

**From Thesis to Article: The Modifications Writers Make
to Transform Theses into Articles**

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by

Eman Ahmed AbdelRazzak Mohamed

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Abstract

Many novice academic writers waste the chance of publishing articles from the theses they produce to get a degree, partly at least because they do not know much about the changes they need to make in transforming the latter into the former and/or the factors that may influence the process involved in making this transformation. Therefore, the present study aimed to identify the main types of changes successful academic writers make while deriving articles from their theses and the factors that may influence the process they usually follow in doing so.

Anticipating that the main changes that writers make are changes made to the semantic realisations of the organisational pattern of theses and articles, a model was developed based on the works of Hoey (1983), van Dijk (1980), van Dijk and Kintsch (1983) and Swales (1990) in order to be able to study the semantic organisational pattern of these interrelated text types, theses and articles, to identify the variations academic writers make to their semantic and subsequently linguistic realisations of two of the different levels of organisation of this pattern. The developed model was applied to ten successful theses, five from the scientific domain and five from the humanities, which have produced thirty three articles that were published in respectable international journals.

The results of the analysis of the interrelated texts showed that writers make various changes to the semantic elements of the top and the middle levels of the organisational pattern of theses while producing articles. The changes in the top semantic elements, Question and Answer, were mainly influenced by the overall type of Question/Answer given, whether it is single or multiple, the organisation of the thesis transformed, whether it is modular or integrative, and finally the strategy of transformation that the writer chooses to use in deriving the Question/Answer of the article from the Question/Answer of the thesis. On the other hand, the major changes made to the middle level semantic elements, i.e. Setting, Response, Answer and Outcome, were due to Condensation and/or Re-orientation which were in turn realised by further types of changes under each of the semantic elements of the middle level of organisation of the texts explored.

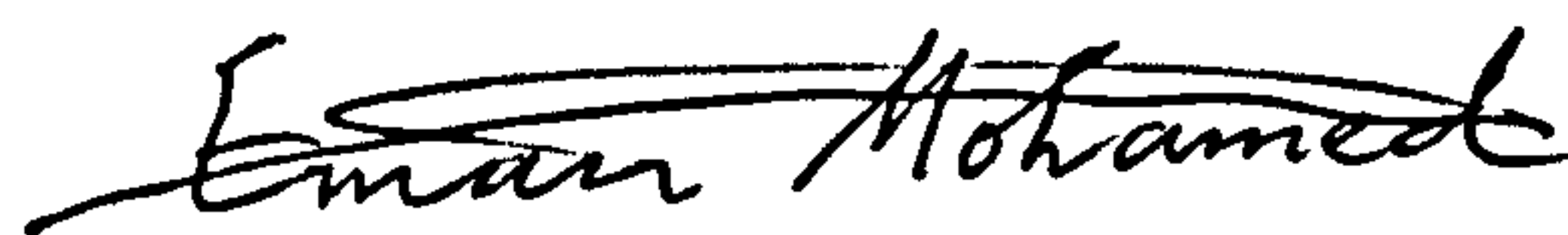
In order to confirm/disconfirm the results of the texts analysis, two mini-studies were carried out. The first aimed to investigate the perceptions of expert academic writers about the changes they make to transform theses into articles as well as identify any misconceptions that novice academic writers may hold concerning these changes and the factors that influence them. The second study aimed to gain first-hand knowledge of the modifications writers make by consulting two expert writers representing the two fields of science and humanities. The two case studies gave valuable comments on the stages they followed to convert their own theses into articles, the changes they made, and the factors that influenced them in this process. The outcome of these studies confirmed further the analyses of texts and gave further illuminating information about the process of deriving articles from theses.

Declaration

This work is original and has not been previously submitted in support of any degree qualification or course.

Eman A. A. Mohamed

Signed

A handwritten signature in black ink that reads "Eman Mohamed". The signature is written in a cursive style with a prominent horizontal stroke across the top of the name.

**To all the people who really care about me
because they are the ones that really matter**

To my parents, my husband and my son

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CHAPTER ONE: INTRODUCTION

1.1. Background and Aims

Academic writing and the skills needed to produce linguistically acceptable academic texts have been the focus of a good deal of research interest in the last few decades. One of the main reasons for this is the importance of reaching a wider audience as perceived by most academic writers who want to be accepted within both their own local academic circles and their wider international scientific community. Being aware of the difficulties that face novice research writers, especially non-natives, whose ultimate aim is to achieve local and international recognition, EAP practitioners have to take on the very important task of training non-native novice academics to live up to the expectations of their academic disciplines and to find better ways of achieving academic recognition, either on a small or wider scale.

Recognition in local academic circles can be seen as primarily related to the act of producing texts aimed at the acquisition of academic degrees. Thus, novice research writers need to write Masters and PhD theses and dissertations to be initiated into their local academic circle. On the other hand, international publications are the main way of achieving international recognition. Hence, novice researchers need to produce research articles, which are the main vehicle for publicising research work, to be able to acquire world-wide attention.

The present study is motivated by a need to help EAP practitioners as well as novice academic writers deal with the problems that are inherent in attempting to make the transition from local to national and international recognition, and to produce articles to interact with the wider academic community.

Being aware of the importance of achieving scientific recognition at all levels, previous research has attempted to tackle the problems that face novice academic writers, both native and non-native, in writing theses and dissertations (e.g. Dudley-Evans, 1984,1986), on the one hand, and research articles (e.g.

Swales, 1990), on the other hand. These studies have given a better understanding of these two important types of texts, and hence helped EAP practitioners to guide academic writers to overcome the problems of preparing them.

However, the exploration of thesis writing and research article writing has dealt with them as two separate research activities. None of these studies has considered that the first attempt to achieve international recognition is often linked to the act of producing texts for getting degrees. Therefore, there has been little or no attention to the investigation of the particular problems that stem from taking this first step of producing an internationally publishable research work based on a Masters or PhD thesis. These problems could become a stumbling block for many researchers and may thus prevent a great number of researchers from ever achieving the dream of becoming recognised by the international scientific community and of advancing in their academic career. Moreover, there has been little or no explicit focus on the process by which novice writers advance to a level of competence which may help them venture to become publishing writers.

The present study, being aware of this gap in research and the need to help younger researchers, especially non-natives, to publish their early research work in English speaking journals, focuses on investigating the relation between research publications and the theses which are their original sources. Hypothesising that the problems facing novice researchers could be at least partly due to the difficulties faced in transforming theses into articles, the study aims to discover the main differences between the two types of texts, especially those differences which are due to the changes writers make in turning one type of text into the other, and to throw some light on the perceptions of expert writers of the ways in which they transform their texts to a more internationally publishable form and the factors influencing these changes. In addition, the investigation explores the perceptions of novice writers concerning these changes and the factors that affect them, in order to see how far their perceptions appear to match the picture suggested by the analysis both of texts and of the perceptions and behaviour of expert writers. The ultimate motive for undertaking this research is to be able to

provide EAP practitioners with some useful pedagogic guidelines to help their academic students who are working on their degrees but wish to publish their research work internationally in the future.

This study is a continuation of an earlier study done by the same author (Mohamed, 1993) and on a related topic. It must be confessed that the earlier research, though it presented valuable information about the interpersonal nature of the two types of texts, did not yield as much information about the main variations between theses and research articles as expected. All this has led to the decision to continue to pursue the same problem, but on a larger scale, with a different perspective and using other methods of analysis.

1.2. Research Questions

Thus, the present study has two main aims: (1) to identify the main types of difference between theses and the research articles derived from them; and (2) to explore what successful writers believe to be the kind of modifications they make in the process of deriving an article from a thesis. These types of changes will be also explored from the point of view of novice writers as well as expert writers to evaluate how far novice writers are aware of them and hence what kind of help they need to overcome their problems in attempting to become expert writers.

To be able to achieve the above two aims, there is a need to find answers to the following main research questions:

1.2.1. First Aim: Identifying the Differences between Theses and Articles

- a. What are the main kinds of difference between theses and the research articles derived from them?
- b. What are possible reasons for these differences?

1.2.2. Second Aim: Exploring the Modifications that Writers Make in Changing Theses into Articles as Perceived by Expert and Novice Writers

- c. How do writers decide on the parts from their theses to include in their research articles?

d. What do the writers of the texts consider to be the main changes they make while transforming their theses into research articles? What motivates them to make these changes?

e. What do novice research writers consider to be the major changes writers make to derive articles from theses? What do they think are the reasons for making such changes?

1.2.3. Attempting to Link the Findings and Implications of First and Second Aims

f. Do expert writers' perceptions of the differences between the two types of texts confirm the results of the text analyses? What are the implications of the answer?

g. To what extent do the perceptions of expert and novice writers about the process of producing articles from theses match each other? What are the implications of the answer?

1.3. General Research Design of the Study

In an attempt to achieve research triangulation the general design of the present study covers two main sources of information: *texts* and *writers*. For the purposes of the present investigation *texts* refer to the theses and the articles derived from them on which textual analyses are carried out. *Writers* refer to a randomly selected group of both science and humanities researchers who have already gone through the process of publishing (*expert research writers*) or have not yet experienced it (*novice research writers*). Within the *expert writers* I include case studies of two of the writers who have actually written two of the theses explored in order to get their academic degrees and have also published international papers from them. In general, the different groups of writers investigated in this study are approached in order to advance my knowledge about the process of writing articles from theses, and in particular to confirm/disconfirm the results of the analysis of texts. In the following sections I explain in more detail how each of the above research elements are considered in the present study.

1.3.1. The Texts

A number of research theses and the articles derived from them were selected according to certain criteria and subjected to a range of textual analyses. A specific model of analysis was applied to help in

understanding and distinguishing the differences between theses and research articles in terms of their overall semantic organisation. The model helped to investigate the overall informational structuring of the texts explored as well as throw some light on the more detailed variations found between them. This is to achieve a balance in investigating the top and bottom levels of the semantic structure of the texts.

In this part of the study, readers, as informants, were used as a confirming audience concerning my comprehension of the texts I analysed. These readers were both natives and non-natives but all of them were expert readers competent to give judgements concerning the meanings and functions of the texts (see appendix 5 for samples of the responses of readers reading specific parts of texts to deduce their main aims and conclusions).

1.3.2. The Writers

1.3.2.1. Expert and Novice Writers

Having analysed the texts, the following step was to consult the writers of similar texts. There were two reasons for this. First, the findings of this consultation were matched with the outcome of the text analyses. The aim of this was to validate both the analyses of texts and the information derived from expert writers on the changes made (see 1.3.2.2. below). Second, the consultation of these writers helps to better understand how these writers think this process is done and this enhances our knowledge of the writing process involved in making the transition of producing articles from theses. On the other hand, the study also focused on the perceptions of novice researchers concerning the same process of writing and in particular what they consider to be the main changes that writers make to convert theses into articles and the motives for these changes. This was done particularly in order to identify any possible mismatches between the perceptions of novice writers and those of expert writers.

1.3.2.2. Text Writers

Two case studies of two writers derived from the group of expert writers investigated above were further

investigated. These writers were researchers who have actually transformed parts of their theses into articles and who belonged to two different fields, Linguistics and Dentistry. The aim of the investigation of these two case studies was to gain first hand knowledge of the process of transforming one type of text into another and hence confirm or disconfirm, and where possible refine, the outcome of the texts analyses by consulting expert writers in different fields. This investigation also aimed to help to evaluate the perceptions of novice writers and thus assist in putting forward recommendations for teaching similar types of academic writers about the changes entailed in the process of writing articles from theses.

1.4. Overall Outline of the Thesis

In addition to this first introductory chapter, this thesis is divided into eight main chapters. In the second chapter a review of the most relevant literature is given with comments on its contribution towards the present investigation. The third chapter describes the texts selected for carrying out the organisational and textual analyses, the criteria for selecting these texts, and the general aspects that the study of the texts focuses on. It also describes the informants selected for the study of the writers' perceptions and the criteria for selecting them. The fourth chapter describes in detail the model of analysis used for the analysis of the data selected and the rationale for using it. The chapter also reports the problems faced in applying the model and gives examples of applying it to real texts. The fifth and sixth chapters report the most important findings of the analysis of the texts specifying in particular the types of changes writers make in deriving articles from theses. The following chapter, chapter 7, reports the results of the survey carried out to investigate the perceptions of both expert and novice writers of academic texts of the kind of changes involved in the process of transforming theses into articles. The chapter also reports the outcome of interviewing two writers of the texts already included in the corpus: they were asked to retrospect on what they believe were the main changes they made in their texts, what constitutes the process of changing theses into articles and the factors affecting this process. Chapter 8, the final chapter, focuses on the conclusions drawn from the two lines of enquiry followed in the present study. It gives a summary of the main results of the investigation and some

discussion of the main issues that the findings raise. It also explores the teaching implications, reports the main limitations of the study, and finally makes recommendations for further research.

CHAPTER TWO: THEORETICAL BACKGROUND

2.1. Introduction

The present chapter gives an overview of the theoretical background upon which the current study is founded. This investigation aims to explore the variations between two types of *texts*, theses and research articles, and the writing *process* writers follow in transforming theses into articles in order to explore in more depth the modifications they make in the process. Therefore, it seems convenient to report the theoretical bases for such a study under the two dimensions of *texts* and *writing processes*. However, it must be pointed that my interest in following *process* data is primarily done to support the investigation of *texts*. Hence, in the following part of this thesis, these two different, but related, dimensions of the act of producing academic texts, *texts* and *writing processes*, are explored in terms of the developments of the theoretical thinking on these two topics as well as the basic approaches followed in investigating them. In addition, an attempt is made to evaluate and discuss these developments and approaches in order to link them to the research standpoint adopted by the current study.

2.2. Texts

Before embarking on the review of the relevant approaches that influenced the current study, it is necessary to give a brief definition of the term *text* and how it is recognised as it holds for the present investigation. In addition, the term *text* is related to the notion of *text types*.

2.2.1. Definition and Recognition of a Text

At the most concrete level, it is clear that in this study we are dealing with two texts, theses and articles. Yet, if we consider the definitions given in text theory, they tend to focus on different aspects of this discoursal entity. On the other hand, the criteria for identifying a text are not as problematic as its definition. In the following section, I attempt to consider this issue by considering first the definition of a text and secondly how it is recognised. I afterwards apply the outcome of this

discussion to the two types of texts under exploration in the present study.

If we consider the definition of text in the literature, it can be noted that the definitions given by linguists emphasise different aspects of the same notion. This may be due to the complexity of the notion itself as it is a complex multidimensional structure whose dimensions include at least syntactic, semantic and discursal features. As a result of this complexity of structure, we find that some linguists define text from a formal perspective. An example of such linguists is Cook (1989, p.156) who defines text as "a stretch of language interpreted formally, without context". This definition emphasises the formal aspect of texts and underestimates the influence of the factor of context in shaping and interpreting texts. Other linguists emphasise in their definitions of a text that it is a unit for achieving communication. Such linguists are like Brown and Yule (1983, p.6) who use the term text "to refer to the verbal record of a communicative act" and Crystal (1992, p.72) who also defines text as "a piece of naturally occurring spoken, written, or signed discourse identified for purposes of analysis. It is often a language unit with a definable communicative function, such as a conversation, a poster". It could be said that the above two definitions focus on the aspect of communicativity of texts as a main feature, and that a text represents a single communicative act realised as a language unit. These two points are important to consider when we look at the two types of text the present study is aiming to explore. Not only does each one of them have its own main communicative function which represents a specific communicative act, but it can be identified by readers as a single language unit on its own. While the first definition lays more emphasis on the external communicative act which translates into a text, the second definition makes the text more paramount and links it, not to a communicative act, but a specific communicative function. However, it seems that both definitions quoted above are communication-based. Thus, whereas Cook (1989) believes that texts are entities that can be explained in isolation from context, Brown and Yule (1983) and Crystal (1992) believe that a text does have a distinct context in which it is produced and received. A completely different approach in defining texts is presented by linguists who consider a text from a purely semantic point of view. For example, the definition of a text by Halliday and Hasan (1976, p.2) lays emphasis on

the fact that it is “best regarded as a SEMANTIC unit: a unit not of form but of meaning”. This is the complete opposite of linguists like Cook (1989) who only emphasise the formal aspect of texts. To linguists who emphasise the meaning aspect of texts, “any piece of language that is operational, functioning as a unity in some context of situation, constitutes a text” (Halliday, 1978, p.293). The same point is emphasised by other text linguists like Kress (1993, p.254) in their definition of text as they consider it “a unit of meaning which is coherent and appropriate for its context”. Such linguists, and other such as Crystal (1992), are thus aware of the effect of the context on defining a text.

From all these definitions, which constitute only a very small fragment of linguists’ thoughts on the term text, it is apparent that these linguists lay different emphases on the term text, though most of them agree that it is an entity with a meaning. In the present study, it is important to propose a working definition of the term text which may help introduce my conception of what this entity is composed of and shaped by as well as how it behaves, especially in relation to the texts explored in the present study. This definition is as follows:

A text is a linguistic entity, spoken or written, which has a distinct communicative function dictated by a specific communicative context in which it is produced and/or received by the participants in this communication. The function of the communication decides the meaningful combinations of detailed language units (i.e. words, sentences, notions and propositions) which shape this particular instance of language as a complete whole.

If we attempt to apply this definition to identify texts it may not be enough to distinguish varied types of texts. Thus, it seems that what matters then is not what a text is, but rather how readers can identify texts and distinguish between one text and the other. Thus, as Halliday and Hasan (1976) state:

... although the concept of a text is exact enough, and can be adequately and explicitly defined, the definition will not by itself provide us with automatic criteria for recognising in all instances what is a text and what is not.
(Halliday and Hasan, 1976, pp.294-5)

It seems that readers have the intuition to recognise texts, relying above all on their physical boundaries. Therefore, it is not very difficult for a reader to identify a book as a text, since it has a clear shape. A further way of recognising a text is the language signals it includes, like having titles, references, indexes, appendices and being divided into numbered chapters. All these features help readers to distinguish one type of text, the book. These features also help them to differentiate between it and another type of text like the letter, which has different physical boundaries, shape and language components.

This example seems straightforward, yet it is not always easy to be able to recognise a text. As Halliday and Hasan (1976) point out:

It would be misleading to suggest that the concept of a text is fully determinate, or that we can always make clear decisions about what constitutes a single text and what does not. We can often say for certain that the whole of a given passage constitutes one text; and equally we can often say for certain in another instance we have to deal with not one text but two, or more. But there are very many intermediate cases, instances of doubt where we are not at all sure whether we want to consider all the parts of a passage as falling within the same text or not.
(Halliday and Hasan, 1976, p.294)

Ellis (1987, p.115) makes a similar argument: “Demarcation of or into texts is not, as a matter of theory, altogether the straightforward thing it might appear...”.

This is directly relevant in the case of dealing with theses and the articles derived from them which are the concern of the present research project. The particular problem in the case of the thesis and the article published from it derives from the relationship between them. Thus, although they may be thought to represent two recognisable text types on their own, due to the fact that the article may be drawn from only one chapter/part of a chapter from the thesis, it becomes necessary during their analysis to identify exactly which parts are drawn from the thesis and transformed into an article. Although these parts constitute only one part of the larger text, the thesis, they also have at least the potential to act as separate texts - the evidence being that they have already produced articles that stand as separate texts. In the present study

then I may not be always interested in comparing the two full text types, the thesis and the article, but rather parts of the first text that coincide with the second one.

For practical reasons related to the present study, I will consider a thesis chapter(s) or even parts of a chapter/chapters from which the articles are drawn as “potential texts” incorporated within a wider text, which is the complete thesis. This is because such “potential texts” have been regarded by the writers as coherent enough to use them to produce complete texts, articles, which have their own communicative function that represents a single communicative event and hence can be treated as a single language unit. The idea of “potential text” is similar in some ways to Hoey’s (1983) notion of discourse as having the pattern of a Russian doll in which further discourses may be included within the overall one and yet could be discernible from it. Also, Longacre (1989) in his discussion of the organisational pattern of a narrative identifies the element of “episode” as a representation of a smallish narrative within the wider narrative. This again confirms the fact that some texts, like the theses in our case here, can be seen as actually composed of more than one sub-text. However, the main differences between the concept of “potential texts” as identified in my study and that of Hoey’s and Longacre’s notions is that “episodes” are already clearly demarcated sub-texts, which do not usually get “lifted out” of their host text and presented separately, while “potential texts” are not necessarily so clearly demarcated in their host text and may not be identifiable as sub-texts at all except retrospectively, in relation to the separate texts into which they are converted, in our case research articles. Each potential text, or as I will call it for purposes of abbreviation “p-text”, represents a discursual entity that has shown itself to be turnable into another complete text as an account of a single research event. Thus, the writer may decide to separate a part from the wider thesis text to produce another written representation, a research article, as another version of this same single communicative event represented by a single p-text. Writers, when they decide to produce an article from the thesis, will often be selecting and extracting from the full thesis the parts that seem to be potentially “newsworthy” to present to the public. This entails that the writer may not be concerned

with the full thesis as a complete text or a representative of a text type, but rather with some parts of it - chapters or parts of various chapters - in the attempt to produce a full text of another type, the research article. This raises the issue of whether or not these selected parts of the thesis actually constitute "texts" on their own. My assumption is that they are not actually recognisable forms of texts by themselves, but they represent coherent units of meaning which can be potentially successful in producing other texts after modification and change. Hence, in my analysis of the theses I focus on these discernible chapters or parts of chapters which make up p-texts from which articles have been published. I treat these chapters or parts of chapters, not as actual "texts" as defined and recognised earlier, but as physically separable yet related units of meaning drawn from the overall thesis text which in turn represent another complete and coherent unit of meaning.

It is worth noting that in some cases a chapter in a thesis may be recognisable as a p-text which can stand on its own in many respects and from which an article could be easily extracted. In other cases, although the p-text may be spread throughout the thesis, it may be clearly identifiable as a separate element in the research to expert readers even if they do not have a corresponding article to compare it with. But in many of the above cases it is only when the article is actually produced that it becomes clear, looking back to the thesis and identifying the corresponding parts, that there is a p-text. In addition, it is not always possible to identify the exact boundaries clearly in the thesis that correspond to those of the article. As a result of this problem of identification of p-texts, as a method of analysis I always begin by considering the produced text, the article, in order to establish the boundaries of the p-text in the original text, the thesis. (A specific example of how this is done is given in Appendix 4, section 4.2.).

There are other notions that can be drawn on in attempting to deal with the relation between these two texts, a thesis and the article produced from it. One of these notions is considered in linguistics under the name of *intertextuality* which deals with the way in which the production/understanding of a certain text depends on knowledge of other texts. According to Fairclough (1995, pp.14-15), "In the intertextual

analysis of a text, the objective is to describe its “intertextual configuration”, showing for instance how several text types may be simultaneously drawn upon and combined.” In addition, Bakhtin (1986) points out that texts and utterances are shaped by prior texts that they are “responding” to, and by subsequent texts that they may “anticipate”. For Bakhtin, “each utterance is a link in the chain of speech communication”. Taking an example of this intertextual relation between texts from Malmkjaer (1991), it could be said that a traffic sign that says “resume speed” only makes sense on the basis of a previous sign telling the driver to slow down. From this evolves the notion of interdependence of texts which allows us to link texts together in the knowledge that they display similar characteristics and patterns (see the discussion of *text types* below). Fairclough (1995) identifies three types of intertextuality; sequential, embedded and mixed. According to him,

in sequential intertextuality, different stages of generic schema are modelled in different genres, in embedded intertextuality one genre is embedded within another, but in mixed intertextuality it is impossible to ascribe different parts of a text to different genres - even a single clause may be multi-generic.
(Fairclough, 1995, p.15)

In the present study, it is clear that we are facing a special type of embedded intertextuality situation as one text, the article, is taken as in some sense incorporated into the other, the thesis, before being detached and represented as a separate text on its own. Yet, this is not the actual type of intertextual relationship that the final produced article holds with its original text, the thesis. Thus, although the above account gives the usual way the concept of intertextuality is seen by theorists in the field, in the case of my data the concept needs to be seen in a slightly different way. Whereas all the above quotations seem to consider the text in relation to other types of texts in the field with which it may hold a relation (a sort of a *dialogic intertextuality* where texts seem to converse with one other), the present study is more concerned with the relation between one specific text and another derived from it (as a sort of *derivative intertextuality*). A good example of a similar intertextual procedure of transformation is that of the journalists’ attempt to present an academic and formal message presented in a research article in another text which is far less formal and non-academic for the layman in a popular magazine. This change, although it is manipulating similar content and probably similar traditions of writing on this specific

topic, is anticipated to reflect a difference in the communicative purpose for presenting the new text and the functions it displays. Similarly, the present study is mostly concerned with investigating aspects of how the thesis is “cannibalised” to produce the research article.

The present study not only compares and contrasts single instances of texts, but it explores specific texts which represent identifiable *text types*. To fully understand what is meant by text types it is necessary to refer to the notion of genre as developed by Swales (1990) and others (e.g. Bhatia, 1993). According to Swales a text that belongs to a genre, or a text-type, has a communicative purpose shared by all other similar types of texts in the same field. It is recognised by the expert members of this field not only in terms of relevant content, but also in terms of the schematic structure of the discourse whose linguistic representation is influenced by the intended audience reading this genre. Thus, the present research will aim to study the thesis and its articles as representatives of two different text-types, or genres. In particular, it will aim to identify the variations between the sample theses and the articles derived from them to draw some general findings and conclusions about the differences between these two types of text (further discussion of this point is under section 2.2.2.3).

