demands shaping the structure of a text.

In planning, teaching and facilitating genre-based approaches to EST reading and writing, the teacher may want to bear the essentials of Swales’s (1993: 58) influential definition of genre in mind; that is, a genre:

- is a class of communicative events;
- has shared, identifiable communicative purposes; and
- contains more or less prototypical features (in terms of structure, style, context, and intended readership).

This text-context cline should form the basis of genre-based instruction drawing on the resources of the approaches surveyed in this dissertation.

Finally, given the wealth of theoretical perspectives across the fluid boundaries of the four main orientations, and the wide range of practical pedagogical applications that can be extracted from them, the main conclusions to be drawn from this critical survey of the research corpus will be discussed next. This will be followed by suggestions for further research.

6. Conclusions

The main conclusion of the survey is that genre-based approaches to EST are an amalgam of textual-contextual orientations on a structural-linguistic-social-ethnographic cline. In the comprehensive genre-analysis of any text, they are not
only interconnected but are inseparable, involving simultaneous (microlinguistic) bottom-up and top-down (macrorhetorical, social-ethnographic) processing. However, pedagogically and pragmatically it may be more expedient to work from the general (context) to the specific (linguistic structure). The desired level of detail should be determined on the basis of the institutional, course-specific and target-group-related constraints of the specific ESP/ESP teaching and learning context in each case. It follows that the longer the time frame and the higher the level of the students, the deeper the level of detail that becomes possible, and the reverse.

Second, it is clear that, as opposed to Swales’s (1993) comprehensive tome, the research articles surveyed all pursue specific, specialised angles of research. It follows that, individually, they cannot be expected to present an integrated analysis drawing on the resources of all the approaches reviewed. Collectively, however, they provide a rich perspective on the large scope of genre-based approaches to EST reading and writing.

Third, the sheer difficulty and labour-intensive nature of SFL and GRA in particular may initially discourage many teachers of lower-level (intermediate) EST students from integrating these approaches into their tightly-structured, pacing-schedule-driven courses. However, these obstacles are not insurmountable and the benefits would validate the time and effort needed to acquire the necessary knowledge. Certainly, at the advanced levels, the students’ awareness of the fundamentals of the textual and contextual aspects of EST reading and writing will have been sufficiently raised for their teachers to assist them in concentrating on the deeper and more specialised levels of detail using the basic resources of SFL and GRA.
Finally, it must be concluded that, while a comprehensive survey of genre-based approaches to EST reading and writing is not feasible within the scope of a dissertation, a broader and deeper doctoral-level investigation would yield valuable insights. What is needed is a considerably larger corpus of primary and secondary research materials in order to understand fully the interconnections and dynamic tensions between and within the individual approaches. To this end, a number of essential questions for future research are suggested; however, specific, discrete-point investigations such as those suggested by Ferguson (2001: 80-81) and West (1980: 488) are not be included in the list of possible research questions. Similarly, the areas of minor contestation between researchers that need to be clarified—for example, the extent to which Gunawardena’s (1989) research findings differ from those of Lackstrom et al. (1970, 1973) and Malcolm (1987)—are omitted on the grounds that other areas of pragmatic, pedagogic research would yield more valuable results.

7. Suggestions for further research

Given the richness of the perspectives provided by the genre-based orientations reviewed in this dissertation, the following pragmatic research questions readily spring to mind:

- What are the main theoretical and pedagogical arguments in favour of or militating against the pedagogical use of the approaches surveyed, individually and collectively, within and across the sub-fields and various academic levels of EST?
To what extent would more comprehensive future investigations clarify the connections between grammatical form and rhetorical structure in GRA, the more detailed and extensive pedagogical uses of SFL, and the mutually complementary nature and applications of these two orientations?

What is the current state of knowledge within the EST teaching corps of each of the four orientations surveyed?

How many tertiary institutions and teachers use them?

How successful do they consider their application to be?

To what extent does the current battery of commercial and in-house EST reading and writing materials within the sub-fields and across the different academic levels of EST include the orientations surveyed?

Do these materials use them separately or together?

Are the reading and writing components integrated?

How formulaic or communicatively learning-centred are the materials?

What are the implications for materials’ development?
What are the challenges posed by and the implications of a comprehensive genre-analysis approach to the teaching and learning of EST reading and writing for designing learning-centred, communicative syllabi for the various sub-fields of EST?

How and to what extent could modern media technology be integrated into a genre-based approach to enrich the teaching of EST reading and writing within the contexts of the classroom and the self-access media laboratory?

What would the implications of a comprehensive genre-based approach to EST reading and writing be for assessing the student’s proficiency and performance within the various sub-fields and academic levels of EST?

It is hoped that the current survey—and the additional pedagogical applications of the approaches outlined in this chapter—will provide a valuable point of departure for such future investigations into the uses of a comprehensive genre-based approach to the teaching and learning of EST reading and writing within a flexible, learning-centred context. Certainly, such in-depth investigations would further dispel the myths about the formulaic and prescriptive nature of genre-based approaches and provide the teacher and student with a pragmatic and holistic perspective on the reading and writing of EST discourse.

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