Now that we have covered the important aspect of defining and identifying the first dimension of the current study, texts, in the following section I will be concerned with the report of some of the relevant approaches that affected my analysis of texts. I will also attempt to give a thorough evaluation of these approaches and describe how they will be applied in the current research.

2.2.2. Approaches to Analysing Texts

In this section, various research theories and empirical trends in analysing texts are discussed. These are as follows:

1. Bottom-up and top-down approaches
2. Product and process approaches

3. Genre analysis and rhetorical patterns
4. Applied genre analysis
5. Hoey's Problem–Solution pattern
6. Studies on the analysis of the various sections of research articles and theses
7. Macrostructures, superstructures and propositions
8. Systemic Functional Grammar

2.2.2.1. Bottom-Up and Top-Down Approaches to Text Analysis

Bottom-up and top-down approaches are usually used in the theory to refer to the ways readers follow in processing reading texts but the same concepts could be also adopted by analysts of texts. In the present section, I will be referring to the two approaches primarily in relation to the analysis of texts, but will frequently resort to the findings from the research on the cognitive models of processing of reading texts for this same purpose.

The two research trends of top-down and bottom-up processes reflect two distinct but complementary ways by which language analysts may approach the task of analysing texts. The bottom-up approach considers text as an entity composed of very small units which combine together to make larger units on a higher level. In turn, these larger units are combined together to make a higher level unit and so on. According to this approach, linguists might start their analysis by looking at the individual lexical items which compose a clause, then consider clauses which combine together to make up sentences, then consider sentences as the building blocks for the paragraph, and so on.

This particular approach to text analysis is related to the bottom-up cognitive model of processing texts which was developed under the influence of cognitive psychology around the mid 1960s (e.g. Carroll, 1966, 1968; Arapoff, 1967, 1968, 1969). This model assumes that readers read by identifying first the letters that make the smallest units of text and then building them up into words. After this they combine

words into sentences and chain them to make up paragraphs that in turn constitute the complete text at the end. According to this model, comprehension of a text is, therefore, the final outcome of a series of hierarchical steps of decoding of linguistic items. Although this model was very successful among cognitive linguists up to the end of the 1960s, it came under fierce attack in the late 1970s and was soon opposed by a top-down model of processing.

The main criticisms of the bottom-up model (e.g. Taylor, 1981) were the outcome of research carried out in the field of human memory. Research has shown that processing as described by the bottom-up model would slow down reading to a point where readers would not be able to understand any part of the text and retain it in memory. Moreover, it was found that it is often impossible to decode letters and words in a serial manner. This is because comprehension of meaning is sometimes more essential than the actual decoding of single letters to make up a word. A further criticism of this model came from the investigation of errors made while reading aloud. The fact that readers sometimes deviate from the text shows that reading is not a mere bottom-up process of mechanical decoding.

As was the case with the bottom-up processing model in cognitive psycholinguistics, the approach to studying texts following the bottom-up paradigm also came under attack with the advent of the 1970s. This fading in the interest in the lower linguistic elements which are restricted to the domain of sentences was due to a need perceived by linguists to investigate the totality of texts by going beyond the sentence level. Hence, there was a move to a top-down approach in undertaking research (e.g. Selinker, Lackstrom and Trimble, 1973; Swales 1981; Jordan, 1984; Trimble, 1985).

The top-down approach laid more emphasis on the study of larger units than words, sentences or paragraphs. This means that researchers deal with a text as a complete whole before going down to the lower units that make up the text. This approach to analysis is again relatable to the top-down model of processing of texts in cognitive psychology. This model, which opposed the earlier model in terms of the

direction of processing strategies of texts, assumed that readers proceed from the higher level units in the text to the lowest. As Nunan (1983) comments,

according to this theory, the listener/reader makes use of his or her background knowledge of the subject at hand, knowledge of the overall structure of the text, knowledge and expectations of how language works, and motivation, interests and attitudes towards the text and the context it contains. Rather than decoding every symbol, or even every word, he or she forms hypotheses about what might follow in the text and then reviews or “samples” these to determine whether the original hypotheses were correct.

(Nunan, 1983, p.53)

However, this model was also problematic for a number of reasons. First, it ignored the fact that lower-level processes may direct higher-level ones. Second, it is sometimes difficult to explain how beginning readers, especially children, can process texts in a top-down manner. Due to these difficulties it was necessary to look for an alternative model to understand how readers process texts. This feeling was shared by researchers using the top-down approach for analysing texts. Hence, the 1980s witnessed a movement towards achieving a balance between the two opposing paradigms, top-down and bottom-up.

In the field of cognitive psychology, the balance between the top-down and bottom-up models was achieved through the introduction of the “interactive processing model” by Stanovich (1980). This model “suggests that, in comprehending discourse, we use information from more than one level simultaneously” (Nunan, 1983, p.54). In other words, it is possible that readers may begin by processing the higher-level of the text then move to the lower one. Alternatively, they may choose to go the other way round to be able to understand the text. If this line of thinking is applied to the research methods used for analysing texts, it could be stated that analysts may benefit from working on the higher-levels of text construction as well as the lower levels of individual linguistic elements. According to Halliday (1994), this is a common procedure that text analysts use and which he calls “shunting” which includes going backward and forward between text-level and clause-level.

The present study attempts to integrate the top-down and bottom-up analyses of texts in a variety of ways. This means that the analyses sometimes start from top to bottom and at other times from bottom to top. In other situations both types of approaches are followed in the kind of ‘shunting’ process advocated by Halliday. The ultimate aim is, in any of these cases, to attempt to capture and understand the changes writers make while deriving one type of text from another. The advantage of this balanced line of research is that it allows the investigation of the more global aspects around and within texts and thus gives the study more breadth. On the other hand, it will also allow for the exploration of the local linguistic elements that realise these more global units and hence give the study more depth.

The second approach to analysis that has influenced this study is related to the “product” and “process” approach in the investigation of writing.

2.2.2.2. Product and Process Approaches

In the “product” approach in writing, the study of the text lays emphasis on the finished text produced by the writer. This was the focus of most studies of written text till the 1970s. Many of the studies had a strongly applied orientation, and this empirical approach had an effect on pedagogy. Thus, traditional teachers used to require their students to produce texts (e.g. letters, essays, etc.) following a linear process of writing (e.g. Connor, 1987) and with little or no interest in purpose or audience. The final aim of this kind of production was for the teacher to criticise and evaluate these texts regardless of how students had managed to produce them. This approach had its opponents who believed that the act of writing entails much more than just the final product. Thus, in the late 1970s and early 1980s, a new approach appeared, the “process approach”, which opposed this line of thought by arguing that the series of steps that writers undergo until a text is produced is more worthy of study. The new approach laid emphasis on the complex set of cognitive behaviours entailed in writing and attempted to describe the strategies writers follow before, during and after writing a text. Murray (1987), for instance, suggested that writers follow a

circular course for producing text which is made up of five main stages. These were; collect, focus, order, draft, and clarify. Other people like Graves (1983) talked about the stages of pre-writing, drafting, revision, editing, and publishing. This interest in the stages writers follow while producing a text encouraged a number of experimental studies to investigate the mental strategies writers claim they follow while writing. Such studies were based on “protocols” where writers are asked to describe what they were doing/thinking before, while and after writing a text. The most interesting studies of this kind were carried out by Flower and Hayes (e.g. 1980, 1981) and confirmed the fact that the writing task is a complex one which is often made up of “a set of relatively simple cognitive operations that produce enormously complex actions” (Czemiewska, 1994). Flower and Hayes (1980) also considered it a problem-solving process in which writers seem to address the writing task as a problem which needs a well-thought plan to find solutions for it in order to produce an acceptable text at the end. However, there were many criticisms of this approach. The most important one was that this approach neglects the content of the written products and views the writer as a socially isolated being. This is due to its focus on the strategies followed by writers regardless of the context of the writing act.

On the other hand, since I am in the long run interested in the pedagogical impact of this approach on teaching EAP writing, it is important to say briefly here that the “process” approach had its advantages in pedagogy especially because it developed new teaching methods that encouraged following natural processes for producing texts, allowing students to experiment with text writing, and at the same time developed a better feedback system for written productions. One criticism of this approach in pedagogy was that it may not really help writers to write the real types of texts they will need to produce in later life as it neglects the sociocultural aspects of writing. Despite the fact that the ideas of the “purpose” of writing and the “audience” who are targeted were incorporated in classes influenced by this approach, specific real purposes and real audience were generally not considered and therefore students were not trained to meet the cultural norms about who can write, to whom and when. Also, there was not enough emphasis on the product, specifically on the conventions that expert writers are aware of and generally

follow, in producing specific types of text.

These criticisms led to support for a more balanced and eclectic view of the two opposing approaches of “process” and “product” that address the various situations outside the context of writers’ productions and incorporate the sociocultural aspects of writing.

Turning now to the analytical dimension rather than the pedagogic one, the present study responds to a balanced influence of both analytical approaches. Thus, it focuses its attention on two sets of specific written texts which are “products” of certain writers, theses and articles, in specific social contexts. It also attempts to analyse them as two related, but different, types of written productions of one and the same individual not only to identify the variations that exist between these two types of written products but also to explore the processes followed in their production. Bearing in mind that analysing the organisational and linguistic features of these products only will not give a full view of what motivates the changes writers make while deriving one text from another, it was felt advisable to hold retrospective interviews with the writers of the texts and note what they say they do throughout this process in order to understand the psychological and social motives behind the modifications they make to their texts. Thus, I make use of a research tool that has been already used in previous process studies (e.g. Zamel, 1982; Raimes, 1985, 1987).

One of the studies that attempted to achieve the balance of carrying out analysis of the product and the process is that of Gosden (1995). In this study, the researcher investigates the cohesive element of theme and evaluates its effect on the success in writing scientific research articles by non-native writers. The study covers the investigation of this element by looking at the products, research articles, as well as by exploring the effect of the revision of themes in a number of drafts written by novice writers producing their research articles. The present study, similarly, attempts to reach the balance of using both product and process methods of analysis in order to achieve a better

understanding of the academic skill of transforming theses into articles. Thus, in exploring the texts, product data, I attempt to understand the process writers follow in transforming these texts which could be discerned from the variations between the two types of texts concerned. On the other hand, by exploring the perceptions of expert writers, process data, of what they believe to be the stages they follow in making this act of transformation, the changes entailed in it and the factors affecting these changes I am attempting to discern from the process data evidence that may support the outcome of the analysis of the product data, texts.

Supporting the view held by genre theorists that writers need to be aware of the “real” types of texts they need to produce later in life and follow the “real” ways for producing such “real” types of text, it is necessary now to look at the studies which have been carried out under the influence of genre analysis to understand the characteristics of “real” texts, like theses and research articles, and explore how writers produce such texts. In the following section I attempt to give a short overview of the concept of genre, its importance for studies in EAP and how it has affected the present investigation. In addition, I introduce some of the genre studies that seem relevant to the present study and discuss how they have influenced it.

2.2.2.3. Genre Analysis and Rhetorical Patterns

The concept of “genre” had been used for a very long time before assuming importance in linguistics to classify different text-types in the fields of literature, sociology and rhetoric. In the field of literature, where it was most prevalent, it was used to refer to the different styles of writing pertaining to a variety of literary texts such as sonnets, tragedies, etc. However, in recent times, genre has become a very important concept in linguistics. Linguists who have been interested in this concept include Hymes (1974), Saville-Troike (1982), Halliday (1964, 1978, 1979, 1985, 1987, 1988, 1990), Ventola (1984, 1987), Martin (1985, 1986, 1991, 1992, 1993, 1999), Martin and Rothery (1986), Couture (1986), Swales (1990), Bhatia (1993), and Kress (1993). This importance is mainly due to its useful applications in pedagogy,

especially in the field of academic writing. If we apply this concept to the academic situation discussed in the present study, the knowledge that theses and research articles are, as will be argued later, two different types of genre with specific characteristics has both receptive and productive value for EAP practitioners. Not only does it help practitioners train students to identify the main features of the “real” academic texts, but it also helps to train them to differentiate between both types of genres, understand the reasons behind such variations and be able to produce these two varieties of written texts as required from them by the conventions of their academic community to achieve local and global academic recognition.

It must be noted that genre analysis, as a discipline aiming at language description in texts, has evolved from the wider study of discourse analysis. If we consider briefly how the study of genre has developed from the earlier attempts to analyse discourse, it can be argued that it was the outcome of a movement from register analysis (Reid, 1956; Halliday, 1964), which focused on the analysis of the more common surface-level elements of language varieties, to the “thicker” description of the language of specific text varieties, especially those aspects of the text which link to the functions writers often carry out in specific registers and those expected by the readers. In the early forms of language description within register analysis, researchers focused on the study of the frequency and distribution of lexico-grammatical features of a particular text variety. Although such studies were able to identify the more common linguistic features of certain varieties, they did not give an interpretation of the reasons for the use of specific surface-linguistic elements in any of the varieties investigated (e.g. West, 1980; Heslot, 1982). Subsequent studies on the description of language began to consider the rhetorical function of these frequent lexico-grammatical elements produced by the writer (e.g. Trimble and Trimble, 1982; Adams Smith, 1984). Again, though such studies yielded interesting explanations of the writer’s choice and use of particular linguistic items, they offered very little information on how texts were structured and how knowledge of readers’ expectations may affect the structuring of a specific discourse. This led to more recent studies of the language of text as representative of instances of interaction between a writer and a reader (e.g. Widdowson, 1979). Out

of such studies developed the notion that language use in texts is structured and interactive. Thus, writers, to be able to produce successful text types, have to be aware of the conventions of structuring, using and organising the more detailed elements in different text types. Again, although such studies linked the linguistic features of particular text types to the relation between participants in specific settings of a conventionalised nature, they still undervalued the importance of sociocultural and organisational interpretations which explain why writers write in the way they do. As a result of these limitations, the approach of "genre analysis" developed with an emphasis on the importance of generic conventions and the context for such conventions (e.g. Dubois, 1986, 1987, 1988; Swales, 1990). The main aim of this approach is to pinpoint the language features common in specific language varieties, explain how they reflect the relationship between their writers and readers, and finally identify the semantic organisation of such texts. This is also the main focus of the present study which is less interested in the pure description of the more detailed language features of specific types of texts like theses and articles than in how these language features reflect the semantic choices made by writers to interact with readers as well as the organisation of these semantic elements in these genres which are also influenced by the relation between readers and writers.

Genre analysis also emphasises the need to systematically study and interpret the conventionalised selection and use of specific linguistic elements in particular written and spoken products as well as the sociocultural and psycholinguistic factors affecting the choice and use of such features. This eclectic model of text analysis, known as genre analysis, was developed by Swales (1990). This again was interesting for my research purposes in that I was able to systematically apply specified tools of analysis to theses and the articles derived from them to identify the variations between them and relate these variations to the socio-cultural factors which influence each genre.

For my own purposes, I have adopted Swales' definition of the term genre to refer to the text types investigated. According to Swales (1990), a genre

comprises a class of communicative events, the members of which share some sort of communicative purposes. These purposes are recognised 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 realised, the exemplar will be viewed as prototypical by the present discourse community.
(Swales, 1990, p.58)

From this definition it is evident that genre analysis is concerned with groups of text types that are generated by producers who share the same purpose for producing such text types which are in turn identifiable by the more expert members of a defined discourse community. In addition, such texts, which represent a similar communicative event and assume a similar goal, also have similar patterns of structure and intended audience. If we apply this definition to the two types of texts we are dealing with, it becomes clear that they share a number of common features. These include the fact that research writers, both of theses and articles, have the purpose of presenting research information to an academic audience who are assumed to be expert in the area of research presented and who belong to the same discourse community in their wide area of study. Despite these similarities which reflect the fact that the two types of text may be connected by a relationship of derivation, it should be also noted that theses and research articles are expected to have slightly different agendas in dealing with their audience and the way of presenting research studies. These two types of text are also aimed at a different specific sector of the same discourse community. Thus, in addition to the similarities between these two genres, there is a high probability that they exhibit differences in content and style. Hence the need to do the present study to identify any such differences and the motives for making them as identified by the expert members of the discourse community.

If we consider the aspects which genre analysis discusses as the dimension of variation between genres, according to Swales (1990) genres vary from each other in terms of a number of parameters. They vary according to complexity of rhetorical purpose ... They also vary greatly in the

degree to which exemplars of the genre are prepared or constructed in advance of their communicative instantiation ... Genres also vary in terms of the mode or medium through which they are expressed ... Prepared-text genres ... vary also in the extent to which their producers are conventionally expected to consider their anticipated audiences and readerships ... Genres also vary in the extent to which they are likely to exhibit universal or language specific tendencies.
(Swales, 1990, pp.61-62)

If we consider very briefly the application of the above definition and parameters of variation between genres to the two types of text analysed in the present study, it is apparent that some of the parameters pointed out by Swales may not help differentiate between the two types of texts. These include medium and preparation in advance. Both types of text are exponents of the written mode. Both texts also need very careful preparation by the writer before they are published in wider circles and they can never be spontaneous products as they will need a good deal of revision before their final versions are produced. In addition, both types of text at least in some respects have the same pattern of organisation which is the kind of patterning expected by the wider academic community.

Nevertheless, in terms of their communicative purpose and the type of communicative event and participants involved in it, it can be argued that theses and research articles are exemplars of two different types of genre. First, if we consider the communicative purpose of the two texts, it is noticeable that each type of text has its own particular goal to achieve. Whereas in the thesis the writer is interested in proving to examiners his/her worthiness for a degree, in the research article he/she is more interested in "selling" the new knowledge he/she has identified without forcing the readers into accepting it. Second, this difference in goals reflect the difference in the communicative event of writing a thesis and producing an article. The addressees in the communicative event of producing a thesis are the examiners, who are also expert members of the wider discourse community, whereas in the case of the articles they are presumed to be members of the same research community who share similar interests and status, but who could be experts or non-experts.

From all the above it can be argued that the two types of text under examination are different in some

ways, but are similar in others. The common perception amongst expert writers, of course, is that they are different genres (as the existence of different names for each indicates). However, in the present study I need to adopt a variable stance on the question of whether they are two different and distinct types of genres which exhibit differences in terms of their linguistic features. Some aspects of my study rely on there being generic similarities: for example, the model of organisation outlined in Chapter 4 is designed to apply to both. In other respects, I draw on the differences: for example, in exploring the changes made in deriving an article from a thesis, I assume that there are different contexts of production and reception for the two text types which influence or determine the changes. Overall, it is safest to assume that these are distinct but very closely related genres.

This is a preliminary and a simplified discussion of the similarities and differences that are likely to be found in the theses and the articles studied in the present research, but I will come back later to discuss this issue in the light of the findings of my study in chapter 8.

2.2.2.4. Applied Genre Analysis

The growing interest in genre analysis around the end of the seventies and eighties led to a great number of applied studies that aimed at investigating the types of texts, the genres, that are commonly produced in the academic setting such as research articles and theses. However, whereas the academic research article received a great deal of attention and was explored extensively, the thesis genre was “largely avoided, at least partly because of the daunting size of the typical text” (Swales, 1990, p.188).

For the purpose of the present study, I will be focusing on a number of these studies on research articles and theses which have influenced my thoughts and approach to exploring my research questions.

If we first consider the studies that have been carried out on the research article, the most directly

relevant are those on the rhetorical transformation of the genre of research article into other types of texts. Such studies include Dubois's (1986) paper that follows the process by which scientific articles written in the *New England Journal of Medicine* are prepared for publication as news items by science journalists working for the Associated Press. Other studies conducted by Fahnestock (1986), Adams Smith (1987) and Myers (1994) investigate "the process of the popularisation of scientific research article where they pass from the original research reports intended for scientific peers into popular accounts aimed at a general audience" (Fahnestock, 1986, p.272). The interest in the transformation process from one type of genre to another has inspired the present study which also looks at a similar process.

The studies quoted above have identified a number of differences between the original texts and their new versions as well as the factors that seem to account for such differences. For example, some of the differences that were identified were related to the organisational form, the purpose, the syntactic and the lexical features of the two types of text explored. All these studies also agree on the fact that the variations are probably due to the "significant change in (the) rhetorical situation" (Fahnestock, 1986, p.278-9) which entails the anticipation of a different audience. Similarly, in the following analysis of the differences between theses and the articles derived from them, I argue that such variations exist in terms of their content, its organisation in each type of text, the main purpose and outcome of the study presented in each text, as well as some of the lexical and syntactic features of the two texts and that they can be largely explained by the difference between the situational context of each text type, including the difference of the purpose and status of the producers and receivers of such texts. However, it must be stressed that the differences between articles and their popularised versions are much easier to identify because the audiences and purposes of such text types are more clearly different than those between theses and their research articles whose audience and purpose may seem similar in many ways. This is likely to cause a difficulty in identifying the differences between such related types of text.

The other type of studies which were conducted on research articles and which have influenced my approach in analysing the texts I am exploring are those that have focused on the investigation of the *patterns* of rhetorical, informational and conceptual organisation of written texts (Hepworth, 1979; Swales, 1981; Wood, 1982; Hill *et al*, 1982; Belanger, 1982; Zappen, 1983; Bruce, 1983; Stanley, 1984; Cooper, 1985; Hopkins, 1985; Crookes, 1986; Peng, 1987; and Hopkins and Dudley Evans, 1988). If we consider briefly the contribution of such studies and their influence on the present research undertaking, three main streams of research interest can be identified. First, some of these studies focus mainly on the identification of the functional categories that make up research articles and the suggestions for specific labelling for such categories. These include Swales (1981), Bruce (1983) and Cooper (1985). Whereas Swales is more concerned with identifying the moves found in Introductions sections and presents his first 4-moves analysis (a revised version is presented in Swales, 1990), Bruce's work suggests that the Introduction-Method-Result and Discussion format of the whole article follows the logical cycle of inductive inquiry. Cooper (1985), on the other hand, attempted to criticise Swales's model of analysing Introductions, demanding the addition of a citational category (Move 2 - Summarise Previous Research) based on the results of her study of the IEE publications dealing with advances in the field of computer technology. The main contribution of these studies in relation to mine is the fact that they supply functional labels to identify the various sections of the Introduction and the rest of the article. This is necessary to consider when attempting to investigate the overall organisational and functional pattern exhibited in the texts investigated in the present study. Although I may not be using the same labels used by such studies I attempt to produce functional labels that express the organisational pattern of the theses and articles I am investigating.

The second research interest which was shared to some extent by Hill *et al* (1982), Belanger (1982), Cooper (1985), Hopkins (1985) and Peng (1987) is that of the recycling feature of the research article sections. According to Hill *et al*, the shape of research article is like a funnel where the introduction

and the conclusion seem to be similar in that they make contact with the wider area of study, unlike the body of the article which is more focused and concentrated. On the other hand, Belanger (1982), who analysed 10 discussion sections in the field of neuroscience, found that “the structure of the discussion section is closely correlated to both the number and kind of research questions posed in the introduction sections of the paper” (1982, p.1). The same idea of the link between the introduction and the discussion sections is revisited in Cooper (1985), Peng (1987) and Hopkins (1985). For the purpose of the present study, this is a very important notion because it is expected that the beginnings and the endings of theses and the research articles derived from them are likely to be linked in a similar way. In fact, if writers are likely to make changes in the introductory part of their original text, the thesis (or more strictly, the p-text), to suit the purposes of the new type of text, the article, it is also likely that the concluding part of the research article may exhibit the variation in the number and kind of the answers to the research questions posed in the introduction, as suggested by Belanger (1982). This possibility is investigated in the present study (see chapter 5, section 5.3).

The third line of interest which these studies have considered is the use of a Problem-Solution pattern to capture the semantic organisational pattern of the research article. In fact, the present study also makes much use of the pattern *Problem-Solution* which has been proposed and discussed in a number of studies (Zappen, 1983; Stanley, 1984; and Adams Smith, 1987) to account for the conceptual macrostructure of research articles. However, it must be noted that these studies had their own limitations. Whereas Stanley (1984) gave almost no textual evidence of such a pattern in his analyses, Zappen (1983) was limited to the study of the introductions of research articles which were viewed as *Problem-Solution* texts. Another limitation of Zappen’s study was that his five-part rhetorical pattern (*Goal, Current Capacities, Problem, Solution and Criteria of Evaluation*) is too limited in scope and somewhat confused over the labels it uses for my own research purposes. This has led to the consideration of a more reliable work on the rhetorical functions of text that still uses the *Problem-Solution Pattern*, but which seemed more suitable for the analysis of the types of texts of the present

study. I discuss this model of analysis and its contribution to the present investigation below.

2.2.2.5. Hoey's Problem-Solution Pattern

A better and a more complete formulation of the *Problem-Solution Pattern* is that of Hoey (1983). Although it echoes some of the categories discussed by Zappen (1983), it is much wider in scope and more precise in its use of labels. The fact that it does not apply this pattern to only one section of the text or even a specific type of text is the reason for its wider applicability. Thus, for Hoey, the *Situation, Problem, Response, Solution and Evaluation Pattern* is “a common discourse pattern of English ... of which a number of variants are possible” though it “should be taken as typical of the way in which we believe discourse can fruitfully be treated, rather than indicative of the importance of one particular pattern” (1983, p.61). This unlimited flexible nature of the pattern proposed by Hoey is the main reason for adopting it for the exploration of the texts I am interested in for the present study. The assumption that articles and theses may be similar in the way they need to approach a research *problem* to find a *solution* for it, and the expectation that these two genres have a similar organisational pattern that revolves around a problem and attempt to find a solution are the main motives behind the decision to adopt this global pattern to cater for the description of the overall structural pattern for the two types of texts investigated.

Although in the present study I argue that the organisational pattern of theses and research articles, as representatives of written academic research texts, have a pattern that largely incorporates the main functional elements of the *Problem-Solution* pattern proposed by Hoey (1983), I use other labels to refer to the different categories of this pattern in my analyses of texts. In fact, Hoey (1988, p.68) himself used other labels to refer to the element which plays the same ‘pattern-triggering’ role as Problem depending on the type of text analysed and the function that the text seems to reflect. The change in this label carries through to a change in the label assigned to the element that plays a similar role to Solution. Thus, he identifies a Goal-Achievement pattern in texts where the triggering element

expresses purpose rather than problem. In another type of text (following Adams-Smith, 1987) he identifies a pattern of Gap in Knowledge - Gap Filling. This happens in texts where no specific problem is signalled and the writer simply sets out to provide information on a topic that was not previously available. The decision to change the labels under the *Problem-Solution* pattern and sometimes to incorporate new categories is due to the fact that it is not always a *problem* that a RA needs to consider and therefore other related functional categories may differ/be added as a result of the fact this particular functional category is not applicable to the text analysed. In fact, some studies show that unexplained phenomena are the focus of many research undertakings. For example, in a discipline like biomedical research, Adams Smith (1987) has found from informants that this type of study “is not a matter of problem-solving. Rather it is the observation of this phenomena over a period of time, and the recording and explanation of the findings” (Adams Smith, 1987, pp.19-20). In the present, I argue for a similar case as discussed below (also see the full discussion of this point found in chapter 4 under the application of the *Problem-Solution* pattern).

One of the most relevant research studies employing the Problem-Solution pattern as a model of text organisation is Thetela’s (1997) study of *Evaluation in Academic Articles*. Arguing that evaluation can be mapped into the various parts of academic research articles, she sets out to apply the *Problem-Solution* model to her texts (200 research articles drawn from the hard and soft sciences) to identify the various rhetorical sections. In general, this study confirmed the workability of this pattern on a large number of research articles (181 out of the 200). A number of important observations and findings were drawn from the application of this model. The first of these is related to the function of the whole paper. According to Thetela (1997), as Hoey himself once stated, the main motive for producing any paper is to cater for a “gap in knowledge” which can be seen as constituting the generic Problem of research, and the paper itself is the attempt to “fill this gap in knowledge” which in turn constitutes the Solution for this Problem. Hence the study argues that academic research articles can be seen as problem-solution texts. In the present study, this same approach is taken but, instead of

using the labels *Problem* and *Solution*, which represent the gap in research and the filling of it, I argue that the use of *Question* and *Answer* categories as replacement labels for the Problem-Solution categories in dealing with applied sciences may be more appropriate for my own research purposes. In fact, Hoey himself (Hoey, 1986, pp.196-206) argues that the Problem-Solution pattern may overlap with other patterns which could be used to analyse written, and even spoken, texts. These patterns include the Question-Answer pattern. It must be noted, however, that he uses the functional categories Question and Answer to refer to a different pattern from the one I am referring to in the present study. He uses them to analyse short texts like religious sermons that are putting forward their arguments to the reader in the form of a Question followed by Answers that are sometimes positive and in other times are evaluated as being negative and hence encourage finding further Answers, by the same author or others, until a positive Answer is found. On the other hand, I find that these two categories, Question and Answer, seem to reflect better than other labels the main research activity behind the applied study represented in the type of theses and articles I am investigating (questioning) and its ultimate motive (finding answers to questions). In the case of the other types of sciences, non-applied sciences, other categories or labels may need to be proposed. These other types of sciences include those that Adams Smith (1987) talked about, and those articles which Thetela found could not be analysed using the Problem-Solution pattern (26 examples in the field of History).

Thetela's study also focuses on the conceptual representation of the pattern she is exploring. The present study shares the same interest in the exploration of the content structure of this organisational pattern of texts. However, it takes this aspect a little further by exploring the differences of the content and rhetorical structures of two interrelated text types.

2.2.2.6. Studies on the Analysis of the Sections of Research Articles and Theses

Another line of study on research articles in the field of genre analysis which has influenced the present research is that proposed by Swales (1990) in the analysis of RA introductions. The CARS

model of research introductions, although it is too restricted for my research, is very useful and illuminating in terms of the functional categories and labels it gives for the various structure-moves of this part of the RA. In the present study, I argue that the overall Question-Answer pattern which could be helpful in analysing the overall semantic macrostructure of the texts investigated could be also helpful to identify and analyse the more specific semantic functional categories that realise the various elements of the overall Question-Answer pattern. One of the means by which this pattern could be elaborated to have a more specific nature that can help it to investigate the more detailed semantic structure of the texts investigated in the present study is to adopt the move analysis suggested by Swales in analysing RA Introductions to identify the specific functional categories that relate to each of the more global functional categories of the Question-Answer pattern. This attempt at marrying the more global Question-Answer pattern to a Moves analysis that can specify the semantic sub-functions used in particular types of texts to realise the more global functions of the Question-Answer pattern can help in the development of a model of analysis that can capture both the semantic elements of the global semantic pattern of the texts explored (e.g. the Question element) and the more specific semantic sub-elements realising this element (i.e. whatever other sub-elements the writers of the theses and articles investigated use to Question in their study). In fact, some of the functional categories used by Swales CARS model were used, with modification, to analyse the lower semantic sub-elements in the text explored. Furthermore, like Swales, I consider the relation between these sub-elements a sequential one. For Swales, the moves that writers produce in writing the Introduction of a research article is written in a sequential order (i.e. 'Establishing Territory' normally precedes the 'Establishing of a Niche'). My model of analysis also emphasises the sequential aspect of its sub-elements, as it treats them as elements that are expected to follow one another in the texts in which they appear. This is unlike the case with the top elements, Question and Answer, which are bounded together in a relational manner (i.e. A Question will always need an Answer and an Answer must stem from a Question). This is because my model adopts the Question/Answer pattern which is a relational one to explore its overall macrostructure, while it uses the more sequential moves of analysing texts

used by Swales for the analysis of its more detailed macrostructure. Another important contribution of Swales's research that is utilised in the present study is his dependence on linguistic exponents to support his structural analysis. Although other means may also be useful for the identification of the various components of a certain pattern, the linguistic ones remain the more tangible to depend on. (For a fuller discussion and application of this point see chapters 5 and 6 in relation to the various elements composing the analysed texts).

However, there is a number of differences between Swales's model and mine. Although I adopt the idea of Moves from the Swales CARS model, I use it in ways that may make it look different from what Swales may have intended. First, I do not consider the moves as the only means by which the texts could be analysed, but I consider them as a second step that help to identify the more detailed semantic elements of a global pattern of semantic organisation of the two interrelated types of texts concerned. So, unlike Swales' model in which they appear as the sole means of analysing texts, here they are incorporated as part of a larger, more global pattern. Second, although I may adopt some of the functional categories used by the CARs model for the analysis of the Introduction section, I do not use exactly the same categories or labels suggested by Swales for analysing the more detailed level structure for the two text types. Instead, in many cases, I use other possible functional categories and labels that stem from the analysis of the texts I am exploring and which have been expressed by the other researchers in the field (Martin, 1985, 1986, 1993). (For a further discussion of the model of analysis suggested and how the Swales Move-analysis is incorporated in it, see chapter 4, section 4.5.).

Other studies that have influenced my present view on how to consider the lower level structure of text types, especially the generic study of research articles, are the analyses of the discussion section conducted by Belanger (1982), McKinlay (1984), Hopkins (1985) and Hopkins and Dudley-Evans (1988). These studies are more concerned with refining the move-steps analysis of the discussion

section, especially the Hopkins and Dudley-Evans study which offers 11-move schemes for understanding its discursal pattern. As is the case with Swales's study on Introductions (1990), these studies provide me with workable categories for the various low level structures of the discussion section and labelling them for use in my own analyses. However, I have also modified some of these categories and their labels as appropriate to suit the analysis of the kinds of texts investigated in the present study.

Until now I have focused on the studies within the genre analysis approach of research articles. If we move to discuss the studies that have been carried out to explore theses and dissertations, it will become clear that the number of these studies is limited. Out of these studies, I am mainly concerned with the studies that relate theses and articles. In fact, there are two trends of research on the relation between theses and research articles. The first emphasises the similarities between theses and articles and the other focuses on the differences between these two text types. Examples of the first trend are the studies by Dudley-Evans (1986) and Hopkins and Dudley-Evans (1988) which examine the introductions and discussion sections of a number of MSc biology dissertations written by British postgraduates. They show that both sections utilise many of the moves identified for the research article. On the other hand, Swales (1990) gives very short and cryptic comments on what he inferred from the analysis of six dissertations written in the University of Michigan. For him, the distinguishing aspect of the genre of dissertation is its heavier reliance on metadiscourse than the case with the research article. Metadiscourse refers to "writing about the evolving text rather than referring to the subject matter" (Williams, 1985). The use of such metadiscoursal statements include that of "Advance Labelling ("We shall need to discuss this issue in other terms in the next section") and recapitulation ("We have now discussed ..."), Advice to readers ("The reader might wish to read the last section first") and various enunciations of authorial stance ("It is unfortunate that we still do not have a way of ...")" (Swales, 1990, p.188). All the above comments refer to the text itself rather than the information it is reporting. This feature of the text, metadiscourse, is explored in the present study

when appropriate to identify the changes that are made to the metadiscoursal features which are found in both texts, theses and articles. It is anticipated that the amount and nature of the metadiscoursal features are more extensive and elaborate in the theses than in the articles produced from them due to the “more extensive textual territory” (Swales, 1990, p.181) that theses occupy and the need to guide readers through this huge piece of work. However, differences in metadiscourse are clearly only one aspect of a potentially much wider field.

If we turn to the studies that were carried out to identify the variations between theses and articles, it must be said that there are none that focus on these issues. The relationship between these two genres is commented on very briefly in some works, but never discussed or researched in a systematic way. One of the important “quick and dirty” treatments of the relation between theses and articles is Bhatia’s (1993) discussion of the difference between the introductions of theses and research articles, based on the work of Swales (1981) and Dudley-Evans (1989). According to Bhatia, there seems to be a similarity between them yet there are a number of distinct variations in the move-structure of this specific section in the two genres. One of the simple reasons for this difference is that “in student dissertations and theses generally, the introduction is fairly elaborate and long compared with introductions in the research articles, because of a fairly well established tradition to include a literature review” (Bhatia, 1993, p.98). Another variation pointed out by Bhatia is the fact that in theses writers need to introduce field rather than establish field as in the case of research articles. This is explained by the fact that in research articles, it is important to establish field because the authors are invariably looking for a larger readership than the students, and therefore have to “sell” their research reports. Dissertations and theses are mainly of an academic interest; there is very little professional competition from colleagues and other members of the academic community, and it is generally considered more appropriate to define the scope of, or make claims for, the research (Bhatia, 1993, p.98).

In general, Bhatia shows that these differences are accountable for in terms of the differences in communicative contexts with which they are associated. This discussion by Bhatia is very illuminating for the present study, especially because it considers some of the differences and to some extent the motives for these differences identified in a specific section of theses and articles, i.e. the introduction. However, it is just a theoretical comment on the difference between two theoretical models and their subsequent applications. It needs substantiation by applying a systematic model of analysis to both text types that also takes into account the investigation of the content reflected in all the conventional sections of theses and articles. This is the aim of the present study.

Having covered the most important relevant elements of genre analysis, now we need to turn to the discussion of another line of research and theory that had an influence on the present study, the concepts of macrostructures, superstructures and propositions.

2.2.2.7. Macrostructures, Superstructures and Propositions

Another line of research which has greatly influenced the present study and helped in shaping the model of analysis I propose for the analysis of the semantic organizational pattern of theses and the articles derived from them is that developed by van Dijk (1977, 1980) and van Dijk and Kintsch (1983). The most influential notions I will be considering for my own research purposes are those of macrostructures, superstructures and propositions. A word of caution, however, is that although these notions reflect to a great extent my notions about texts and how they are formed, I am adapting and developing them in ways that might make them seem rather different from what van Dijk meant them to be. In the present section, therefore, I present the definition of these notions, and discuss how they influenced my line of thought in the present study, and how I incorporate them in my own model of analysis.

According to van Dijk (1980, p.27), macrostructures “are taken as *semantic* global structures(s) in

discourse". That means that they reflect the overall meaning and content of texts. The fact that they are the semantic representation of the summative content of a text reflects their analytical function as they "were designed to capture the intuitive notion of the 'gist' of a discourse" (van Dijk and Kintsch, 1983, p.52). For my own analytical purposes, the notion of a macrostructure is of great analytical value. This is mainly because it can help in handling the content of longish texts, like research articles and thesis chapters, in a more practical way. By producing the summative macrostructures of the two texts I need to explore, it becomes practically feasible to compare and contrast the content of both types of texts and hence decide whether the examples of these two related genres in my data vary in their content or not, and if so in what way they vary. It can also help in identifying and locating the linguistic realisations of the various semantic elements that constitute the summative macrostructure of the two related types of texts to be able to find further variations between them, not only on the content level, but on the level of the more detailed linguistic realisation of this content.

Another aspect of macrostructures that has also affected my thoughts about how text content is represented and in turn how it should be analysed and studied is the hierarchical nature of the semantic components of macrostructure. As van Dijk and Kintsch (1983) state,

a text can be reduced to its essential components in successive steps, resulting in a hierarchical macrostructure, with each higher level more condensed than the previous one. In a book, for instance, the top level of the macrostructure may simply be expressed by the title of the book, with the next level corresponding to some subjective tables of contents. Each chapter would then be broken down into subsections and sub-subsections, eventually arriving at the text-base itself. The text-base may be regarded as the lowest level of the macrostructure - the basis from which it evolves: Hence, theoretically, microstructures and macrostructures may "collapse" as in one-sentence discourses.

(van Dijk and Kintsch, 1983, pp.52-53)

The notion of a top level macrostructure made up of microstructures at lower levels has been adopted and adapted in my model of analysis which views the content of any text as being treatable in terms of different levels of informational structures that may reflect the manner by which readers skim texts to identify their global meaning and reread them to identify more detailed information about their overall

content. I assume that going through at least two or three of these levels, especially of longish texts, may be sufficient to grasp the most important semantic elements of the texts concerned, therefore the model of analysis I suggest for the analysis of the theses and articles investigated in this study may be represented by three main levels: the top level, middle level and bottom level. All of these hierarchical levels in the end constitute the holistic content of the text. This proposed view of the content of the text is evidently very much related to van Dijk's notion as represented above. This view also allows me to focus on the text's content at any of the levels separately and to draw comparisons and contrasts accordingly between the two types of texts investigated at these levels. In the present study I am mainly concerned with the investigation of the overall meaning reflected at the top and middle levels hoping to capture the global content expressed in the text. However, in many cases I need to refer to the more local content at the lower text base to supply the texture of the more global content of the upper levels. It should be noted that I have revised the label terms used by van Dijk to refer to the elements of these levels for reasons I will be discussing in the following section on superstructures. In general, however, the notion of macrostructure is incorporated by the present study and further adapted and developed in relation to the notions of superstructures and propositions which are discussed below.

If macrostructures are the global semantic structures of texts, superstructures are the "conventionalised (schematic structures) which provide the global 'form' for the macrostructural 'content' of a text" (van Dijk, 1980, p.127). As an illustrative example of what the difference is between macrostructures and superstructures as discussed by van Dijk, we may take the case of a narrative. Although narratives may have different content macrostructures that are unique to each one of them - one may be a dramatic telling of a love story as in the case of Jane Eyre or a spy narrative which is full of action and suspense as in the case of James Bond narratives - they may all share the same conventional schemata of a narrative which can be seen as including the categories of *orientation*, *complication*, *resolution*, *evaluation* and *coda* (Labov and Waletzky, 1967). That is, most narratives will have a beginning that introduces a certain

situation and then move to describe a problematic situation that seems to disturb the previous scene and which is eventually resolved and a conclusion and moral are drawn from it. Thus, while macrostructures are “content”-based structures, superstructures are the “form”-based structures through which this “content” is expressed. It is important to note that while macrostructures are very specific to each text as they represent its individual “content” structure, superstructures are likely to be shared by texts of the same genre as they are expected to have similar “form” structures.

A link could be made here between the notion of superstructures as discussed by van Dijk (1980) and rhetorical patterns like the *Problem-Solution* pattern introduced by Hoey (1983). Discourse or rhetorical patterns, like superstructures, consist of hierarchical sequences of categories. These categories appear to have, or to have been developed from, functional properties (van Dijk, 1980, p.127). It is clear that this is applicable to the *Problem-Solution* pattern as it has a sequence of categories - *Situation, Problem, Response, Solution* and *Evaluation* - which are functional in nature. In addition, van Dijk’s notion of superstructures is hierarchical like Hoey’s pattern as mentioned by Hoey himself (1983, p.60). However, van Dijk’s superstructure is much more elaborate and specific than Hoey’s pattern. For van Dijk, superstructures are applicable to specific types of text (see van Dijk’s schematic structures of narrative, argument, scholarly papers and news items, 1980, pp.116, 119 and 120). This is not the case with Hoey’s pattern which he believes is a general pattern that can be applied, with some modifications, to various types of texts in English. Another difference is the fact that Hoey’s pattern may be applicable to short texts or to parts of longer texts. In the case of van Dijk’s superstructures, the researcher is attempting to produce global patterns that incorporate the whole text, regardless of its length and without focusing on separate elements of the overall organisation. Furthermore, Hoey’s model is mainly concerned with the semantic relations holding between its various functional categories, while van Dijk’s emphasises further the hierarchical status of the various elements that make his superstructures. Due to the above variations between the two models, for the purposes of the present study, although I adopt the *Problem-Solution* model, or rather the *Question-Answer* model, I also attempt to intermarry it with the notion of

superstructure/macrostructure to expand my “formal” organisation pattern to cater for the analysis of the content of lengthy texts of the thesis chapters and research articles. I also focus on the different hierarchical levels of superstructures by splitting them into three levels - top, middle and bottom - as I have proposed for the content structure of texts earlier. The aim of this is to allow for greater clarity and precision in the analysis of the formal structure.

The relation between macrostructures and superstructures must not be only understood as a relation of difference as may be suggested by the above discussion. They are very much related and integrated as “superstructures of a specific kind are to be mapped onto the semantic macrostructure of discourse” (van Dijk, 1980, p.112). Superstructures make up the organisational slots of texts which are recognised by readers and writers of a specific text type and which are semantically realised in terms of the various instances of this specific text type by macrostructures which fill these organisational/functional slots. In other words, if the superstructure of a text is its skeleton which determines its global shape, the macrostructure is the meat that fleshes out this skeleton and gives it its unique individuality.

For the purposes of the present study, the notion of intermarriage between “form” and “content” as represented by superstructures and macrostructures is adopted. In fact, separate, but related, planes of analysis are proposed by my model of analysis to cater for the analysis of the overall “formal” pattern of text and its “content”. These are the *organisational plane* and the *semantic plane* which map onto each other, where the latter gives the semantic realisations of the former. This idea is more or less what is proposed by van Dijk (1980). In the present study, more focus is given to the analysis of the content of the two types of texts investigated, but this cannot be identified without specifying first the organisational slots for this content, especially because the two text types studied are conventional in nature and hence have their own distinct type of organisation which could be used to represent numerous semantic realisations. It should be noted, however, that the main focus of the present study is to study the content of the texts compared rather than the organisational pattern used to represent this content. I refer to this as

the “semantic organisation” of the text as it highlights the fact that the focus is on the meanings in the texts which are realised and examined in relation to the overall pattern of organisation that my model of analysis sets up as in principle common to all the texts in my data. Having provided specific functional categories for the overall formal superstructure of the two types of texts analysed, theses and research articles, it becomes much easier to locate the content that is expressed under each of these functional categories at the various levels in the various texts explored and then finally various summaries for these texts can be developed representing their overall semantic organisation to be used to compare and contrast the semantic organisational structure of the related texts. My focus is therefore on the differences in content rather than on the similarities in organisation.

One question that arises when we are considering the analysis of the semantic organisation of the two types of text under investigation in the present research is: What are the semantic units of analysis which can be used to analyse the “content” of these texts? The notion of *propositions* is the answer to this question. We need however to focus on what they represent and how they can help in identifying the differences between theses and the articles derived from them on the various levels of the content of the text.

According to Renkema (1993), “the concept “proposition” is taken from the field of philosophy and logic and is used in a general sense in discourse studies, namely, to denote the minimal unit of meaning” (Renkema, 1993, p.54). Propositions are “roughly the cognitive counterpart of a clause” (Callow and Callow, 1992) and hence include reference to a process, the participants involved in it and the other complementary information relevant to this minimal semantic message, using Halliday’s (1994) terms. To identify the semantic structure of texts, it is necessary to conduct a propositional analysis to find out the propositions that comprise the “gist” of the specific texts investigated. This is to be able to use these condensed versions representing the “gist” of the related texts to compare and contrast them in terms of their overall content. It must be noted that identification of the propositions is done in a way to reflect the

different levels of content which I have suggested earlier; top, middle and bottom. Thus, at the top level of comprehension, it is expected that the top propositions will be identified by attempting to recognise the semantic elements that comprise the top level organisation pattern. Typically, this may be done by extracting the information from a number of clauses and/or from the general understanding of the text to compose single propositions or a limited number of propositions that reflect the top level meaning(s) expressing the main global “gist” of the text. On the middle organisational level, further middle level propositions are identified that give more detail to the top level propositions. Again, these will be drawn from the reading and understanding of the various clauses in the text yet at a more detailed level. The propositions identified at this level, like that of the previous one, are still not expected to be equivalent to clause propositions. It is the bottom level propositions which are expected to coincide with propositions that are expressed by the actual clauses which make up the text base.

The identification of top level and middle level propositions in this study makes use of the “macrorules which can be used in order to trace *the* meaning structure of discourse (and) ... describe the procedures with which *a* meaning structure can be assigned” (Renkema, 1993, p.56). These rules, which are proposed by van Dijk (1980), include the rules of *deletion* (these work by eliminating those propositions which are not relevant for the interpretation of other propositions in the discourse), *generalisation* (these work by selecting or producing a more general proposition to represent a series of specific related propositions) and *construction* (these work by constructing one proposition from a number of propositions). Although these rules can help in specifying the top level and middle level propositions of a specific text, it is in practice difficult not to mix them up in the attempt to deduce propositions of texts and thus it is sometimes impossible to decide how propositions were arrived at by singling out one specific rule for the process. Thus, for my own purposes, I am not concerned in detail with how the propositions were derived but I am mainly interested in the content they reflect at the levels explored in this study, the top and middle levels. However, to be able to see how I used these rules to extract the summaries of the various elements of the top and middle semantic organisation levels of the texts

explored, theses and articles, I give examples of the process in appendix 4. It should be noted that the way I use them to extract the propositions that summarise the top semantic elements of the texts is many ways different from the way van Dijk and Kintsch (1983) used them. This is mainly because in attempting to identify/extract the top elements I use them in a top-bottom manner working down from the need to find out in very long texts propositions that could be eligible to represent the summative propositions of the top elements investigated. In the case of van Dijk and Kintsch (1983), they used the rules in a bottom-up manner working their way upward as they investigated the propositions that make the base of the text and attempted to extract from these propositions representatives of the summary of the whole text. Furthermore, whereas I depend on other ways to identify and extract the summative propositions of the elements explored, like using key lexical items and relating the content of related parts of the two texts explored, the way van Dijk and Kintsch used the rules originally does not explicitly include the use of these other methods. However, my application of these rules in the analysis of the middle level elements is more closely related to the way in which van Dijk and Kintsch originally used these rules. This is mainly because in this analysis I am working more closely with the actual propositions that compose the base of the text in a more or less a bottom-up manner rather than a top-down manner.

To avoid the confusion that may result from the use of the term "structure" in dealing with the semantic aspect of texts, I refer to the macrostructure of the text in terms of propositions. Hence, the top content level structure will be represented by "top level propositions" which will be the most condensed and representative content of the text. Lower down the scale, we can identify the "middle level propositions" of the text which hierarchically constitute the more detailed level of information expressed below the top level propositions and which semantically realise the formal middle level structure of the text. At the bottom level, we can identify "bottom level propositions" which may be equated with the propositions actually expressed in the text and which make up the text base. In general, these different types of propositions are used as analytical tools to simplify the very extensive content presented in the data and to allow for the extraction of "summaries" of paired texts and in turn

allow for the comparison and the contrast of these related texts in terms of their overall content structure and expression. However, in most cases in reporting the findings of this study I will attempt to present examples extracted from the actual texts analysed, rather than from the summaries of these texts in order to be able to show, not only the differences between the texts in terms of their content, but also in terms of the linguistic realisations of this content. (For a full example of the propositional analysis of the data explored see end of chapter 4).

In conclusion, the notions of superstructures, macrostructures and propositions which are introduced and discussed by van Dijk are incorporated and used extensively in the present study, but with some modifications. As mentioned already, these modifications are mainly related to the different ways in which I represent the macrostructure of the texts explored and apply the rules that they suggest for the extraction of the propositions that represent the semantic elements of this macrostructure. I also attempt to marry the macrostructure of research articles suggested by van Dijk (1980) to the Problem-Solution/Question-Answer model discussed by Hoey (1983, 1986). Using the more flexible elements suggested by Hoey (1983) allows the developed pattern to capture the more overall functional categories that make the top level of the two types of text explored. At the same time the pattern is capable of capturing the more specific functional categories that represent the more detailed categories of the top functional categories as van Dijk's macrostructure does. On the other hand, the rules used by van Dijk and Kintsch (1983) were used in a slightly different manner in the present study because they were applied for different purposes. Overall, the main motive for these modifications and elaborations in using the notions of macrostructures, propositions and the rules for extracting them is to ensure the development of a simple, yet clear, model of analysis based on these notions, which is easy to apply to the texts investigated in the present research in a way that reflects how I believe these types of related texts are processed by readers and in turn how they could be modified by writers.

Now that we have briefly covered the notions of macrostructure, superstructure and proposition I move to discuss another line of research that has influenced the present study. This is systemic-functional grammar and its analytical tools for exploring written texts.

2.2.2.8. Systemic Functional Grammar

Another school of analysis which has affected the present work is the school of systemic functional grammar as represented by Halliday (1994). The present study has been affected both by the general principles of Halliday's approach to language understanding and the models of text analysis which he proposes.

If we consider the theoretical influence of Halliday's approach, it should be noted that the present work, following Halliday, views language as a means by which writers/speakers express various meanings and perform different functions. According to Halliday, language performs three *metafunctions* all at the same time. These are the *experiential*, the *interpersonal* and the *textual*. Thus, not only can language help its users to represent the experiences they have in the real world or in the imaginary world in their minds, but it can also help them reflect their relations with other people and maintain these relations. In addition, language can be used to show users how they organise their ideas while passing on a message and link these to other ideas and messages around them. In the present study, this notion of the multiplicity of language functions is adopted. However, I should note here that I focus mainly on the investigation of the experiential aspect of the language as I am more concerned with the investigation of the difference between related texts in terms of their content as expressed by their main propositions. This is implied from the use of van Dijk's models of superstructures and macrostructures. However, this does not exclude occasional reference to the variations that writers make in relation to the interpersonal and the textual aspects as well. These aspects, however, are referred to only as appropriate and only when propositions are equated with the actual clauses that are expressed by the writer of the texts.

Another notion which has influenced the present study is Halliday's notion that meanings, or functions, are expressed by language users by selecting the linguistic forms suitable to realise these meanings. These linguistic forms which are available to users as linguistic options (i.e. the lexical and structural possibilities that the language system offers for use) (Thompson, 1996) are decided by the *context of situation* in which they are used. This notion is applicable to the kind of text types investigated in the present study. Both types of texts are produced by writers who are influenced by a specific *context of situation* which makes them present their meanings by selecting specific linguistic forms from a variety of linguistic options, to realise these meanings. It is anticipated that the variation between the *context of situation* of both types of text will be reflected in the variations in the linguistic choices made by the writer to express the three metafunctions of the texts produced.

From the analytical point of view, Halliday's approach to text analysis is very useful in identifying the various linguistic variations between theses and articles and explaining them in terms of the variations between the language functions each text is performing. In order to give an overview of the models of analysis adopted from Halliday to investigate these functions in the present study, it is necessary to discuss the various *systems* of choice available to language users under these metafunctions as represented by the Hallidayan approach. According to Halliday (1994), each type of metafunction is realised by a number of *systems* of choice from the grammar of the language. Thus, the *experiential* function of language is realised by a number of choices under the systems of *transitivity* and *ergativity*. In the case of the analysis of the *interpersonal* function, the formal choices are drawn from the systems of *mood*, *modality*, and *evaluation*. The *textual* function is realised by a set of choices from the systems of *thematization* and *cohesion*. In the present study, theses and the articles derived from them are analysed using the analytical models proposed by Halliday in a very simplified form and only at certain points. The main systems that are referred to occasionally during the analysis of the texts are the systems of *transitivity*, *modality*, *thematization* and *lexical cohesion*.

The choice of these systems is due to the expectation that writers when they transform their theses into articles are likely to change in the way they repeat the research experience with all its events, the participants involved in them (transitivity), the way they represent their responsibility and commitment to the claims they make (modality), the positioning of the linguistic elements making up their main topics in order to change the organisation of the writer's ideas in the text (thematisation) and the way lexical elements help in linking the various parts of the texts (lexical cohesion). As I have mentioned earlier these systems are to be explored in the present study whenever it is appropriate and the data allow for it. Now I give a brief account of Halliday's models of analysis and the linguistic choices available under these main four systems and which help realise the three metafunctions of texts.

a. Transitivity

This system allows the writer to express his/her ideas about the world around him/her or that in his/her mind. According to Thompson (1996),

language comprises a set of resources for referring to entities in the world and the ways in which those entities act on or relate to each other. At the simplest level, language reflects our view of the world as consisting of "goings on" (verbs) involving things (nouns) which may have attributes (adjectives) and which go on against background details of place, time, manner, etc. (Adverbials).
(Thompson, 1996, p.76)

In the present investigation, it will be important to identify whether propositions in articles vary from those of the thesis in the way they represent the various entities involved in the research experience recounted, including their *processes*, *participants*, and *circumstances*. According to Halliday (1994), *processes* may be classified into a number of types, each expressing a certain function realised by specific structural forms of the verb. Such processes include the *material*, *mental*, *relational*, *verbal*, *behavioural*, and *existential* processes. Each type of process in turn decides the roles the *participants* involved in it will have. Thus, if the clause representing a specific world experience is realised by a *material* process realised by a verb like the verb "eat", the participants involved in such a process will take the roles of an *actor* who is responsible for "doing" the act of "eating", and the *goal* which is the participant "to which" the same act has been done. Any further qualification the writer chooses to use to represent the

environment of the act of “eating” would be considered circumstance. The following example shows this:

John	ate	the apple	quickly
Actor	Process	Goal	Circumstance

In the present study, I am not interested in analysing the various entities, actions and circumstances that represent all the experiences expressed in all the propositions in theses and then their articles, because this would be a tremendous task beyond the capacity of the present study. Instead, I am only interested in making a data-driven analysis of some of the significant propositions that will show the variation between the two types of texts explored by referring to the expression of the research experience they relate including the consideration of the participants, the processes and the circumstances of these experiences.

b. Modality

In the case of the system of modality the focus is on the relation writers set up with readers as well as their attitudes towards what they say in the light of what their readers expect from them. Thus, through the modality system writers can, as mentioned by Thompson (1996), show their *commitment* and *responsibility*. By *commitment*, we mean:

... the degree to which the speaker commits him/herself to the validity of what s/he is saying. For example, in an academic paper a writer has to judge very carefully the extent to which s/he advances a claim as certain or as still open to doubt; while in giving advice a speaker has to judge very carefully the extent to which s/he appears to be putting pressure on the other person.
(Thompson, 1996, pp.59-60)

It is clear from the quotation given above about academic papers that modality as a system is often exploited by academic writers in attempting to influence readers' opinions in the way they present their claims. This system of choice could be realised by a number of lexico-grammatical elements that show the varied degrees of commitment expressed by writers. These degrees vary from high, to median and

then to low as illustrated in the following three examples of advancing a claim for readers to consider.

- a) This is certainly true. (High)
- b) This is probably true (Median)
- c) This is possibly true (Low)

Whereas the first example reveals a strong commitment on the part of the writer to claiming that a certain phenomenon happens, the following two claims lower the degree of the commitment of the writer by using the specific lexico-grammatical elements “probably” and “possibly”. This use of probability and possibility adverbs indicates the varied stance of the writer in terms of the probability and possibility of the claims s/he is making to her/his readers.

On the other hand, modality signals may help writers express their acceptance of their *responsibility* for the attitudes they express in their texts. Thus, research writers may represent new ideas in a way that makes it clear that they are responsible for their points of view (subjective modality). Sometimes, however, they may choose to down play their responsibility for a certain point of view by attempting to objectivize it. These two extremes can be done explicitly or implicitly. The following examples illustrate these different possibilities of realising modal responsibility, as represented by Thompson (1996, p.62):

	MODALISATION	MODULATION
Explicit Subjective	<i>I'm sure</i> we should sell this place	<i>I advise</i> you not to drink it
Implicit Subjective	She <i>might</i> have written to me	<i>I mustn't</i> go there any more
Implicit Objective	We <i>probably</i> won't repay it	A cathedral is <i>supposed</i> to be old
Explicit Objective	<i>It's likely</i> that they've heard by now	<i>It's essential</i> that you leave at once.

In the present study, I consider occasionally how writers express their claims indicating the level of their commitment to them as well as how far they overtly reflect their responsibility for their views. This is important to investigate in the two types of texts compared because they are texts in which writers put forward various claims and represent a variety of points of view. To develop both, writers will need to be careful in the way they realise the system of modality in each one of them and be aware of the variations that are likely to be encountered in this situation. Investigation of the variation in relation to the ways in which writers show their commitment and responsibility is likely to show some of the differences between the text types. These variations will be influenced by the fact that each type of text has a different “immediate audience” to which research writers will be putting forward their claims and whose varying status in relation to the writer may affect the way in which writers are likely to present their claims and opinions using more variable degrees of commitment and responsibility. A previous study (Mohamed, 1993) did not show great differences on this specific point, yet this point is still pursued in order to investigate it in relation to larger and more varied data to check the validity of the earlier findings. However, the analysis of the modality system, like that of the transitivity system, is data-driven rather than a complete analysis of all propositions in the texts under investigation. Representative examples that may show differences between the two types of texts are located in the texts and analysed separately without having to go through the tremendous task of analysing all propositions. Such examples typically appear in the final sections of the texts explored where writers present and defend new claims based on their research findings, hence the need to use modality/modulation expressions.

c. Thematisation

One of the important systems of language which help writers in organising their ideas within the overall content structure of the text is that of *Thematisation*. Thematisation is concerned with the selection of lexical or grammatical elements to be “the starting-point” of clauses (Halliday, 1994). In English, the “starting-points” of sentences and clauses mostly decide what the statement or clause is about and can help in creating coherence within the various parts of a text. According to Thompson (1996), four main

functions can be identified for themes in texts. These include:

1. Signalling the **maintenance or progression** of “what the text is about” at that point ... maintenance is done by keeping to the same Theme as the preceding clause, progression often by selecting a constituent from the preceding Rheme (the end point of the clause) ...

2. Specifying or changing the **framework** for the interpretation of the following clause (or clauses) - the wording here is taken from Fries (1995). This is mostly done by the choice of marked Theme ...

3. Signalling the **boundaries** of sections in the text. This is often done by changing from one type of Theme choice to another ...

4. Signalling what the speaker thinks is a **viable/ useful/ important starting point**. This is done repeatedly choosing the same element to appear in Theme (A particular participant, the speaker’s evaluation, elements which signal interaction with the hearer, etc.)...

(Thompson, 1996, p.141)

In the present study, it is useful to explore how theses and articles vary in the way writers organise their messages. It is expected that some variations may be displayed in the thematisation of such texts or parts of these texts due to the writers’ attempt to reframe their messages differently, especially at the beginning and the end of the text, to suit the varying context of situation they are working within. It could also be triggered by writers’ choice to select other “starting-points” for their central propositions which appear more suitable for the change in the direction of their line of thought in both texts.

Again, it must be noted that a full analysis of all the themes in the related explored genres is not the aim of the present investigation. Instead, analysis of thematisation is carried out on selected parts of the theses from the chapters/sections from which articles are drawn as well as pairs of clauses, especially those central to the delivery of the main message of the text (e.g. clauses representing the research Question posed and the Answers proposed), in order to show the changes writers make in their selection of the elements they consider important starting points in their messages and how these varied starting points help in redirecting the line of thought in both types of text.

d. Lexical Cohesion

The final system of choice that will be exploited in the present study, yet with great modification, from the Systemic Functional Linguistic school of analysis, is that of lexical cohesion. According to Halliday (1994, chapter 9), cohesion in English is created in four ways: reference, ellipsis (including substitution), conjunctions and lexical organisation. Being interested in the semantics, rather than the purely grammatical aspects, of texts, the present study focuses on lexical items as information carriers and their role in linking different parts of texts. In fact, although Halliday refers to lexical cohesion and its various forms (i.e. repetition, synonymy and collocation) as one of the systems writers depend on to organise and link their ideas and meanings in texts, he seems to give it less consideration than grammatical cohesion (i.e. linking parts of texts using reference, ellipsis and conjunction). Since the present study is more concerned with the investigation of the semantic variations between theses and articles as well as all the language realisations that show these variations, I focus attention on the study of lexical cohesion, as presented briefly by Halliday, but drawing more on the more extensive treatment of the same linguistic feature provided by Hoey (1991) who bases his insights on previous work by Hasan (1984), Winter (1974, 1979) and Philips (1985).

According to Hoey (1991), lexical cohesion does contribute importantly to a text's organisation. Thus, in order to identify the main pattern of organisation in any text, it is essential to identify the lexical patterns created by *repeating* lexical items with variations in form among pairs of sentences. These repeated lexical items act as fundamental units of analysis and can be classified under the following headings identified and classified by Hoey (1991, p.83):

Simple lexical repetition

Complex lexical repetition

Simple paraphrase

Complex paraphrase

Substitution

Co-reference

Ellipsis

Deixis

In fact, one of the pilot studies (Mohamed, 1998) that I made as part of identifying the most suitable model of analysis for the investigation of my research questions focused on the exploration of this particular type of lexical repetition. I believed that the differences between the two types of texts explored could perhaps be identified by applying the principles of Hoey's lexical patterning which he proposes to be used to produce coherent summaries of any well-formed texts. I therefore attempted to use it to produce summaries of the related texts which I could then compare to see how far they matched or differed from each other in their 'central sentences' (Hoey, 1991, p.113). Hoey's model can in principle be adapted for the use of computational methods, as it depends on the calculation of the number of links between any two sentences which in turn creates a lexical bond and in turn builds a net of lexical relations that can be represented visually by a matrix. Therefore, an attempt was made to use a computer program (Abridge) that had already been developed and used elsewhere (Peng, 1994) to simulate Hoey's model. This program, which could process longish texts, unlike the case with the shortish texts Hoey used in his analysis in his book *Patterns of Lexis in Text*, was expected, after being modified slightly to suit my research situation, to help in comparing and contrasting both types of texts in terms of their lexical linkage and bondage as well as produce summaries (abridgements) of both texts to use for further analysis of their content. However, due to various technical problems with the program and with its application to very long texts, it was not possible to test the validity of this method of analysis and its contribution in identifying the differences between the two types of texts I am exploring.

In the present study, therefore, the exploration of lexical items was mainly done as appropriate in order to show how the differences between theses and articles are also manifested in the way writers

choose to represent their content using varying lexical items and lexical patterns. In particular this writer choice is investigated in the way the top and middle level propositions in the introduction and the conclusion sections are presented lexically to reflect different content and purpose.

Up to this point, this chapter has attempted to give an overview of the approaches of analysis applied to written *texts* that have influenced the present study. In the following section, I turn to the discussion of the most relevant studies on the second dimension of the present work, that is *writing processes*.

2.3. Writing Processes

In the present section I attempt to give an overview of the previous studies on the composing processes of writing texts which are relevant and useful for consideration in relation to the second dimension of my research project, *writing processes*. In particular, I focus on the main research designs used to explore the writing process of various text types, especially those of the theses and articles, and their advantages and problems as well as the main findings of such research studies on the process of writing by both experienced and inexperienced writers in L1 and L2.

2.3.1. Research Designs Used to Study the Writing Process

As noted earlier, the composing process can be studied either by exploring the *products* of writing or investigating the *processes* followed in producing these products. In the present study, both research approaches are used in order to gain a more complete picture of what writers do in the process of writing research articles from theses as a specific writing task, in particular the kind of changes they make during this specific task, and the various factors affecting it.

As a first method, product-oriented data - i.e. the final written texts produced by the writers - can be studied to infer the processes writers use in writing their texts. In the present study, attention is paid to the investigation of the actual texts produced and noting their main features which indicate the way in which

they were written. In particular, investigation of the variations between the interrelated texts aims to infer the strategies and tactics that writers use to transform one type of text into another.

On the other hand, if we consider the second approach of using process-oriented data, there are a number of research techniques that can be used to collect data from writers about their writing processes and in turn help to confirm or disconfirm the results of the investigation of the product analysis and the kind of processes inferred from the analyses of texts. Such techniques include the investigation of the multiple drafts written prior to the final written texts. This is done by comparing and contrasting all the drafts one research academic writer has produced before the production of his/her research paper which was published later. Further techniques include direct observation, audio-taping and videotaping protocols based on composing-aloud sessions, and retrospective accounts of composing drawn from interviews and questionnaires (see 2.3.2 below for discussion of representative examples of such studies). Although all these techniques can give very valuable data for investigation, some of them are more practical and beneficial than others. In the present study, the techniques of using retrospective interviews and questionnaires are used to overcome the inherent problems of using observations and protocols. The use of observation is not very practical since the process of producing theses as well as the article derived from it is likely to take too long a time (from three to six years) to allow for direct observation. In addition, the artificiality of using composing-aloud protocols and the pressure they may place on the writers themselves (Holmes and Ramos, 1991) lessens the value of this particular method in the present study.

It is essential to consider the advantages and disadvantages of using questionnaires and interviews which are used in the present study to get the maximum benefit of their use. If we consider questionnaires, it is clear that such a method of collecting data is advantageous in being easy to produce, use and analyse. However, there is a danger of producing unclear, too technical and biased questionnaires if researchers are not careful. According to Belson (1981) and Courtenay (1978), questionnaires must be clear and easy

to analyse by lending themselves to qualitative and quantitative analysis. Belson notes the need to pilot questionnaires before using them and to use a "question-testing method" where wording of questions are checked with informants after responding to questionnaires. In the present research, attention was paid to the production and wording of questions which were piloted and revised well before using them. Another factor that needs to be considered is the respondents to the questionnaire. Great care was taken to ensure that the informants selected to answer these questionnaires are clear about the aim of the questionnaire and how they should be responding to it and that they would help in yielding the needed information about the process of writing articles from theses as perceived by experienced and non-experienced writers. This point is developed further in section 3.3.1. on the selection of research informants.

If we consider, on the other hand, the use of retrospective interviews, it will be clear that such a research instrument has the advantage of being accessible, easy to conduct, and fruitful in the type of outcome it may lead to. In addition, researchers can easily retain copies of interviews on audio-tapes for reference. However, interviews are usually limited in time and scope. They can easily go wrong if interviewees and interviewers digress, get distracted by side issues or leave questions with incomplete answers. There is also the danger of respondents misunderstanding what the questions are all about, or the temptation of saying "what one should do" rather than what "has actually been done" (Cohen, 1987). Keeping all this in mind, I attempted to use specific questions in the retrospective interviews conducted to elicit from the writers of theses and articles the changes they made while transforming the thesis into an article and the factors affecting these changes. However, the interviewees were allowed freedom to add any comments they had on the topics discussed since this can result in valuable insights that could be helpful in understanding the process of transformation investigated on the whole, and that would otherwise be missed if respondents are not allowed to freely express their comments on this process. This made the interview a semi-structured one which was meant to overcome the limitations of the rigidity and narrowness of view of structured interviews as well as the lack of focus of totally free interviews. The fact that the interviewees were expert writers and established scholars in their fields added to the possibility

that the outcome of the interviews would be representative enough to draw sensible conclusions from it. This reliability was increased by having two interviews with the same informants at times distant from one another.

Considering the types of writing tasks investigated in previous studies on the process of writing, it becomes clear that they differed in a number of ways. They differed in terms of their number (e.g. researchers chose to focus on only one task, while others focused on many more), the types of texts produced out of these writing tasks (e.g. essays, narratives, research articles), the topic of such texts (e.g. personal/ impersonal) and the time allotted for completing the writing task (e.g. half an hour, no time limit) (Kraples, 1990, pp.48-49). The present study, however, focuses on one type of task only, involving the production of two written texts, theses and articles, both written on similar or related topics as one is the outcome of the other, and the time needed to produce them is not taken into account. Yet the issue of when they were written in relation to each other was important to consider while selecting the data and afterwards in attempting to explain the outcome of the questionnaires by experienced and non-experienced writers, as this factor had an effect on the number and type of changes made in the articles.

Having considered briefly the different research designs used to study the process of writing in general, and those used in this study in particular, I can now move to report the various relevant studies which have employed the above research designs and discuss their most relevant findings in relation to the present investigation.

2.3.2. Previous Studies on the Process of Writing

For the purposes of clarity, it seems sensible to give an account of the most relevant studies on the process of writing in L1 by English native writers and then to move to those undertaken in L2 by non-natives writing in English. In both cases, reference to studies on skilled and unskilled writers and

studies on native and non-native writers are discussed as a means of bringing the studies on the processes of writing in L1 and L2 together to show how they reflect similarities or variations between the processes of writing in English by experienced and non-experienced writers and native and non-native writers. Throughout this account, I also attempt to link the present study to these previous studies and consider how much they have influenced it.

2.3.2.1. Studies on the Process of Writing in L1

Probably the most influential study carried out on the process of writing English as a first language is that conducted by Flower and Hayes (1981). On the basis of their think-aloud protocols, Flower and Hayes managed to set up a model of description of the process of writing consisting of three parts. The first one is the task environment, which includes all the external elements that influence the writing tasks (e.g. the goal of the text, the genre, the text so far). The second part includes the writer's knowledge of the topic, audience, text type conventions, grammar and writing plans. The third part is the writing process proper. According to Flower and Hayes, this consists of the *planning* process, the *sentence generation* process, and finally the *revision* process. Although this model is a very good starting point for the consideration of the various elements of the writing process as well as the factors that influence it, it has been criticised for being "too general to serve as a basis for scientific research" (Renkema, 1993, p.70). For the purposes of the present study, this model is not, therefore, applied in investigating the process of the specific task of transforming theses into articles. However, the general elements of audience, knowledge of topic and genre, planning, revision and the like are incorporated as very useful elements to consider in investigating the process of writing identified in the present research. Another useful aspect of this study is the fact that it managed to show that inexperienced writers, in this case children, do not plan their writing carefully like older and more experienced writers. This fact has been confirmed by other studies like that done by Bereiter and Scardamalia (1987). Like Flower and Hayes (1981), they also found that skilled writers have new ideas which are about 60% rooted in the rhetorical domain, while unskilled writers produce new ideas which are about 70% rooted in the content of the text developed. This meant that whereas

experienced writers care about the way ideas are organised in the text, inexperienced ones focus more on the content and pay less attention to planning this content. Moreover, Flower and Hayes (1981) found that immature writers tend to delay or even ignore the process of revision more than mature writers. This again is another significant finding which is explored in the present study. In addition, Bereiter and Scardamalia (1987) observed that more experienced writers are also more aware of the difficulty of the writing task than younger ones. They also note that ideas are sometimes generated by the act of writing. On the basis of these observations, Bereiter and Scardamalia produced more detailed and complex models, one for the writing process of less experienced writers (the knowledge-telling model), and the other for more experienced ones (the knowledge-transforming model). In short, the first model focuses more on the content produced, whereas the second focuses on the rhetorical aspect of writing in addition to the content. The most interesting thing about the “knowledge-transforming model” is that it reflects a problem-solving process. For Bereiter and Scardamalia, the act of writing becomes a *problem* to which writers must find a *solution*. Thus writers tend to ask themselves questions like “What should I write (content)?” and “How can I write it (rhetorical structure)?” Having answered these questions by going back to their content and discourse knowledge, the writers become able to solve their writing problem. It is interesting that this study explains the writing process by referring to a model reflecting a *Problem-Solution; Question/Answer* process which I have already expected to be working, yet considering the texts as products. This suggests the possibility of intermarrying the model for analysing texts and that of the process followed in producing the same texts. This point is to be picked up later in chapter 8 on the relation between text analyses and the outcome of the investigation of perceptions of expert writers of the processes of writing followed in transforming the texts explored. In addition, the interest in differentiating between skilled and unskilled writers using L1 is useful for the present study which is motivated to investigate the transformation process of writing articles from theses by a need to assist inexperienced writers by identifying how expert writers go about this process. It was anticipated that the feature of planning is one which expert writers are aware of and which has an effect on their success in producing acceptable written texts in contrast with inexperienced writers.

2.3.2.2. Studies on the Process of Writing in L2

Unlike studies conducted on L1 writers, these studies normally investigate the writing of adult students (undergraduates and postgraduates) and how they study English writing to pass their exams and get their degrees. Hence, the findings of these studies are even more relevant to the present study than those mentioned in the earlier section, which were mainly based on the study of children's processes of writing.

Many of the studies on the process of writing in L2 focus on effective and ineffective behaviours in writing specific tasks (e.g. Chelala, 1981; Jones, 1982; Zamel, 1983; Raimes, 1985; Cumming, 1987; White, 1988; Friedlander, 1990; White and Arndt, 1991; Grabe and Kaplan, 1996). One of the most important findings of these studies is that a lack of competence in writing in English results from a lack of composing competence rather than from the lack of linguistic competence. Hence, writers writing in L2 may be proficient in the English language, yet their written productions may still be poor in quality. This was very true in the case of the studies of Zamel (1982, 1983), who was interested in exploring the writings of "skilled" and "unskilled" writers at university level by going through the multiple drafts of the students or by directly observing them during their writing tasks. She managed to show that skilled writers "clearly understand what writing entails" (1983, p.180) and therefore tend to produce better organised and revised texts than inexperienced writers who surprisingly do not seem to consider writing problematic at all and tend to ignore the idea of organising or revising their texts as this is considered unnecessary. This finding is potentially relevant to the present study which aims to identify the variations between expert and novice research writers in their perceptions of the writing and revision processes entailed in turning a thesis into an article as well as what they consider to be the changes writers make in this process and the factors that affect these changes. This notion of the lack of awareness of the various aspects mentioned above on the part of novice writers may be one of the main causes of their writing problems in undergoing this process of transformation of texts.

If we consider the studies carried out to investigate the variations between writing L1 and L2, relevant studies include those of Jacobs (1982), Zamel (1982), Lay (1982), Raimes (1985, 1987) and Arndt (1987). In Lay's study, which was conducted on 4 Chinese adult students writing in English as a second language, it was found that non-native writers tend to use native language switches during their writing and this often causes problems in writing. He also found that some topics lead to more language switches than others. This notion of the transfer of first language writing processes to second language writing processes is confirmed by other studies on Japanese and Arabic speakers (Burtoff, 1983), on Spanish and English writers (Gaskill, 1986; Jones and Tetroe, 1987). Zamel (1983) found that there is, however, no difference between the writing processes followed in L1 and L2. This in fact contradicts what previous studies have shown as Raimes's (1985) study confirms the presence of differences in what L1 and L2 writers write and revise. Some of these differences are similar to the ones identified by Flower and Hayes (1981), that is the ideas of the lack of planning, revising and editing in the L2 writers' acts of composing. Raimes also shows that there are even differences in the process of writing among inexperienced writers as well. This contradiction between the findings of Raimes and Zamel is typical of many of the findings in the field of writing processes research. This is because many of these studies are inevitably hampered by the complexity and limitation of the number of case studies investigated by researchers and their attempt to generalise from their results on these small scale studies. However, the finding of these studies are illuminating as they throw some light on important issues which the present study needs to consider. As with Zamel's results (1983), I anticipate that knowledge of the second language will not be the most important factor in the difficulties writers may have in deriving an article from a thesis, but rather the knowledge of the conventions of this process of transformation. On the other hand, although variation between the perceptions of the process followed to transform the two types of texts explored and the changes made in this process by native and non-native writers is not explored and discussed in the present research due to practical constraints that will be further explained in chapter 3, I am concerned with investigating the perceptions of these processes of transformation by expert and novice research

writers, both from the humanities and scientific fields. I am also concerned with what they believe to be the factors that influence these processes.

One final point that needs to be discussed here is the fact that none of the studies mentioned above on the exploration of writing processes in L1 and L2 explore the writing process involved in transforming one text into another or even the process of writing a thesis or a research article. It is true that some later studies have attempted to investigate the process of publishing articles and the factors that influence it (e.g. Gosden, 1995 and Flowerdew, 2000), yet none of these studies considered the process of deriving one text from another. This is perhaps due to the fact that the processes involved in this activity are far more complex than those involved in writing shorter texts such as essays and reports, or publishing an article. Another problem with most of these studies is that they tend to generalise from the study of a single type of text to the whole process of writing in L1 and L2. Hence, although they may identify the type of text produced, they typically use the findings of this research to interpret and describe the overall process of writing in general, and in the process less focus is given to the specific writing task involved.

The only references that I came across that referred to the same process, but which seem to be mainly writings based on the personal experience of their writers and not based on systematic research studies, were handbooks and manuals that were meant to give novice writers some guidelines about writing the different types of texts that academic writers need to produce in all academic fields (e.g. Holmes, 1976; Parsons, 1973; and Preece, 1994). One very good example of these manuals is Luey's *Handbook for Academic Authors* (1995) which dedicates a small section to discussing the issue of using dissertations to produce other types of texts. According to Luey (1995),

Many junior faculty members feeling pressure to publish see their dissertations as the most likely place to start. At first glance, this seems to be sound reasoning.
(Luey, 1995, p.31)

He believes, as I myself believe, that it is a source that could be reproduced only after serious revision.

Thus, in his chapter on revising dissertations (chapter 3, pp.31-44), he discusses the issue of transforming dissertations into books and articles. Although Luey focuses most of his attention on the process of producing a book from a dissertation and discusses in detail the differences between the two text types, he dedicates a small section to the idea of “mining” dissertations for articles. In particular he discusses the possibility of producing different types of articles from dissertations before they are actually written, while they are being written, and after finishing them. He also specifies in particular the type of materials/parts of dissertations that could be turned into articles. These same issues that Luey discusses and gives guidelines about are explored in my study of the perceptions of novice and expert writers while investigating the process of transforming theses into articles (see questionnaire given to expert and novice writers in appendix 6). In addition, the present study seems to take the same line that he takes by attempting to find evidence that this process is not a mere process of copying and therefore writers, as he strongly suggests, should not “regard the search for articles as a mere red-pencil effort” as they must consider the dissertation “as a source of ideas as well as words”. In the present study I attempt to show that the writing of an article from a thesis in many cases entails the production of a text that has ideas which are not usually pursued in the original text from which it developed.

In order to avoid the problems and the limitations of the studies on investigating the process of writing in L1 and L2 mentioned above, and to support the comments of experienced academic writers producing manuals for novice writers, the present study, in its attempt to identify the main variations writers make in such a process and the factors that influence them, focuses on the investigation of the perceptions of expert writers who were actually involved in the process of transforming theses into articles as well as those of novice writers who are expected to go through the same process in the future. This is to be able to confirm or disconfirm the changes expert writers make and which have been identified from the analyses of the texts. It also aims to get a better idea about the factors that may influence these changes.

Having reviewed the main research studies that have affected our study of the second dimension of this study, *writing processes*, I turn in the following chapter to the report of the data explored and the methods used to investigate them.

CHAPTER THREE: DATA AND METHODOLOGY

3.1. Introduction

Having covered the basic background necessary to position the present study within the wider area of research and general theoretical trends affecting the analysis of the two academic written text-types and writing processes investigated, the present chapter aims to give an overview of the data selected for investigation, the criteria for selecting these texts, the type of analyses applied to the data and the focus of these specific analyses (section 3.2.). The chapter also describes the informants selected for the study of the perceptions of expert and non-expert writers about the process of transforming theses into articles, the tool used to investigate their perceptions and the means by which it was developed, piloted and finally used (section 3.3.). The two case studies followed up from the group of the expert writers who have produced part of the data explored are also described (section 3.3.).

3.2. Text Description and Selection

The present study needed to identify a number of criteria for the selection of the specific type of data to be investigated. For this purpose, three main criteria for selection of the texts were set up. These are discussed below in detail.

3.2.1. Number and Features of the Selected Texts

The fact that the texts investigated, both theses and articles, share daunting sizes, and that many articles could be produced from a single thesis, made it practically very difficult to investigate a large number of theses and the articles published from them. Thus, a decision was made to focus on a manageable number of theses and their articles in order to allow for a close investigation of these types of texts and the variations between them. Hence, this study aimed to explore texts in depth, rather than breadth. Ten theses were selected for analysis, out of which thirty three articles were published. See appendix 1 for a full list of the theses and articles investigated and their codes as used in the present thesis. The code system I use is explained in section 3.2.2. below.

At the same time, I had to ensure that the selected theses and their articles are representative exemplars of the kind of theses and articles produced in their fields so that reasonably valid general conclusions could be drawn from the findings at the end. To make sure that the selected data are representative of the types of texts from which they were drawn, it was essential to have a quick survey of other theses and decide whether the texts selected are typical in shape and organisation of the rest of the theses available in the same area of study. Further confirmation of this was made by referring back to the “handbook” or guide to academic researchers produced by the university for its postgraduate students and the guidelines for contributors to journals to ensure that the data selected follow the general guidelines set for their production in their own specific fields. As a complementary check, experts in the field, including the writers of the selected texts themselves, were asked if the data selected are typical of those usually produced in normal circumstances in their fields. Texts which proved to be typical in their own fields were selected for analysis.

Another feature that needed to be present in the selected data is that the texts chosen for investigation should be successful representatives of the genre they represent, whether a thesis or a research article. Success is a feature that it is necessary to consider so that the conclusions drawn from the study would subsequently help in producing further successful transformations of research theses into publishable articles. The main criteria for identifying successful theses and research articles set for the present investigation are discussed below.

3.2.1.1. Theses

Theses are considered successful if:

- a. they have been thoroughly checked and examined by experts in their field and granted the status of being acceptable pieces of research. It is especially important that they have been accepted for the degree of PhD after any final revisions depending on the comments and suggestions of the examiners.

b. they have managed to produce articles that are published in respectable international journals. Those which have not produced any articles, or produced only locally published ones, were not considered. The more international articles the thesis has produced, the more likely that it is successful in nature. However, theses which produced at least one article, but a respectable one, are considered. In fact, it was interesting to explore why some theses produce more articles than others as part of considering the factors that may make some theses, or parts of theses, viable sources for producing articles than others.

3.2.1.2. Articles

Articles are considered successful if:

a. they are published internationally in journals that are considered to be of a good standard. Good standard journals are usually well-established publications that are commonly referred to by the experts of any field and are considered important outlets for new publications as well as resources for quoting other people's works. The information on which journals are considered respectable was gathered by consulting the experts in the fields from which data are selected as well as visiting the libraries of the departments of such fields to identify the more common international journals postgraduate students are encouraged to consult.

b. they appear in international journals published by identifiable English-language speaking scientific publishing organisations (whether in America or Britain) and have a reputable English-speaking board of editors and referees. The members of this board should be responsible for accepting works of a specific quality which aim to maintain a high standard of language quality. Articles which are revised by their writers following the comments of the English-speaking referees and subsequently accepted and published in these journals are considered successful and hence included as part of the data to be explored in the present study.

3.2.1.3. Further Criteria for the Selection of Articles

In addition to the above criteria for the selection of the articles that were suitable for the present study,

I took the following points into account:

a. Since a preliminary investigation of the various possibilities of producing articles from theses showed that articles could be produced either before, during or after writing the thesis (see chapter 7, section 7.2.3. on the results of the survey), it was necessary to decide which types of articles would be considered. Being interested in the production of papers that are derived from thesis work, it was sensible to select for analysis only those articles which writers have produced during and after the writing of the thesis. This was done in order to be able to identify the parts in the thesis from which these articles were derived. In the case of papers which were produced earlier than the actual writing of the thesis, they were often unrelatable to the main thesis text. It was sensible not to consider them because they seemed to represent another category which is the opposite of what the present study is concerned with - that is, articles from which thesis chapters/parts are derived.

b. It was also important to cater for the various possibilities of the types of papers that are the products from a thesis, either during or after its writing. These possibilities include the fact that some articles may be identical in terms of shape, form, and content to their corresponding parts in the thesis. On the other hand, some of these articles may be barely relatable to any specific part of the thesis produced by the same writer, except in the wider research area of both text types. In these two particular cases, it was felt advisable to discard these articles because practically they do not help in answering the main research question addressed in the present research. This is because they either have no variations whatsoever, as in the first case, or are completely different, as in the second case. Instead, comparable texts which could be related to one another, but which exhibited some changes between them were selected for analysis (see appendix 2 for two samples of such comparable texts and the changes between them). However, it must be noted that, since other types of papers like the ones mentioned above do exist, these non-comparable texts should be considered in the overall process of deriving articles from theses and be catered for in the general discussion of the various possible formats of papers produced from them.

c. The articles to be examined in the present study are also more related to research studies. This means that only academic research papers which give an account of experimental and applied work are to be considered. Other types of papers which are also derived from the work done for the thesis, such as review articles, are not selected for investigation. The main reason for the concern with academic research articles is the well-established fact that they constitute a major type of article in the academic field, and this is the type of paper that novice research writers are required to produce in their early academic career in order to introduce their research work to the wider community.

Having identified the main features of the theses and the articles derived from them which were to be selected, it was necessary to consider the disciplines from which data are drawn and the writers producing such data.

3.2.2. Fields Covered by the Texts

The texts were drawn from the two complementary, and rather different, areas of research; the "hard" sciences and the "softer" sciences. Representatives of the former field of study include theses focusing on scientific areas such as materials science, dentistry and oceanography. On the other hand, data selected from the "softer" sciences, the humanities, include samples from the fields of linguistics and economics. It is believed that drawing data from these two main areas of study may give a better view of the variations that writers make in transforming theses into articles, especially because they encompass the two main research paradigms and hence their exploration is likely to yield interesting conclusions about the variations in the various disciplines investigated. It is also useful to consider the variations that seem to be discipline-related and use these to draw conclusions that can help novice writers deal with such more specific variations. In order to ensure that the texts are balanced in terms of the numbers of samples selected from the "hard" and "soft" sciences, five of the theses selected were representatives of the first paradigm of research while the other five were drawn from the second type of study (see appendix 1). In order to refer to these theses and their articles in the following text, I

have devised a simple code system to refer to them. I refer to Scientific Theses by the abbreviation ST, while Humanities Theses are given the initials HT. The theses are given numbers (from 1 to 5) to distinguish them within each group, scientific or humanities. In the case of the articles derived from the theses, the articles are given the same code of the thesis to which they belong as well as their own code using the initial A to refer to them as Articles and numbers (1, 2, 3, etc.) to refer to their order of publication. In some cases, the chapter from which an article is derived is referred to. To codify this text, I refer to the thesis code and then add the initials CH (i.e. chapter) as well as the number of the chapter in the thesis.

3.2.3. Text Writers

All the texts selected were written by writers who were considered successful in producing and publishing research articles from their PhDs in respectable journals. These writers are both native and non-native speakers of English. The native speakers selected were British nationals who are mainly residing in England and now established lecturers in their own departments at the University of Liverpool. Thus, they are considered experts in their own fields due to the fact that they have acquired a PhD degree, and followed that by producing publications in internationally respectable journals. They also have experienced the process of supervising postgraduate students in producing dissertations and theses for the degrees of MA, MSc and even PhD. Some of them also work as referees for journals in their own fields of study.

These informants are excellent candidates for the exploration of the process of transforming thesis work into research papers because of their first-hand knowledge and experience of the process of publishing articles from theses and the kind of changes they make during this transformation process. This is why two of them were selected as case studies for that purpose.

On the other hand, non-native informants, Egyptians, were also approached for the collection of data. These informants are also considered to be experts in their fields as they have acquired their PhD from

their local university, but have successfully published internationally from their theses. They are also lecturers in their own universities. Again, the fact that such informants are experts in their fields ensures that their written products are suitable non-native texts to include as part of my data. It was originally hoped that the building up of a native and non-native corpus of data would help in the comparison and contrast of the type of changes made as a result of the difference between writers in terms of the knowledge of the English language. However, this was not possible as it was very difficult in certain areas of study to find balancing non-native examples of writers who have published from their own theses internationally. This was the case in the fields of linguistics and economics. Thus, the data were included as data produced by expert writers regardless of their native origin.

Furthermore, I was careful to ensure that the non-native theses included do not, as far as possible, reflect any cultural influences in the way they have been produced. That is they do not seem to follow certain standards for presenting science that may be only prevalent in the scientific culture of the country in which they have been developed. This was done by two means: first, by selecting theses that have been supervised by native speakers and accepted by English-speaking universities (e.g. HT3), and second by selecting theses that are supervised by non-native speakers, but who had been trained in English-speaking universities so they are likely to follow similar standards to these universities in the way they conduct their own research and others (e.g. ST2 and ST3). All this was done to ensure that all the selected theses, more or less, follow the same standards in presenting their science and that they are not influenced by any prevailing trends in their own specific scientific culture that are different from the accepted trends that prevail in English-speaking universities like the University of Liverpool. As far as the articles are concerned, they have all been published in international journals, and have thus gone through similar processes of editing. This means that any potential variations due to the different cultural backgrounds of the writers are likely to be insignificant.

Having considered the overall criteria for selecting the data for the present investigation and the actual

features of these data, we now turn to the type of analyses which were applied to the data.

3.2.4. Aspects of Analysing the Data

The data selected were analysed in terms of the following main aspects:

- a. The overall semantic organisational pattern of the two types of text
- b. The framing analysis of the beginnings and endings of texts
- c. The modal, thematic and lexical cohesive features of the most important statements of both types of texts.

It should be noted that the first study is the focus of the present research while the second is a complementary one that does not stand on its own but rather attempts to throw more light on the variations between the two texts explored in relation to their overall semantic organisational structure.

In the following sections, an overview of these aspects of analysis is given explaining the aims and reasons for carrying out the analyses as well as the overall methods that are used for understanding these analyses.

3.2.4.1. The analysis of the Organisational and Semantic Patterns of the Two Text Types

The aim of this investigation is to identify the main patterns of difference between the two types of texts by discerning the kind of changes writers tend to make in terms of the organisational pattern and the content realising this overall organisational pattern while transforming one type of text into another.

For the analysis of the semantic organisation of the two types of texts, a model of analysis is developed to cater for this investigation which is drawn from the works of Hoey (e.g. 1983) on the Problem-Solution rhetorical pattern, van Dijk's notions of macrostructures and superstructures (e.g. 1980, van Dijk and Kintsch, 1983), and different genre analyses of a variety of texts (e.g. Swales,

1990; Dudley-Evans, 1986). A detailed description of this model and its application to the data is given in chapter 4.

3.2.4.2. The Framing Analysis of the Beginnings and Endings of Texts

One kind of anticipated difference between theses and the articles produced from them is the difference writers make in introducing and laying the ground for the account of a research experience as well as the overall conclusions and outcome of such an experience. This implied a particular interest in exploring the beginnings and the endings of such texts. This study, however, remains complementary to the main study of the overall content of the two related texts mentioned in section 3.2.4.1. above as it focuses on the investigation of the variation discernible in terms of meanings (i.e. the main propositions/ideas expressed) as well as the more specific variations in the actual wording of the beginning and ending parts of these texts.

For the analysis of these aspects of the texts, a qualitative analysis of the type of data analysed is pursued. No specific model of analysis is designed for this purpose. Instead, data-driven analysis is undertaken to identify the type of differences identified in the different parts of the theses and articles explored as part of the study of the overall semantic organisation of the two texts.

3.2.4.3. The Modal, Thematic and Lexical Cohesive Features of Significant Statements

The identification of the differences in the Modal, Thematic and Lexical Cohesive features aims to inspect another angle of the differences between the texts. This investigation is again data-driven and is designed to help to clarify the variations in the way writers communicate their attitudes and claims to their readers, point out what they consider to be the main “starting-points” of their statements as well as show the lexical links between the related clauses/ sentences in both types of text.

For the analysis of such an aspect, the models of analyses proposed by Halliday (1994) for the study of *modality* and *theme* systems are used as well as the study of lexical cohesion as presented by Hoey

(1991). However, they are used in a simplified form to suit the present study. The focus of the analysis is placed on the investigation of the significant statements that are typically changed in transforming theses into articles. These are expected to be present at the beginning and the end of texts where writers reorient their readers to the specific accounts of their research as well as other important statements that get changed in any of the other sections of the texts explored.

Now I move to consider the data and methods used to investigate the second dimension of the present study, *the writers*.

3.3. The Writers

3.3.1. Types of Informants

Two types of writers were included in this study: expert and novice writers. Expert writers are those writers who have managed to produce a thesis and produce successful articles from it. Some of these were the writers whose texts were analysed in the text analysis outlined above and who had a first hand knowledge of the process of changing parts of a thesis into a publishable research article. Further expert writers consulted were writers who went through the process of publication earlier. On the other hand, novice writers in this study are mainly academic students who are still working or about to work on their theses, but have not yet published any articles and hence have no experience in transforming theses into research articles, though they are highly likely to do it in future. All these writers may be native or non-native speakers of English. The aim of selecting such informants, as already mentioned earlier, is to investigate their perceptions of the stages followed and the changes made while attempting to produce an article from a thesis and their perceptions of the factors that influence such factors. The ultimate aim of this is to compare their perceptions with the outcome of the analysis of the texts to be able to confirm or disconfirm the results of this analysis.

3.3.2. Methods Used to Study the Perceptions of Writers

A nine-item questionnaire was used to investigate the informants' perceptions of what is entailed in

the process of transformation. The main items in this questionnaire were developed to investigate the subjects' general perceptions about the extent of the demands involved in producing articles from theses and most importantly the basic changes writers make while doing so. For ease of answering and analysing, informants were supplied with possible answers to tick from and allowed to add further comments if needed (see appendix 6 for a copy of the questionnaire used). The answers provided, especially those related to the major questions investigating the changes/revisions (i.e. questions 6 and 8) were designed to reflect what the limited previous studies have pointed out as the main areas of difference between the two types of texts explored (e.g. Bhatia, 1993), the main sections/sub-sections of theses and research articles as the general areas where change may take place (e.g. Swales, 1990 and the reference to the purpose of research, report of previous research, methodology, etc.), and my own experience of what expert/novice writers in the field have reported to be the main areas of change/revision. In addition, the answers provided possible factors that may influence writers in making the above mentioned changes (i.e. answers to question 9). These answers reflected some of the motives my informants have suggested during the piloting of this questionnaire (e.g. style, repositioning of information), the responses that I have always been given by my EAP students when I considered with them the reasons for making the types of changes made in this process of transforming texts (e.g. language variations and the factor of scope/size as a factor to be considered in making the transformation process) or those that I have already explored in my previous research (Mohamed, 1993, and the importance of readership).

The questionnaire was piloted with 3 respondents and a few minor changes were made to its various items accordingly to ensure its smooth use. Two near-identical versions of the questionnaire were given to expert and non-expert writers. The questionnaire was always given with a front page that explains to the informants the purpose of the study and the reasons behind asking the questions included in it. In some cases, this was the only information that could be given to the informants as the means of communication was usually through pigeonholes and letters. This was often the case with expert writers who were usually too busy to have face-to-face contact in order to respond to the

questionnaire. On the other hand, the novice writers were mostly students attending EAP courses that I have been involved in teaching and hence face-to-face communication was possible in addition to the informative page preceding the questionnaire. During breaks and at the end of sessions, I managed to talk directly to the informants about my area of interest, explain the kind of problem I was dealing with and the main types of responses that I was looking for. The informants were allowed to ask any questions about the questionnaire and were helped through it. Then they were given the chance to complete the questionnaire, either in the same session or at home, and hand it in later. In some cases questionnaires were returned empty or were never returned. In three cases, the questionnaires were not fully completed or were completed wrongly and hence they were discarded. An example was when the informant did not tick any of the responses to question 9. The rest of the questionnaires were collected and then analysed in three different ways. First, the responses of the expert writers were considered generally in order to compare/contrast them with the findings of the text analyses. The aim of this was to show how far the comments given by expert writers, especially those indicating the types of changes they believe writers make in the process of transformation investigated and the reasons behind making them, confirm or disconfirm the results of the text analyses and my interpretation of these results. Second, the responses of the expert writers in the field of humanities were compared/contrasted with the responses of their counterparts in the field of science. This was designed to parallel the outcome of the text analyses of the variations made in humanities and scientific theses. The aim of this was to identify any differences between these two different groups of writers in the way they perceive the writing task of transforming theses into articles and the factors that affect it. Finally, the responses of the expert writers were compared/contrasted with the response of novice writers. The aim of this was to reveal any misconceptions that novice writers may hold about the modifications writers make in this process and the factors that may influence it. Further relevant conclusions and pedagogical implications were drawn after relating the comments of the expert writers with the novice writers' perceptions.

A further method that I used to investigate the changes writers make in the process of producing articles from theses was that of case studies. I selected two of the writers of the texts explored and held two interviews with each one of them. The first interview was carried out before the analysis of the texts, with the aim of gaining some knowledge about the process from the writers of the texts and the kind of modifications that they think they have actually made while transforming their theses into articles. In order to discuss these areas the informants were given the chance to discuss freely any of the types of modifications that came into their minds and when it seemed difficult for them to remember any they were allowed to elaborate on the areas that were developed in the questionnaire used for investigating the expert perceptions. The second meeting was then held after doing the analysis of their specific texts in order to verify what they had already mentioned in their first interview and link that to what I had found through the analysis of their texts (see Appendix 7 for the tape-script of some selected parts drawn from the interviews held with these two cases studies). In this interview, furthermore, the informants were asked to discuss in more detail the specific variations that they had made to the various semantic elements composing their related types of texts and to consider in more detail the factors that influenced their decisions to make these changes. I took the decision not to put forward to the expert readers all the findings of my texts analyses, to avoid the possibility that their responses might be influenced by the categories that I had established rather than what they had actually done. In general, the main aim of interviewing these two cases was to confirm or disconfirm the general findings of the text analyses. Thus the writers were asked to retrospect about what they consider to be the main changes they made in the process of deriving articles from theses and the reasons for making these changes. Since this particular study is based on retrospection of processes that were carried out at least two to three years before the interviews have taken place, it was clear that the informants may not always be able to recollect the finer details about the changes they had made or their specific motives in making these changes. Instead, the outcome of the investigation was intended to confirm or disconfirm generally the overall types of changes that texts analyses revealed and the factors that I have suggested in my analysis could have influenced them.

The two selected case studies represented the two different fields of Dentistry and Linguistics, thus representing “science” and “humanities”. The aim of this was to identify any variations of the same process as perceived by experts coming from two differing fields of study to estimate the effect of the background study on this process of transformation. In addition, both informants were natives to ensure the validity of their comments and to avoid the variable of the knowledge of the language on the process of writing.

All the points raised in the interviews were considered and compared with the outcome of the text analyses and the questionnaire findings in order to provide a more fully-rounded picture of the process of transforming theses into articles in general.

Having described the type of data selected for the present research as well as the various aspects proposed for their analysis, it will be sensible to follow this by the description of the model of analysis that was used for the analysis of the semantic organisational patterns in the texts explored and how it was actually applied to detect the differences between theses and their articles.

CHAPTER FOUR: THE SEMANTIC ORGANIZATIONAL MODEL USED FOR THE ANALYSIS OF THESES AND THE ARTICLES DERIVED FROM THEM

4.1. Introduction

The ultimate aim of the present study is to discover whether articles differ from the theses from which they are taken in terms of their content and how it is organised, and if so, what the main differences between theses and research articles in terms of their semantic organisation are. In order to find answers to these questions, it was first necessary to develop a model that would allow for the analysis of the semantic organisation of these two related text types. Thus, the present chapter describes in detail the model of analysis that was developed to investigate the relationship between theses and the articles published from them, especially in relation to the way writers select and organise their content within texts. It gives a brief outline of the theoretical bases of the model (section 4.2.), a rationale for the proposed model (section 4.3.), an overview of the model (section 4.4.), a detailed description of its application to data and its various elements using some examples from real texts (section 4.5.), the problems faced in applying the model to the texts investigated and how they were handled (section 4.6.), and finally two sample analyses of two texts that are given to show the model at work (section 4.7.).

4.2. The Theoretical Bases of the Model

In order to have a fuller picture of the two types of texts explored, it was anticipated that a detailed model of analysis which integrates more than one linguistic aspect and covers texts at various levels and from different dimensions would yield more comprehensive results. Keeping still to the early hypothesis that the two genres studied will not vary much in terms of their overall organisation and content, but rather in the way this content is represented to their different readers (Mohamed, 1993), it was essential to find a model that could allow the investigation of the semantic organisation of the texts on the micro and macro levels, in order to arrive at a more inclusive and detailed representation. Although I have decided to adapt an integrative approach in analysis like the one used by Jordan

(1992), the "integrated three-pronged analysis", for the analysis of a fund-raising letter, the model that I propose here is not similar to Jordan's model. Instead, it is the result of the integration of some well-established analytical techniques and insights in the field with some modifications to suit the aims of the present study. It is mainly based on work by Hoey (1983), van Dijk (1980), van Dijk and Kintsch (1983), and Swales (1990).

As mentioned earlier (chapter 2, section 2.2.2.7.), the model considers the semantic organisational patterns of texts as they are assumed to be perceived cognitively by readers and anticipated by writers. Thus, it uses concepts such as macrostructure and propositions as discussed by van Dijk (1980) and van Dijk and Kintsch (1983) and in particular the hierarchical manner in which readers grasp the informational structure of texts. The model attempts to develop a hierarchical macrostructure composed of at least three levels, top, middle and bottom, for the thesis/research article that can help in extracting the propositions put forward in the different slots. The ultimate aim of applying this model of analysis to texts is to extract the summative propositions for the different levels of the texts explored, using van Dijk's rules of deriving propositional summaries of texts, to be able to identify how they may differ in terms of content and wording in the two interrelated text types. As discussed earlier, this hierarchical view of the macrostructure of texts is adopted from van Dijk (1980), but the splitting of the macrostructure into levels, though considered by him in theory, is not applied in practice as it is done here. Moreover, the rules to derive summative propositions, as discussed earlier (chapter 2, section 2.2.2.7.), are also applied in slightly different ways from the way van Dijk and Kintsch (1983) propose that they should be used (this point is discussed in more detail in Appendix 4). In addition, as mentioned earlier (chapter 2, section 2.2.2.5.), the model of analysis suggested in the present chapter draws in particular on the Problem-Solution/Question-Answer pattern as discussed by Hoey (1983, 1986) as it is anticipated that writers of academic texts, such as theses and research articles, are typically expected to exploit such a rhetorical pattern while producing these types of texts. However, as this pattern is designed to be flexible enough to cater for the analysis of any texts, it was integrated with the macrostructure organisational pattern developed by van Dijk mentioned above to

be able to make it apply more specifically to theses/research articles. Furthermore, to allow it to conform to the idea that readers conceive texts in a hierarchical manner, the pattern was also applied to texts in a hierarchical manner as will be further shown later (sections 4.4.2. and 4.5.). In addition, the functional categories that make up this pattern and the labels used to refer to them as suggested by Hoey (1983, 1986, 1988) were modified to suit the types of texts explored. A further influence on the model is the approach taken by Swales (1990), in particular his notion of moves as illustrated in his CARS model of Research Article Introductions. This was used in specifying the organisational slots at the lower level of the model. In addition, as part of the verification of the eligibility of certain propositions to represent elements of the macrostructure, I used similar techniques for identifying and verifying these propositions, mainly the dependence on linguistic signals that show the function of these propositions.

The following two sections give a brief rationale for the model suggested, followed by an overall description of it and how it can be applied generally to sample texts. While describing the model generally, attempts are made to relate it more closely to the established models in the field discussed briefly above to clarify further the modifications made to these models, if any.

4.3. The Rationale for the Proposed Model

It can be safely assumed that we cannot understand how writers organise their ideas in texts without first knowing what these ideas are. Similarly, ideas usually cannot be fully understood without referring to the rest of the ideas expressed in the text and noting how they are organised in relation to one another. Due to this strong link between content and organisation, there has always been a difficulty in separating these two planes in practice. A further difficulty has been the attempt to separate these two planes in theory. It seemed therefore necessary to make a distinction between content and organisation in terms of theory to be able to apply it in practice later. Thus, theoretically if content is the plane that seems to answer the question of "What are the ideas expressed in the text?", organisation seems to answer the question "How are these ideas organised/presented in the text?".

Keeping this in mind, in the following section I present a model of analysis based on the investigation of both the content and the organisation of this content in texts.

4.4. An Overview of the Model

In the present section I give an overview of what I think constitute the *Semantic* and *Organisational planes* of the texts explored in the present study.

4.4.1. The Semantic Plane

For the study of the semantic aspect of the texts, I consider the proposition as my basic unit of analysis. Propositions (Halliday, 1994) are the ideas that are typically perceived by readers and writers as complete messages that include mention of participants, processes and perhaps the surrounding context related to these participants and processes. Therefore, a proposition includes all the semantic elements that can make it understood as a minimal semantic message. Propositions typically correspond to the semantic units expressed by clauses and sometimes sentences. This agrees with Callow and Callow (1992, p.8) who consider a proposition as "roughly the cognitive counterpart of a clause". This is also similar to the use of the term as discussed by van Dijk (1980) who equates propositions with clauses. Due to the fact that propositions are often expressed on different levels in terms of the generality and specificity of the topics they express, I approach the analysis of texts by referring to different levels of description for the analysis of propositions as they fall within the specific organisational pattern/macrostructure of the type of text in which they appear (van Dijk, 1980; Meyer, 1992). Meyer (1992, p.83) specifies in her model of analysis three primary levels of text for her approach to prose analysis. Like Meyer's model, the present model refers to three main levels of description of the propositions found in texts, as anticipated by writers to be picked up by readers. Although the same levels that she used are adopted in order to allow for the comparison with her three levels, some modifications are made to these, especially concerning the terms used to refer to them. Whereas she uses the terms *top level*, *macro* and *micro levels*, the present study uses the terms *top level*, *middle level* and *bottom level*. This system of three different levels represents a practical

hypothesis about the main cognitive levels of processing that writers assume readers will make as they read an extended text. These levels may not cover all the semantic aspects of the texts explored but they will be adequate to cover the analysis of the salient ideas and their main relevant details that writers expect readers to get from the texts. The reason for the adaptation of the terms mentioned above is the possibility of confusion over the use of the terms “macro” and “micro” to refer to propositions that may not, in terms of meaning, actually seem to be macro or micro in status or importance in relation to the rest of the propositions in the whole text. Thus, it was felt that it would be safer to use terms that only refer to their hierarchical position in relation to one another. An important issue which should be clarified here is that higher level propositions, top and middle, are not always equated with clauses as was mentioned earlier, but they must be based on the clauses expressed in the text. It is the bottom level propositions that are highly likely to be equated with the clauses that make up the base of the text.

At the top level, writers may be seen as expecting readers to retain a minimal number of propositions that are relevant to their goal in reading the specific texts produced. These are the globally relevant propositions expressed in the texts and which could also be used to summarise their content to the intended audience, if needed. I will be calling such text propositions the Top Level Propositions. Analysis of the first level of texts in terms of ideas is therefore called the Top Level Propositional Analysis.

It should be noted, however, that top level propositions may not necessarily be easy to identify in text. This is because it is possible that they may not be realised by single clauses or sentences but rather a number of these. In fact, it may be necessary to extract such propositions using the “rules” mentioned by van Dijk and Kintsch (1983) of *generalisation*, *deletion* and *construction* from various clauses/sentences that could be distributed in different parts of the text. This is mainly due to the summarising nature of such propositions that makes it difficult for them to be expressed in only one specific clause. On the other hand, there is also a possibility that writers, to help their readers, do

express these propositions through single clauses/sentences. In any case, to identify such top level propositions, I look for the linguistic realisations of these propositions in the text, whether they are single propositions or deduced from a number of propositions. In the latter case, I attempt to reformulate the intended propositions depending on my understanding of the meaning expressed by these propositions as realised linguistically and on the confirmation of competent readers of the accuracy of these reformulations (see Appendix 5 for sample responses by competent readers).

As we go down the scale, readers may be seen as expected to identify further specific main ideas related to these top level propositions. These are the propositions that the writers consider it important for their intended readers to know, given their assumed goals for reading these texts. At the same time, these more specific propositions elaborate on the top level propositions already extracted at the first level of text processing, but they are not too detailed propositions as they could be still elaborated by further other more detailed propositions that may coincide with the base of the text, the bottom level propositions. I call such salient propositions Middle Level Propositions and the analysis of these salient propositions is called the Middle Level Propositional Analysis. As in the case of top level propositions, middle level propositions may not be easy to identify as they may be constructed out of a number of clauses/sentences.

At the lower level of processing texts, more detailed propositions which are relevant to the middle level propositions identified above are expected to be picked up by readers by more careful and closer reading. At this level, all the salient ideas and their specific details are expressed in terms of what are called Bottom Level Propositions. Analysis of this level of meaning is therefore referred to as the Bottom Level Propositional Analysis. In this analysis it is less difficult to assign single clauses/sentences to propositions because the more detailed the analysis gets, the more likely it is that propositions are expressed through single clauses/sentences. Attempts are therefore made to construct bottom level propositions from sentences and clauses (or parts of them) in the text wherever possible. The bottom level propositional analysis is not in many cases exhaustive of all the propositions in the

longish texts explored in this study. This is because the limit of the number of the levels of description in any analysis mainly depends on the length of the texts analysed and the goal of this analysis. In the case of very long thesis chapters that represent p-texts or of research articles, if the texts are too long, the three level analysis does not cover all the details of these texts. Thus, further details may be incorporated by developing further levels for analysis, such as a clause-by-clause analysis of each proposition of the text. Yet, for my own analytical purposes in the present study I stop at the bottom level as defined here, i.e. the third level of detail of the content expressed in the text, as I found from my preliminary study of the data that it covers all the main topics and main elaborations offered by the main propositions of the text beyond which knowledge of further detailed propositions is considered unnecessary and impractical.

4.4.2. The Organisational Plane

As Fries (1982, p.53) notes, "... while a propositional analysis may be necessary to describe the meanings of a text it is not sufficient, for it does not provide a means of comparing the messages of the text. Such an understanding is, I believe, essential to understanding texts". In fact, understanding of the way propositions are organised within texts could be considered an essential feature of linguistic description in order to give a more holistic view of the texts explored. There is abundant evidence (see e.g. Swales, 1990) that academic writers, being aware of the expectations of their readers and the conventions of the type of texts they are producing, often write their texts with a specific organisational pattern in mind. This overall pattern is made up of further lower level rhetorical patterns that present mini-patterns that are self-contained but are strongly related to the overall organisational pattern of the text type they appear in and which together represent its overall organisation. These patterns are also conventional and thus are already known to expert writers in the field. These organisational patterns are those that linguists like Swales (1990) have identified in research article introductions as conventional moves and steps. In order to arrive at the model outlined below, I drew not only on descriptions provided by Swales (1990) and other writers on genre, such as Bhatia (1993) and Dudley-Evans (1986), but also on my own experience of reading and writing such texts. The

evolving model was further checked against preliminary studies of the data in order to ensure that the functional categories identified for the organisational pattern of the texts explored are applicable to real data and that they reflect the conventional organisational pattern of the two types of texts investigated.

The aim of producing such a model is to use it as a skeletal framework that could be used to produce summaries of the two related text types explored, and in turn identify and locate the main differences between the organisational elements in these texts. This is a first step before attempting to identify the particular semantic content of each of the organisational slots of these texts and hence be able to compare and contrast the two texts on the whole in terms of their semantic organisation and then to their linguistic realisations. Methodologically, the skeletal framework is first applied to an article produced from a thesis to work out its overall organisation and the content that appears under each slot. Then, the parts of the thesis which correspond most closely to the elements in the article are identified and these are the parts used for comparison and contrast. Although in some cases these parts were full chapters of theses, in other cases they were only separate sections in various chapters which make up the potential texts (p-texts) from which articles seem to have been derived. The skeletal framework was also applied to the p-text to check that it was coherent in its own terms (for example, that there was an Answer which corresponded to the Question as formulated in the p-text). Thus the means by which the organisation and content of the p-text were identified were both external (comparison with the article) and internal (checking the potential coherence of the p-text in itself). This two-way analysis is necessary to confirm the identification of the parts to compare and contrast in the theses and their derived articles (for more detailed discussion, see Appendix 4, section 4.2.).

The separation of the two planes of semantics and organisation is necessary for practical and theoretical reasons. Practically it is important to help in the first step of the process of locating the position of the parts to be analysed before analysing these parts in terms of their semantic content. Furthermore, this separation is necessary theoretically because it reflects the difference between the

relatively constant status of the organisational pattern (i.e. it is applicable to all research articles and theses/p-texts in theses) and the varied status of the semantic content conveyed by this same organisational patterning in different texts (i.e. individual writers use the same organisational pattern to present different propositions that introduce their specific studies to their specific readers). Being concerned in the present study with the variations between theses and articles I need to set up first the conventional model for the organisational pattern used in these academic texts, before I bring out the differences that appear in their expected varying semantic content.

Thus, in the analysis of texts, it is the organisation, as represented in functional terms, which is identified first and then their semantic representations are identified in terms of propositions. This is because it is expected that writers may to some extent at least start writing by visualising the conventional structure of the genre they are producing which they then use and develop in ways that serve their own specific purposes and content. On the other hand, it is also expected that readers start reading such genres to some extent with a specific structure in mind which they fill in with specific information they are looking for as they read.

It should also be noted that, as pointed out earlier, the present model assumes that both p-texts in theses and research articles, as long as they both report a research study, will share a similar overall organisational pattern which is realised by varying semantic and linguistic representations. This is why the following description of the various levels of text organisational patterning does not differentiate between the organisational pattern of a p-text in a thesis and a research article, assuming that the second draws on a generic model that can be seen - if only in retrospect - as underlying the first. However, it is left for the application of the model to decide how far these two types of text vary in keeping close to this expected overall organisational pattern and in particular how far they differ in their semantic and linguistic realisations.

The three levels I propose to use in the analysis of the organisational pattern of my texts are as

follows:

- a. The **top level organisational pattern** is the organisational pattern that reflects the functions of the top level propositions of theses (chapters)/p-texts and articles, and allows exploration of how they are related to one another in terms of their most general content. The fact that research is usually based on questions which are often posed to find answers to them is the reason why the readers' expected top level organisational pattern of research articles/p-texts in the thesis is mainly presented by a Question and an Answer (see figure 1 below). Note that Questions usually precede Answers and motivate them. Therefore they are placed first in the diagrammatic form representing the skeletal framework within which fall the top level propositions that realise Questions and Answers in various academic texts. It is theoretically possible that these two elements might appear in reverse order in a text; however, there are no cases in which this happens in my data, and it seems highly unlikely that they would be reversed in either of the text types investigated. This structure overlaps with Hoey's (1983) Problem-Solution pattern, and is adapted from Hoey's (1986) and Adams Smith's (1990) Question-Answer pattern. However, unlike these patterns it does not at this level of the text include any of the other organisational slots of the Question-Answer Pattern, i.e. Situation, Response and Evaluation. In the present model, these would in some respects correspond to the lower levels of detail that further develop these top level elements.

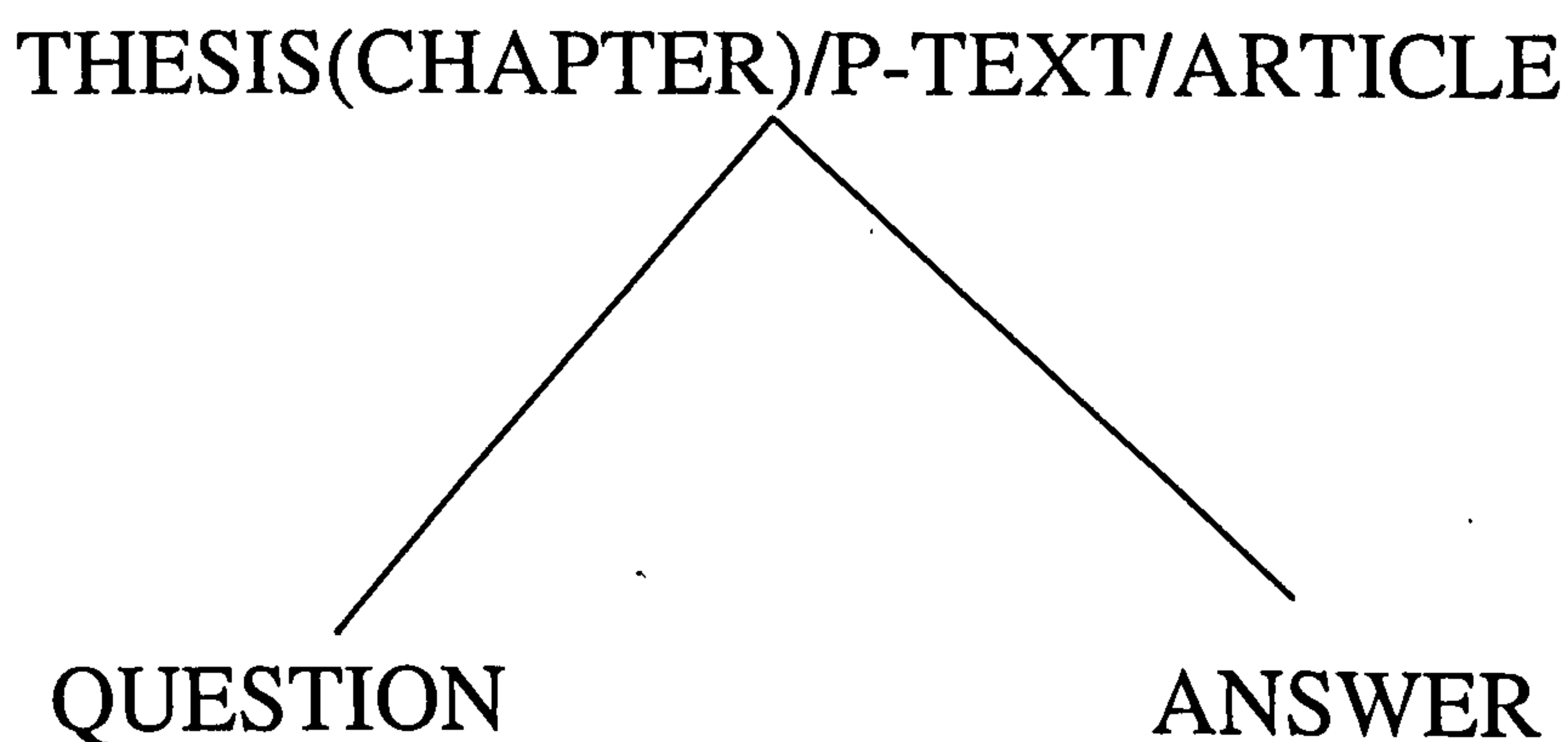


Figure 1. The Top Level Organisational Pattern

b. The **middle level organisational pattern** is the more detailed organisational pattern of the text which shows the functions of the middle level propositions expressed and how they are related to the top level propositions. The following figure (figure 2) shows what might be considered as the middle level organisational pattern of research articles/p-texts expected by readers of these text types as perceived by writers. As at the top level, this middle level organisational pattern forms a relational model like that of Hoey (1983) because the elements in it are still related to each other as in the case of the Question and the Answer top elements. As will be seen below, on the next level down the sub-elements of these middle level elements will shift to a set of moves based on the approach elaborated by Swales (1990). This level, however, specifies what might be considered the details of the research Question Domain and Answer Domain. In this organisational pattern, the linear sequence suggests that prior to the research Question, writers are expected to provide a background to it by describing the Setting of the research. On the other hand, part of the Answer is the Response to the Question, the steps taken by the researcher which should lead to the Answer Proper. This Answer should be justified, evaluated and elaborated as part of the Outcome of the Response. Again, different orders are possible but extremely unlikely because the conventions within academic writing are relatively strict.

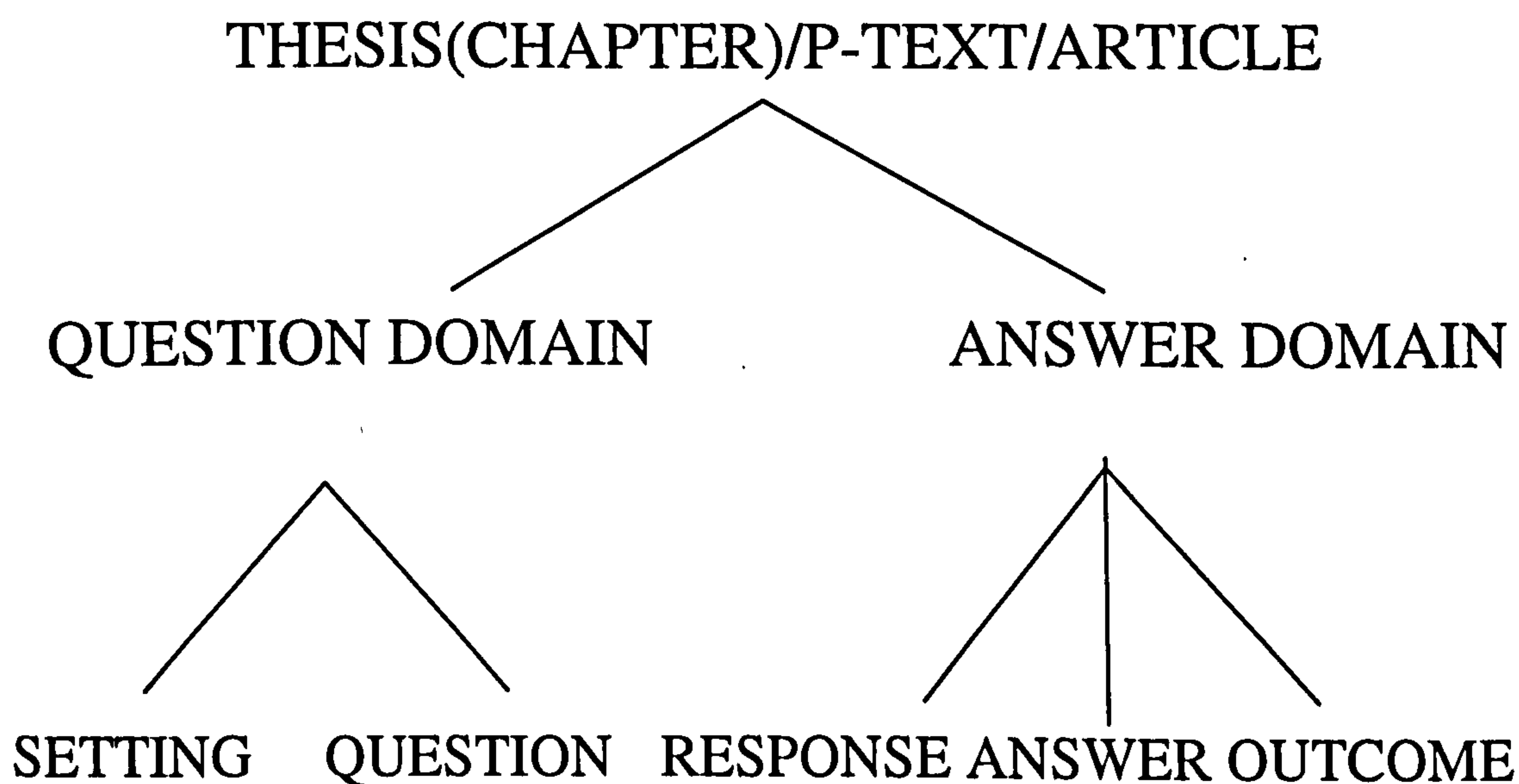


Figure 2. The Middle Level Organisational Pattern

The Setting element is very much similar to what Hoey (1983) calls the Situation. However, I use the term Setting instead of Situation because I feel that the term Situation is more appropriate for narratives, including popular science texts for which the model was originally developed by Winter (1977), than for research articles and theses. Although research texts may be considered a type of narrative, they are at best a distorted kind of narrative, in which, as Myers (1994) argues, the 'narrative of nature' has been replaced by the 'narrative of science' which is essentially organised as a sequence of concepts rather than of events. On the other hand, the element Response is more or less the same as in Hoey's model because it refers to what may be done to reach a Solution/or find an Answer. In the case of the types of texts explored here this means the use of certain steps/procedures to find the Answer to a specific research Question. Furthermore, the Outcome element, which takes the same position as Evaluation in Hoey's pattern, can in a number of respects be seen as fulfilling a similar function. Hill *et al.* (1982) point out that an important role of the Conclusion (i.e. Outcome in my terms) of an academic paper is to revisit the Setting outlined at the start and to evaluate how far the study reported in the paper has affected it. In addition, the Outcome may include positive or negative evaluation of the Answer arrived at in the study. The preliminary analysis of the texts in terms of this level showed that in most cases the Outcome is positive and therefore there is no need for the pattern to recur again. However, unlike in Hoey's model, the presence of negative evaluation, which usually relates to the limitations of the study or the methods used, does not serve as a signal of the recycling of the pattern again in the same text until a positive Evaluation is reached, though it may be designed to indicate that this recycling could be applicable to produce other texts, other theses/research articles. The Outcome element also includes reference to other elements that evaluate the Answer in a rather more indirect way: they speculate on the future by recommending future research or future applications of the Answer identified. This serves to indicate the importance and relevance of the Answer. The main reason for adopting a different label from Hoey's, despite these similarities, is that I felt that the term Outcome is more appropriate for my own exploratory purposes especially because it is wide enough to allow for the inclusion of various elements that are the result of finding the

Answer, and which may not be Evaluation as such. Above all, 'Outcome' captures better the primary function of the element as showing what the new research Setting is as a result of the study. As noted above, this does involve evaluation of the significance of the study, but the main focus in the way the text is actually worded is less on praising (or criticising) the study than on establishing 'where we are now' - i.e. what the Outcome is.

- c. **The bottom level organisational pattern** is a more detailed functional representation of the slots under which fall the bottom level propositions in the text. Figure 3 below shows what could be expected as the overall organisational pattern of the text including the bottom level organisational slots which give the more detailed content that falls under the middle and top level organisational patterns. This figure draws on some of the macrostructure categories used by van Dijk (1980, p.120) and Swales (1990). It is worth highlighting the fact that there is a switch from the relational model used for the two upper levels, where each element is defined by its relation to the others: for example, an Answer is an Answer in relation to a Question. Instead, the lower level categories are best seen as moves in the Swalesian sense, in which each element represents a stage that writers are normally expected to go through on their way towards fulfilling their communicative purpose in a conventionally accepted manner. The model attempts to visualise the linear information writers produce in theses and articles. Thus, as part of reporting the Setting of the study, writers can provide generalisations on the topic explored while providing readers with a Background to the research area/problem, and also they typically review previous research and attempt to link it to the present research Question as part of setting the Research Context. These sub-elements of the Setting element are adapted from the steps of Topic Generalisations and the Report of Previous Research that realise the move of 'Establishing a Territory' identified by Swales (1990). The researcher's Response to his/her research Question comprises the actual study done including the Data exploited and the Procedures followed in the study. Van Dijk (1980) in his representation of the macrostructure of research articles in the field of physics identified these categories as well as that of Hypotheses that are usually attached to the description of the problem/question of research.

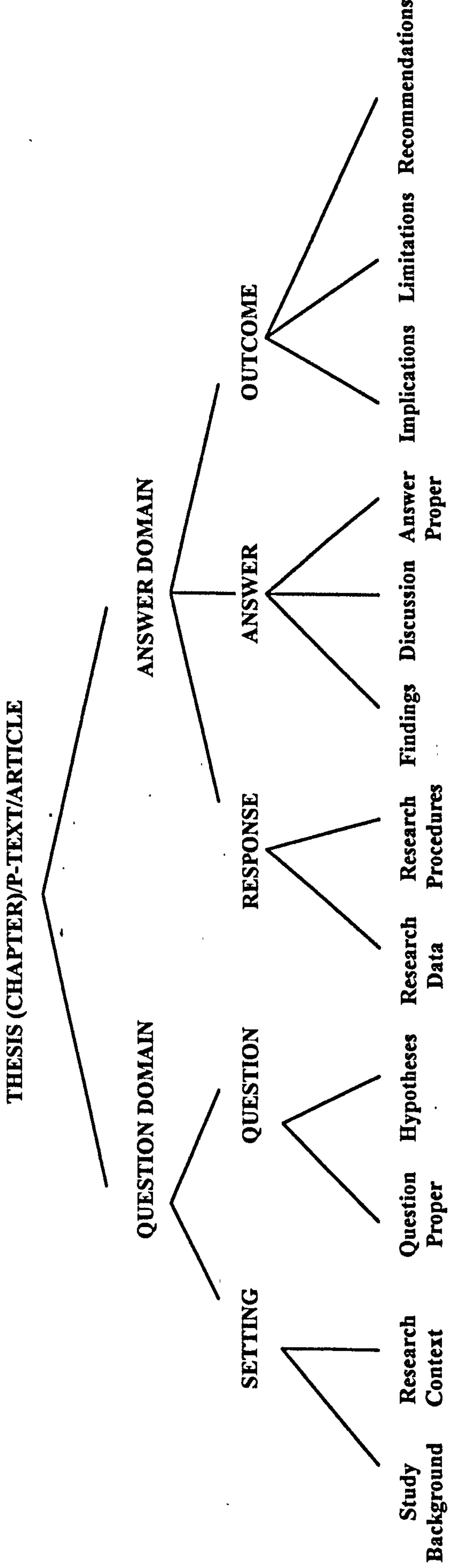


Figure 3. The Bottom Level Organisational Pattern

The Answer is then given by introducing readers to the main Findings of the study, Discussing them and Concluding an ultimate Answer proper to the study. These elements are identified in van Dijk's (1980) macrostructure of research articles and are commonly recognized by readers and producers of such conventionalised texts. The following element to which the Answer leads is the Outcome of the study which is based on the report of further Implications, Limitations and Recommendations deduced from the Answer discussed earlier. Again the sub-elements of the Outcome element are partly adapted from van Dijk's (1980) macrostructure of research articles, the various previous analyses of similar conventionalised texts (eg. Swales, 1990), as well as my experience of the conventional sections and sub-sections used by writers of text types similar to the ones I am exploring in the present study.

The aim of this model is to use it to analyse the related extended texts in terms of their semantic organisation. This enables me to produce manageable summaries of the two paired texts in terms of their semantic propositions as expressed in relation to the different levels of text comprehension which constitute their overall organisational pattern. The exploration of the variations between the propositions put forward by the same writer under the various organisational elements making up the two related texts helps me to explore the overall categories of changes that writers usually make during the transformation process in terms of the semantic organisation of their texts.

4.5. The Model: General Procedures of Applying it and General Description of its Elements

In the following section I attempt to clarify in more detail how the proposed model works by explaining the general steps used for applying it to data, giving a general description of the elements that constitute the model and showing examples of these analytical categories.

4.5.1. How the Model Works on Data

The model was arrived at by drawing first a preliminary sketch of the organisational structure of both articles and whole theses based on the integration of the theoretical considerations noted above as well

as what I believed to be the expected organisational patterns of these interrelated text types. My assumption was that if the model worked successfully on these complete realised texts, it would also be applicable to the p-texts that were the actual basis of comparison. Having set up this preliminary sketch, I applied it to a number of theses and the articles derived from them to see how it could be operationalised in real texts and in particular how it can help in extracting comprehensive summaries of these texts. This trial analysis showed that some of the functional categories that compose this model, especially at the lower levels, needed further refinement. After refining the model, it was applied to the articles and p-texts to produce summaries of all of them. It was also used to analyse whole theses, though mainly at the top level only, where I found it useful to identify Questions and Answers as part of the study of how p-texts relate to the thesis from which they are taken (see discussion of types of Question in section 5.2.). As an analytical tool for the extraction of the summaries of the articles and p-texts, I begin by setting questions that probe the types of functional organisational elements to be realised in the texts at each of the three main levels of processing. Answers to these questions are then sought in the text in terms of propositions that appear eligible to realise these semantic organisational elements. These are identified by referring to key lexical and grammatical signals (Swales, 1990) and by relating the different propositions appearing in the various related elements and sub-elements. For example, in the case of identifying the Question element, it was often helpful to locate an interrogative form that is eligible to express the main research Question of the study. If an eligible interrogative form does not occur, it was often helpful to identify related forms that could replace the Question, such as the indirect form of the interrogative, etc. Another example of the type of linguistic features that were used to identify the elements of the semantic organisation model is the specific lexical items that are commonly used to refer to such elements. For instance, words like “results”, “findings” and “outcome” were often indicative that the part investigated includes the Answer element. However, sometimes it was difficult to pin down specific linguistic features for identification. Instead, other features were used including the position of the information in the text, the use of non-linear information, etc. Finally, the propositions were extracted by following the rules for producing propositions as suggested by van Dijk and Kintsch (1983). These

rules, as mentioned earlier (section 4.4.1.), include the rules of *generalisation*, *deletion* and *construction*. In the case of *generalisation*, the analyser extracts the proposition by producing a general statement that includes the most important information that is presented by a variety of related clauses/sentences. In the case of *deletion*, the analyst is faced with a variety of clauses/sentences which more or less represent the same type of information, typically at different levels of generalisation (as happens, for instance, when a point is exemplified). Hence, he/she must delete those that repeat the same content and keep to a single proposition that contains the most important information mentioned in all the deleted clauses/sentences. The analyst may find it difficult to generalise or delete using the clauses/sentences provided in the text because the writer chooses not to provide direct or clear answers to readers' questions about the main semantic organisation of the text. Thus, he/she finds it necessary to construct new propositions that reflect the meaning expressed in the explored level of structure (see Appendix 4 for examples of how these propositions were arrived at using the above rules). In the present study, having found the answers to all the probing questions in terms of propositions, I managed to produce a skeleton summary of the analysed text. This summary was the outcome of identifying the main answers to the various questions that attempt to identify the various elements and sub-elements that reflect the three levels of comprehending any of the explored texts. This in turn was used to compare the text with other relevant texts in terms of their organisational pattern and the semantic realisation of this pattern. Analysis usually began by developing the summary of the shorter text, the article, before going to the longer one, the thesis/thesis chapter/p-text, to identify the exact parts of the interrelated texts that could be compared/contrasted in terms of their meaning and wording (see samples of such summaries in section 4.7. below; and see also Appendix 4, section 4.2., for a detailed description of working with p-texts). Having identified these parts, the following step was to compare and contrast these related parts in terms of meaning and wording as well as consider the parts that have been dropped out in either text as part of noting all the changes that writers make in the various semantic elements of the two texts while transforming one into the other (see Appendix 2 for samples of comparable parts drawn from the original texts from scientific and humanities theses and their articles and see chapter 3, section 3.2.4. for the aspects of

such detailed analyses). The variations were then reviewed in all the types of texts in order to arrive at a specification of the general types of modifications that writers make in relation to the various semantic elements explored while undertaking the task of transforming theses into articles. These general types of variations were then discussed in relation to their specific linguistic realisations in specific elements and sub-elements in order to attempt to give interpretations for making such variations and hence infer the general factors that may have influenced making such variations.

A detailed definition and description of the elements that make up the model and the linguistic signals that were helpful in identifying them are discussed at the beginning of each section reporting the results of the analysis of each of these elements in chapters 5 and 6. However, to give a general description of the particular elements and sub-elements that constitute the different levels of the model, the following section reports the general procedures used to identify these elements in texts and gives a brief definition and examples of the elements discussed under each of its three levels.

4.5.1.1. The Top Level Analysis

As previously indicated, I used questions to probe the investigation of the top level organisational pattern of the text. Such questions as indicated earlier concentrate on the main Question(s) posed by the researcher and the Answer(s) to these Questions. This is done by extracting the top level propositions which are considered eligible answers to these main analytical questions and which readers/analysts expect to be looking for while reading this type of text. Eligible propositions are those propositions which most readers may select from the types of texts explored that seem to perform the kind of functions they are expected to perform in their texts/p-texts. To further confirm that they are eligible propositions for these functional categories they should have a format that is expected to represent the kind of elements they are representing, and/or include linguistic signals that may help identify them as eligible for the kind of elements they are representing. For example, an eligible proposition for the Question element must be a proposition that most readers will select as a representative of a Question because it is conceptually raises a kind of Question in the thesis/p-

text/article in which it appears. It is also expected to be related to the rest of the semantic elements of the text as such. So, it must have other eligible propositions that readers identify as an Answer to it in the rest of the text explored. It could be also considered an eligible proposition if it is in the interrogative form which is expected by readers of English as the main question format, or it could have lexical/other grammatical signals that show that it is a question. If any or all of these features are realised in the selected proposition then it becomes more or less a confirmed proposition of a Question.

The elements that represent the top level organisational pattern of the text are most plausibly the answers to the following questions:

- A. What are the propositions that are eligible to be research Question(s) **proper** that is/are posed in this study?
- B. What are the propositions that could be considered eligible Answer(s) **proper** to this/these question(s)?

The Question element generally refers to the research Question/Problem that the researcher is aiming to investigate. It is the main motive behind carrying out the study reported in the thesis/article. Unambiguous examples of eligible research Questions identified in the data of the present study are as follows:

ex. 4.1

With the above theoretical basis underpinning the study, the central question should, therefore, be: What are the desirable qualities (Values Orientation) within the ARA and how are they expressed?
(HT3)

ex. 4.2

The purpose of this study was to determine if cephadrine was useful for prophylaxis in the rabbit model for experimental streptococcal endocarditis (McGowan, et al.

1983)
(ST1.A2)

On the other hand, the Answer element refers to the Answer/Solution identified for the research Question/Problem investigated. It is the final conclusion from running the experiment. Since the Answer is mainly determined by the Question set first by the researcher, it should be always related to it. The following examples are the propositions that seem most eligible to serve as Answers of the research Questions given above.

ex. 4.3

The study can be seen to have emphasised so far the differences between “process” and “product”. Process entities are typically evaluated along the lines of usefulness and control, whereas product entities are evaluated along those of significance and certainty, ... The study has indicated that, of the two major systems of evaluation, TOE (Topic Oriented Evaluation) and ROE (Research Oriented Evaluation), the former comments on any kind of entity and employs a very wide range of value systems, which makes it very difficult to categorize. ROE, on the other hand, deals with types of entities as well as ideologically driven values that have been used to establish generalized categories of values across disciplines. The data have shown overwhelming evidence of no significant differences among the four disciplines in terms of the kinds of evaluated entities and ascribed values, as well as the lexical realizations of such values. This indicates that values of research are the same in different disciplines and therefore predictable. ...

(HT3.A1)

ex. 4.4

Cephadrine at the dosages used in this study failed consistently to prevent endocarditis in the rabbit ...With these reservations cephradine is not recommended for prophylaxis in infective endocarditis following dental procedures.

(ST1.A2)

For a detailed definition of the top level elements and how they are identified, verified and positioned in the explored texts - including discussion of less straightforward cases - see chapter 5, sections 5.2.1, 5.2.2, 5.3.1, 5.3.2.

4.5.1.2. The Middle Level Analysis

Having outlined the top level organisational pattern of the texts explored, and their propositional

realisations, the second step was to identify the middle level organisational pattern of the texts and their propositional representations. Again, analytical questions helped me to pinpoint the eligible propositions that realise the middle level pattern expected in the texts. The analytical questions were formulated as follows:

- A. What are the propositions that are eligible to be the research Question(s) **proper** that is/are posed in this study?
 - A1. What are the propositions that are eligible to be the Setting of this Question?
 - A2. What are the propositions that are eligible to be the researcher's more detailed Question(s)?

- B. What are the propositions that are eligible to be the Answer(s) **proper** to this/these Question(s)?
 - B1. What are the propositions that are eligible to be the researcher's Response to this/these Question(s)?
 - B2. What are the propositions that are eligible to be the researcher's more detailed Answer?
 - B3. What are the propositions that are eligible to be the Outcome of this Answer?

It should be noted that questions A2 and B2 have already been answered at the earlier level of comprehension; therefore at this stage they are not discussed, but assumed to be already known to the reader/analyst. However, further details about the Question and the Answer proper may be noted at this level as necessary to get a better understanding of the content of the texts. Questions A1, B1 and B3 help in identifying this more detailed information. This information is related to identifying the eligible propositions that realise the Setting of the research Question investigated, and the Response of the researcher to this Question, as well as the general Answer and Outcome of identifying this Answer.

The Setting generally refers to the description of the overall background to the study and the previous research that relates to it. The following are examples of propositions that are considered eligible to represent the research Setting drawn from two of the texts explored.

ex. 4.5

Composites advocated for the restoration of posterior teeth have been commercially available for the past decade. Many clinical investigations have indicated that wear resistance can be a problem with such materials¹⁻³. Researchers have defined two clinical manifestations of wear: attrition which occurs at sites of occlusal contact and abrasion which occurs across the entire surface leading to exposure of the cavity margins⁴.

(ST4.A10)

ex. 4.6

Aspergillus endocarditis is a life threatening condition frequently only recognised at autopsy. It is associated with a history of cardiac surgery, and particularly recipients of prosthetic heart valves (Carrizosa et al., 1974; Kammer & Utz, 1974; Rubinstein et al., 1975; Mcleod & Remington, 1978). Untreated endocarditis is usually fatal, and even with prompt therapy has a high mortality (ca 87%, Rubinstein et al., 1975). Once the infected cardiac vegetations became established radical treatment is required, involving prolonged antimycotic therapy and surgical removal of the vegetations. Amphotericin B in combination with 5-fluorocytosine is commonly used clinically. These two antifungal agents do not penetrate well into the bulky cardiac vegetations and hence long-term therapy and follow-up is necessary (Rubinstein et al., 1975).

(ST1.A1)

The Response element refers to the action that the researcher takes in order to find the Answer to his research Question. This usually involves the report of the Data investigated and the Research Procedures followed in their exploration - i.e. what is traditionally labelled the methodology section. The following is an example of the eligible propositions realising the Response element as drawn from a non-scientific text.

ex. 4.7

The paper uses a developing corpus of ARAs from four main disciplines: history (H), economics (EC), psychology (PSY) and applied linguistics (AL). So far, 60 of these have been analysed in detail. Since the "hard" sciences have been well researched, I felt that it would be useful to look at what is regarded as the "human" science disciplines. Comparing articles from four different disciplines was motivated by the desire to see whether these use the same categories of value. In arriving at the categories, the texts were read and cases of evaluation identified and grouped on the basis of frequent occurrences of similar patterns of use. These frequencies were then used to establish provisional categories and make initial hypotheses. The data was then examined again to find whether there were any other occurrences that did not fit into the provisional categories, and these odd occurrences were used to reformulate and refine the previously proposed categories.

(HT3.A1)

The more detailed Answer of the study usually includes reference to the details that accompany the report of the Answer proper including the Findings and Discussion of these Findings. The Findings, which are the direct outcome of carrying out the study, are the ground on which the Answer proper is based. The Discussion, on the other hand, is the explanation of the Answer and the comments that link the Answer proper to previous Findings. The following is an example of a part of a more detailed Answer given in one of the explored texts. It includes eligible propositions that give reference to a report of a specific finding, and others that discuss it and refer to previous research that relates to it.

ex. 4.8

Lathe-cut alloy has an average particle size which is considerably larger than that of Spheralloy. The smaller particle size and larger surface area associated with spheralloy favour the rapid dissolution of the mercury into the alloy particles during condensation, with the result that a larger contraction may occur. The resemblance of the dimensional change curve in our case to that produced by Philips [5], while increasing the trituration time, suggests that amalgams of alloys with the smallest particle size are over-triturated in comparison with the trituration of the larger particles.

(ST2.A1)

The Outcome element is the element that represents what the researcher has achieved as a result of finding the Answer to the research Question. This includes the main Implications of the Answer, its Limitations and the Recommendations that could be deduced from these implications and limitations; it therefore corresponds more or less to what is traditionally called the conclusion section. Examples of propositions that were identified as eligible to represent the Outcome element are as follows:

ex. 4.9

... further research in areas such as thematic structure and cultural rhetoric are needed. Such research aims to add to our understanding of the functional relationship between local components of texts, such as theme, and global elements of discourse structure in the "authentic" genres that academic writers are required to produce in L1 and L2. It is hoped that the tool of Propositional Clusters as described here will help teachers to exploit insights from textlinguistic research in cross-cultural settings in the L2 writing classroom.

(HT2.A5)

ex. 4.10

In summary, the silver staining of Wu and Cobb is a useful technique for the investigation of subsurface degradation. However, it is essential to exclude any apparent staining caused by adsorbed silver on the edge of the section. For this to be achieved, thin sections should be examined with a stereomicroscope, followed by incident light microscopy with CP or darkground illumination.
(ST4.A6)

Again, as mentioned earlier, for a more detailed description of the middle level elements, how they are identified and positioned in the explored data, see chapter 6, sections 6.3., 6.6., 6.8., and 6.10.

The main functional categories of the middle level elements were realised by many clauses/sentences as is apparent from the examples given above. Thus, sometimes it was necessary to reconstruct condensed propositions that can help summarise the elements included. The following is an example of a Setting proposition that was extracted from a whole page of further details that include general statements and references to previous studies (see Appendix 3 for the original version from which this summary was made). This proposition is put forward to show an example of what readers seem to grasp at the middle level of comprehension of reading this text and how middle level organisational pattern could be represented propositionally in a more condensed form. Note that this element includes mention of the background to the study and the previous research done on it.

ex. 4.11

The definition of infective endocarditis and its prevalence rates are given with a short introduction to cephadrine as a drug. Then a number of studies are reported about the use of amoxicillin and cephalosporin for the prophylaxis of infective endocarditis as well as the problems faced in using them.
(ST1.A2)

In general, investigation of the middle level propositions shows that they typically need to be inclusive statements that are formed by considering the various propositions under that level of structure. It is rare that they are represented linguistically by single sentences that appear in the text unless the text is very short. Therefore in this study they are either given as part of extensive examples, in which case they are given as italicised quotes from the texts concerned, or in my own words, in which case they

are italicised and underlined as the example given above.

Having extracted the eligible propositions that make up the semantic realisation of the middle level of the texts under exploration, and verified their selection by examining the linguistic signals they include and relating them to the top level elements for further confirmation of their selection, we can assume that we now have a summary of the main information of the whole of the texts. It should be noted that this level of organisation still deals with the overall organisational pattern of the text and its general content as if readers are reading to get the gist of the main elements of the texts. Therefore it does not represent all the base of the texts investigated which make up the bottom level. However, it is understood that the realisations of this level of semantic organisation are based on the extraction of the sub-elements that make it up and which coincide with some of the functional categories of the bottom level organisational pattern and its propositions, but do not cover it entirely as the bottom level does. In other words, to be able to know what the Setting of a study is all about, it is necessary to know about the bottom elements that make up this element. This includes knowing about the Background to the study and the Research Context which make up the bottom level pattern of this middle level element (see section 4.5.1.3. below). Due to this practical problem of the impossibility of disentangling middle level semantic realisations from the bottom level sub-elements and propositions, the present study, as noted earlier, will focus on this level and its realisations by reproducing the specific elements that make up this level as extracted from lower levels. In fact, this study focuses on the investigation of the top and middle levels only as these two levels are expected to cover the most important semantic elements of the texts explored. It is believed that the identification of the propositions of these two levels produces satisfactory summaries of the texts they appear in and hence allows the comparison and contrast of such semantic elements. However, reference to the bottom level analysis is mainly brought forward to back up the understanding of the middle level analysis of the texts explored without venturing into making a complete survey of the propositions or semantic realisations of the bottom level of the texts.

4.5.1.3. The Bottom Level Analysis

The third level of analysis is much more detailed than the previous two levels as it considers the more specific bottom functional categories of the text and the bottom level propositions that represent most of the propositions of the texts explored. In fact, this pattern could be thought to correspond to the outcome of a very close and detailed reading of the text by expert readers. In order to build up analytical questions that can help capture such a pattern, I formulated questions that specify the further details of questions A1, A2, B1, B2 and B3 mentioned above. When these questions are added to the ones already discussed earlier, the result is the following full list of questions which are intended to capture the eligible propositions that represent as much as possible the overall content of a research article/thesis chapter/p-text recounting a research study.

- A. What are the propositions that are eligible to be the research Question(s) proper that is/are posed in this study?**
 - A1. What are the propositions that are eligible to be the Setting of this Question?**
 - What are the propositions that are eligible to be the Background?
 - What are the propositions that are eligible to be the Research Context?
 - A2. What are the propositions that are eligible to be the researcher's more detailed Question(s)?**
 - What are the propositions that are eligible to be repeated instances of the proper/detailed Question(s)?
 - What are the propositions that are eligible to represent the Hypotheses which the researcher sets up for this study?
- B. What are the propositions that are eligible to be the Answer(s) proper to this/these Question(s)?**
 - B1. What the propositions that are eligible to be the researcher's Response to this/these Question(s)?**
 - What are the propositions that are eligible to be the Research Data used?
 - What are the propositions that are eligible to be the Research Procedures followed?
 - B2. What are the propositions that are eligible to be the researcher's more detailed Answer?**

What are the propositions that are eligible to be the Findings of this study?

What are the propositions that are eligible to describe how the Findings/Conclusions are Discussed by the researcher?

B3. What are the propositions that are eligible to be the Outcome of this Answer?

What are the propositions that are eligible to be the Implications of this study?

What are the propositions that are eligible to be the Limitations of the study?

What are the propositions that are eligible to be the Recommendations given?

According to this model of analysis, the research Setting often includes a Background to the study and a report of relevant previous research as mentioned in the previous section. Readers, as well as analysts, at this level of comprehension, are interested in extracting finer details about these sub-elements. Analysis of the investigated data showed that researchers usually give various types of information to provide the background to the study. They may provide specific definitions for terms, general historical statements, and comments about the importance of the study. The following are examples of the type of propositions that can be considered eligible to represent Research Background information.

Definitions

ex. 4.12

Two terms are used to describe wear in posterior composites: "abrasion", which describes general wear across the restoration surface, and "attrition", which occurs in areas of cuspal contact.
(ST4.A3)

Historical Background

ex. 4.13

The innovation centre idea started off in the early 1970s in the United States of America, where the first innovation centres were associated with universities.
(HT5.CHA2)

Importance of the Studied Topic

ex. 4.14

In the past decade silver nitrate has become increasingly popular as a straining reagent for the study of dental materials.
(ST4.A8)

On the other hand, previous studies are also part of describing the research Setting as suggested by the model. It must be noted, however, that researchers may refer to previous studies for different reasons. For example, it was found from the explored data that previous studies, or Research Contexts as they are termed in the model, were not only mentioned to remind readers of the relevant conclusions/results of such researches, but they were also referred to in order to report certain definitions, recommendations, or even problems discussed by earlier research. The following are examples of such data. The data also show the various ways of referring to previous studies (i.e. using numbered footnotes or the Harvard author/date system).

Research Context Reporting Conclusions

ex. 4.15

Craig [6] has reported that current amalgams have dimensional changes that are always positive. (ST2.A1)

Research Context Reporting Definitions

ex. 4.16

In tribology (the study of lubrication, friction and wear), this process is known to cause subsurface damage and is a fundamental mechanism of two-body wear (Zumgahr, 1987).
(ST4.A9)

Research Context Reporting Recommendations

ex. 4.17

It has been suggested that the amount of free setting expansion should not be less than 10 $\mu\text{m}/\text{cm}$ in order just to eliminate the possibility of microleakage [3].
(ST2.A1)

Research Context Reporting Problems

ex. 4.18

*Some problems have been encountered with the use of amoxicillin, in particular the selection of resistant oral bacterial strains and alterations in body flora (Lacey et al., 1983; Southall et al., 1983; Woodman et al., 1984).
(ST1.A2)*

It is worth noting that, concerning the bottom level organisational pattern under the Question element, there is a possibility of referring to more details about the research Question proper at this lower level of analysis. In fact, the present investigation showed that research Questions are sometimes repeated more than once throughout the text. This repetition is often meant to unify the text as well as guide and remind readers of the main research Question and operationalise the research Question as the text develops. A good example of this is given below where the researcher sets a Question under the aims section, then elaborates it by giving a more detailed research Question under other two sections.

ex. 4.19

*With the above theoretical basis underpinning the study, the central question should, therefore, be: What are the desirable qualities (Values Orientation) within the ARA and how are they expressed?
(HT3)*

ex. 4.20

*The main aim is to investigate the following: (i) the things in ARA to which evaluation is attached; (ii) the kind of qualities/values used to judge these "things"; and (iii) whether these qualities can be reduced to a small number of predictable categories.
(HT3)*

ex. 4.21

... In this section, the study aims at the following:

- (i) to group evaluation into a small number of categories (scales) that can be seen to characterize the ascribed value in the ARA;*
- (ii) to show that the scales are related to whether the evaluated entity is product or process; and*
- (iii) to find out how each scale of value is realized in the language, as well as investigating some aspects of the role of grammar in determining these scales.
(HT3)*

It is expected that as part of presenting Questions and as a step forward to finding out the Answer to them, researchers set up Hypotheses about the Answers. These expected Answers may not be exactly what the Answer will look like at the end of the research, but they are usually formulated in the way Answers are formulated. The main difference between Answers and Hypotheses is that the latter are typically set in the future rather than in the present as with the former. Any Hypotheses about things other than the Answers are not considered in the analysis of this sub-element (e.g. hypotheses about the difficulty of carrying out the study, minor findings). The following is an example of explicitly signalled hypotheses set up by a researcher interested in studying theme in research articles.

ex. 4.22

3. 3. INITIAL HYPOTHESES

From the above discussion, it is hypothesized that both unmarked and marked components of Theme perform a variety of discourse functions. Consequently,

[HYPOTHESIS #1]

A detailed functional analysis of both Topics and Context Frames in a corpus of refereed, published scientific research articles will highlight the changing options for, and constraints on, thematic choices across RA sections as the discourse proceeds with developing rhetorical goals.

More specifically,

[HYPOTHESIS #1a]

*A functional analysis of marked Context Frames will elucidate their potential to describe the rhetorical organisation and conceptual macrostructure of scientific RAs.
(HT2.CH3)*

If we turn now to the Response element in this functional model, as mentioned earlier, it is expected to constitute an important part of the study as it includes what the researcher has done to find the Answer. This step, which is the link between Questions and Answers, gives an account of the materials which the researcher has worked with (i.e. Research Data) and the steps followed in exploring these materials (i.e. Research Procedures). In many cases this element is one of the least problematic parts of research article/thesis chapters to identify as it refers to tangible elements and

clear-cut research acts. The following are examples of research responses drawn from two of the articles explored and which represent the “scientific” and “humanities” fields. Note in them the reference to numbers of the corpus and the use of research act verbs such as “were read”, “were used”, “were examined”, etc.

ex. 4.23

The paper uses a developing corpus of ARAs from four main disciplines: history (H), economics (EC), psychology (PSY) and applied linguistics (AL). So far, 60 of these have been analyzed in detail ... In arriving at the categories, the texts were read and cases of evaluation identified and grouped on the basis of frequent occurrences of similar patterns of use. These frequencies were then used to establish provisional categories and make initial hypotheses. The data was then examined again to find whether there were any other occurrences that did not fit into the provisional categories, and these odd occurrences were used to reformulate and refine the previously proposed categories.
(HT3.A1)

ex. 4.24

Three Clay Mineral Standards supplied by Ward's Natural science Establishment Inc. were used in adsorption experiments:
(i) *Montmorillonite No. 2, Chisholm mine, Mississippi,*
(ii) *Illite No. 36, Morris, Illinois,*
(iii) *Kaolinite No. 4, Oneal Pit, Macon, Georgia.*
(ST5.A1)

However, it is not the case that all responses are easy to identify. In some cases it was impossible to identify any distinct account of the Data or Procedures for carrying out the study. This is particularly true with more descriptive and argumentative studies and especially those that depend on a report of history to find answers to their research questions. An example of this is the economics thesis (HT5) explored in the present study where the researcher depends on the outcome of some interviews he has made with a number of managers and owners of businesses to compare and contrast the success or failure of certain economic policies. The researcher does not feel the need to describe the interviews or to discuss the use of interviews as a technique, but depends only on the comments given to him to elaborate his discussion and link it to his readings in history about the development of such policies.

In some cases, on the other hand, Data and Procedures are not separable in texts. An example of this is example 4.2.3. above where the writer mixes both references to Data and Procedures together. This is common when both types of information come under one and the same section entitled "materials and procedures".

It should be noted that sometimes Data are presented in the form of tables and are therefore only pointed to but not described within the running text as follows:

ex. 4.25

The seven composites used in this investigation are described in Table I.
(ST4.A7)

On the other hand, Procedures are sometimes reported as part of previous studies because they may repeat a previous technique used by other researchers. The following is an example of this.

ex. 4.26

The specimens were embedded in a contrasting composite as described by Wu and Cobb (1981), and then prepared for ILM, SEM and XEDA.
(ST4.A8)

In general, however, it is easier to recognise the details under the Question and Response elements than those usually found under the Answer and Outcome elements, which constitute the following two elements of the organisational pattern of the proposed model. Analytically, it is more problematic to distinguish between the Answer and Outcome elements as well as separate out their sub-elements. Concerning the Answer, its sub-elements include the Findings and Discussion with their various details. It was often difficult to differentiate between these sub-elements as they were mixed together in texts in a complex manner. In my data, such details were impossible to disentangle from each other as they appeared to build up in "cobwebs" which often do not represent the different sub-elements as separate categories as my model may seem to suggest. However, it was possible to set a general description of the Answer sub-elements, Findings and Discussion, to help in differentiating them from

the plethora of ideas in most Answer elements. Thus, whereas the Answer proper refers to the final and ultimate conclusion that the researcher reaches and to supply a response to the research Question, Findings are the immediate outcome of carrying out research (Research Response) that is based on the report of the observations made by the researcher, and the Discussion of the Answer refers to explaining the Findings and comparing and contrasting them with previously stated Findings in the same field of study. Thus, it seems that the report of the Answer represents a cline where the Answer is represented in more detail through Findings which are picked up again in the Discussion to report in further detail the more general reasons behind such Findings and their relation to other Answers in the field. It is worth adding that the Outcome element, particularly Implications, represents a further step on the Answer cline as it attempts to relate the Answer proper, its general Findings and their Discussion to the general Setting of the whole study. Thus, the arguments that are raised under the Findings and Discussion sub-elements are further developed by the Implications. In that sense the cline of the Answer could be represented as an arrow that points forward and gets larger every time it is being picked up by a new sub-element (see figure 4 below for a representation of this cline). It is worth noting that the difficulty for the analyst in delimiting the various sub-elements reflects the difficulties that writers (especially novice writers) may have in deciding what information to give under 'Findings' rather than 'Discussion', and how to distinguish those two sub-elements from 'Conclusions'.

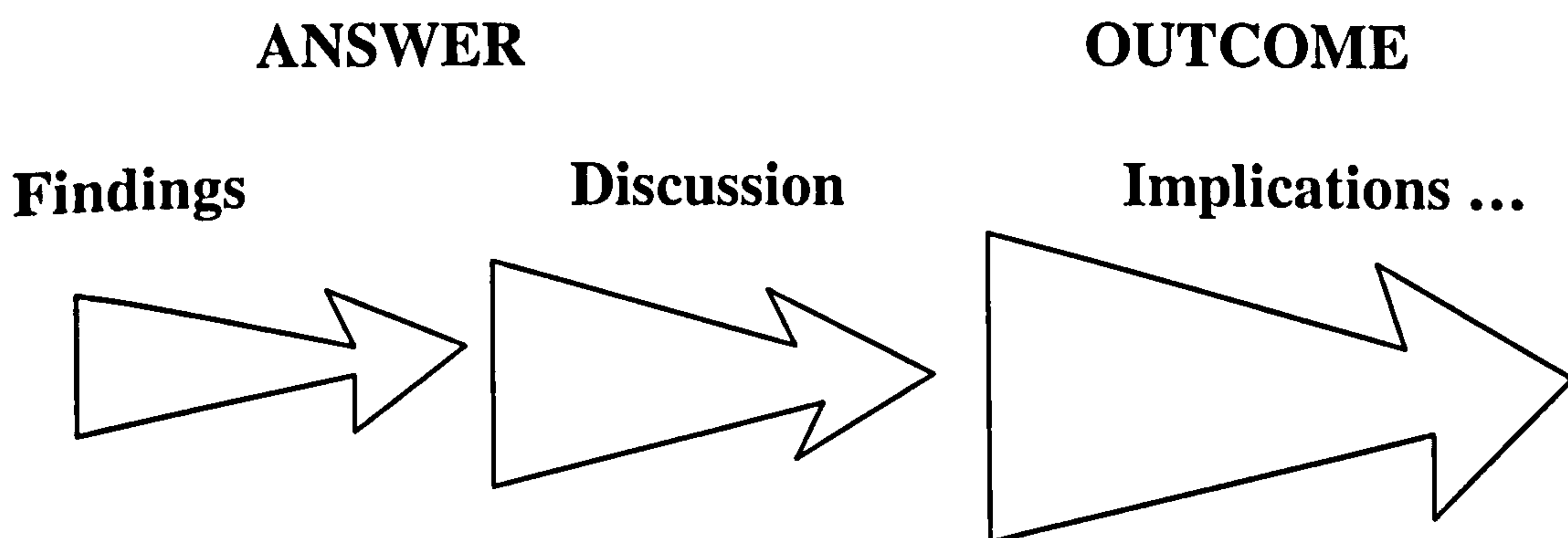


Figure 4. The Answer and the Outcome Cline

Examples of the linguistic realisations of the sub-elements of the Answer are given below.

Answer Proper as a Final Conclusion

ex. 4.27

We concluded that itraconazole at a dose of 5.0 mg/kg body weight is effective in sterilizing rabbit cardiac vegetations.
(ST1.A1)

Findings

ex. 4.28

The two disjuncts above appear to function differently from the evaluation dealt with by the suggested analytical framework. Although the terms 'unfortunately' and 'sadly' but not 'surprisingly' can be looked at from the viewpoint of positive and negative evaluation, and clearly represent the researcher's attitude towards research entities (and are thus ROE), they do not have a direct relationship with the good or bad of research entities in the same way as has been suggested in this paper.
(HT3.A1)

ex. 4.29

The majority of electron micrographs indicated no sign of degradation in the composite subsurface corresponding to the stained areas.
(ST4.A9)

Discussion

Interpreting findings

ex. 4.30

The various colors which occurred in the composite after thermal-cycling may be explained by the scattering spectra.
(ST4.A8)

Comparison with Previous Studies

ex. 4.31

The results agree with the findings of Pillir et al. (1984) and Heath and Wilson (1977) that ageing in water does not have a significant effect on the three body abrasion rate of dental composites.
(ST4.A7)

The Outcome, which is the final element under the Answer domain, includes Implications, Limitations and Recommendations as mentioned earlier. Implications are the further discussion of the Findings of

the study which may lead to setting up certain Recommendations later. It seems therefore that Implications constitute a middle stage as they are derived from Findings/Conclusions and lead to Recommendations. Limitations, on the other hand, refer to all the negative aspects of the study, especially those related to the problems that researchers may have faced in collecting data, carrying out procedures and interpreting results. Finally, Recommendations are the suggested steps that need to be done as a result of the Answer found by the researcher. Analysis showed that these sub-elements, like the sub-elements of the Answer, are not clear-cut as they cannot be separated easily from each other or any of the other Answer sub-elements. However, unlike most of the other elements, it was found that the Outcome sub-elements and their further details are optional as some writers may decide not to include Implications, Limitations or Recommendations. The following are examples drawn from the data to show generally what is meant by these different semantic organisational elements.

Implications

ex. 4.32

The study has suggested that, in terms of evaluating research, the writer of an academic research article can choose from a very small set of semantic/value options as well as a relatively small group of lexical items through which to express these value options. The major values identified in this paper, "fixedness" and "worthiness", can be seen to be related to the ideology of science.
(HT3)

Limitations

ex. 4.33

The present technique gives no quantitative information about the amount of silver present in the degraded composite.
(ST3.A6)

Recommendations

ex. 4.34

Future studies need to consider a more reliable method for the quantitative analysis of the silver.
(ST3. A6)

Although I have given definitions of the bottom level elements of the proposed model, the above description of these functional categories is not exhaustive and is in many ways very general. The aim of this is to provide general information that can help later in defining further the more general categories of the top and middle level elements that are the concern of the present study. The present study focuses on the identification of the more general levels of comprehension/analysis of the semantic organisational pattern of texts as it is believed it may help underpin clearly the overall content of the texts analysed so that their comparison and contrast becomes a much easier task. It should be observed that the above description of the various elements and sub-elements, especially those of the top and the middle level elements, is very general and that a more detailed description is given in chapters 5 and 6 where the actual findings of studying these elements are reported.

Now that I have given an overview of the model of analysis that was applied to compare and contrast the semantic organisation pattern of the interrelated texts explored, theses and their derived articles, I move to discuss briefly the main problems that faced me while applying it and provide sample text analyses to show the outcome of applying the model to actual data to produce manageable summaries of the texts explored.

4.6. Problems Faced in Applying the Model

The main problems faced in applying this model are linked to the following points:

- a. The use of the labels Question and Answer.
- b. The identification of propositions and elements in data.
- c. The presence of other minor elements and sub-elements.
- d. The Answer Domain categories
- e. Applying the model to the two text types, articles and theses/chapters/p-texts

a. The Use of the Labels Question and Answer

The fact that the model uses the labels Question and Answer is sometimes problematic because

researchers may not always pose a direct Question in their texts. This problem is due not only to the fact that interpretation is needed to extract the underlying Question posed by the study, but because it is sometimes very difficult to see that there is a Question posed and therefore extracting such a Question may seem unnatural. This is found in particular in the experimental studies that are descriptive in nature where the researcher tends to report observations and comment on them rather than ask Questions. However, even then the Question “What has been observed in this investigation?” may be enough to suggest again that researches are motivated by Questions that seek Answers. These Questions may be expressed directly or indirectly as the case may be, but they have to exist for the research action to take place.

Another possibility to solve this problem is to use the labels Gap in Knowledge (Hoey, 1988, Adams-Smith, 1987) and Filling the Gap to refer to what motivates such research and the outcome of this research. However, I would argue that these labels could be again expressed by Question and Answer because the Gap in knowledge raises one's questions about what is not known and filling the gap in reality is an attempt to find an answer to these questions. Therefore, again, as with using the label Problem discussed earlier, the use of such labels seemed not generalisable enough for my own purposes and hence I decided to rely on the use of the labels Question and Answer as they seemed more appropriate for my data.

b. The Identification of Propositions and Elements in Data

The identification of the various categories in the texts was sometimes very problematic for a number of reasons. First, it was very uncertain what should count as propositions and how they can be extracted from texts. However, relying on the definition given by Halliday (1994) and van Dijk and Kintsch (1983), it was decided that propositions can be either provided by the author him/herself or extracted from what the text states. Thus, in the first case, I depended on the actual words, clauses and sentences given in the text as the propositions that capture the main information intended by the author. Sometimes these could be located in the abstract. In this case, I would select these

clauses/sentences as it seemed permissible to use them since they are the formulations of the writer of the text of what he/she thought should be the main proposition of the parts of the text that they represent. On the other hand, in the case of failing to find clauses or sentences that seem to directly provide the reader/analyst with the main information that sum up the text or parts of it, I permitted myself to construct my own clauses or sentences that represent the intended content. In many cases, it may be thought unreliable to depend on this option because of the fear that I may be adding a mistaken interpretation of the content while summing it up. In order to avoid such a problem, the constructed sentences were always checked against the text with other expert readers who are qualified in interpreting texts and are also native speakers who have a feel for the writer's intentions (see Appendix 5 for the outcome of a similar exercise). This also helped in another problem faced, which is the verification of the analysis of texts depending on the model.

Another problem that was faced in attempting to identify the various categories of the model in texts is that some categories appear mixed up together with other categories and therefore it is difficult to separate them. The case of the sub-elements of the Answer and the Outcome elements has been discussed earlier (section 4.5.1.3.). In some cases these categories are very closely related as is the case when writers mix Data and Research Procedures together as follows:

ex. 4.35

*Fifty-one restorations that had been removed for replacement were collected from the conservation clinic at the dental school... the 34 larger specimens were divided in half with a diamond wire saw (Bennet and Co., Leicestershire, UK).
(ST3.A6)*

But it becomes more complicated when, for example, they mix up categories and sub-categories that could have come under separate sections in the model. In the following example, where the researcher chooses to describe Procedures and the Findings under the Discussion section, he finishes by providing a conclusion that leads to a hypothetical statement about an alternative finding.

Initially the specimens were cycled under AgNo3 rather than water and processed for microscopy without further staining. This resulted in a much smaller area of stain than when the specimens were stained after cycling. In the latter case, the area of stain increased with time, reaching a maximum at 20 h. This indicates that the staining occurred through a network of cracks nucleating in the subsurface rather than through an advancing series of cracks with their origin at the indentation. Had that been the case, the silver nitrate would have penetrated with the advancing crack.
(ST3.A9)

In these cases where more than one category and sub-category are mixed up, the analyst can only note down the case and identify the position of the various elements while relating them to their main category, but accepting that sometimes there is no dividing line between specific elements, as language is multi-layered and can be sometimes very complicated in terms of its organisation in texts. However, noting down the instance of occurrence of the elements and their position is essential while commenting on them later.

c. The Presence of Other Minor Elements and Sub-elements

The analysis was not always possible using the elements provided because the text may yield elements and sub-elements which the model does not include. In such cases the number of occurrences was always used as the criterion for deciding whether the category is valid or not. However, sometimes if the instance seemed significant or interesting it was kept in a "rag bag" for further exploration later. This usually happened in the analysis of longish texts where more linguistic realisations and elaborate content allowed for the appearance of such instances of minor categories and/or sub-categories. Such cases are brought up in chapters 5 and 6, while discussing the main results of the analysis of data.

d. The Answer Domain Categories

Another problem facing the application of this model was how to identify the category of Answer and all its various sub-categories. As discussed above (section 4.5.1.3), the main problems were faced while attempting to distinguish elements like Findings and differentiating them from Discussion and Implications. This is why it was important to set a very strict definition of Findings, Discussion and

Implications (see chapter 6, sections 6.9 and 6.10). However, some instances still remained difficult to decide since, as argued above, viewing this stretch of the text in terms of distinct sub-categories is an analytical convenience: it is more accurately seen as a cline and there are inevitably borderline cases.

e. Applying the Model to the Two Types of Texts

The final problem to be discussed here is that related to the application of the model to various types of texts. Although the model developed from the initial consideration of sample articles and theses, further applications were made to more articles and theses. In general, it was always more feasible to apply the model to articles because they were short and more clear-cut in their format and organisation. More difficulties were faced while applying the same model to theses because of the length of these texts and their elaborate organisational format. In some cases, it was easy to identify one specific chapter that is turned to an article. In other more problematic cases, it was difficult to identify specific chapters from which articles were drawn. In these cases the only thing to do was to investigate the different related parts of the thesis as a unified body regardless of all the content that come in between. These parts were considered what I have referred to earlier as the potential texts (p-texts) that writers recognise as stretches of text that could be collated together to form a publication in the form of an article. The identification of these parts, as well as chapters that are turnable into articles, was done by analysing the article first before analysing the thesis in order to identify the related parts and then attempting to do the propositional analyses suggested by the model. This indeed made the application of the model more problematic in many ways because I needed to go between the interrelated texts many times to be able to specify the actual parts in the thesis that relate to the article. It was very time consuming, not only because I had to read extensively very long parts in the thesis before being able to determine which parts match, but because in many cases the article added parts that did not have any equivalents in the thesis. This meant that reading the article was not always a straightforward guide. However, in many cases I managed to decide which parts in the thesis match those in the article and produce summaries of the content of the two interrelated parts ready to make the comparison and the contrast between the two related texts. In fact, it was possible to do so to most

of the sections of all the theses investigated. This showed that, although of the difficulties in applying the model to very long texts like theses, it was working as it already worked with the analysis of articles. The following are samples of the analyses of these two types of text made using these procedures. For detailed exemplification of the procedures followed in extracting some of the top and middle level analyses of the following texts, see Appendix 4.

4.7. Sample Analyses of Texts

Now to give a better idea of how the model works, the following is the full analysis of two texts, one from the humanities (Applied Linguistics) and the other from science (Dentistry), to show the reader how the final content summary of the text was arrived at and which is used later in comparing and contrasting the organisational and content structure of the text with other related texts in general, and as a guide to identifying the parts from the comparable texts that need to be investigated linguistically further. See Appendix 4 for a full commentary on how some parts of the summaries reported below were worked out from the original texts and how the rules of extracting propositions were applied.

The first text below is the full analysis of an article drawn from the field of applied linguistics entitled "Why Ask Questions in Academic Monologue? Language Choice at Work in Linguistics and Science Talks" (HT1.A1) which is derived from a chapter from a PhD thesis (HT1.CH5) in the field of linguistics entitled "Asking Questions". The second text is the analysis of a part of a thesis chapter (ST4.CH7) "Factors Affecting Permeability and Degradation" from the field of dentistry drawn from a thesis entitled *Permeability, Degradation and Wear in Dental Composites* (ST4). The following analyses display the final summary of each text with all the elements, and sub-elements of the top and middle levels included. I start by giving the top level elements; then I give the middle level elements and sub-elements. The following summaries are mainly based on constructed propositions. The rest are produced by the authors themselves.

TEXT ONE

ARTICLE (HT1.A1)

SUMMARY OF THE TOP LEVEL ELEMENTS

QUESTION

The present study aims to fill a gap, that is the neglect of study of the use of questions in monologue lectures and research presentations from two discipline areas: applied linguistics and applied science.

ANSWER

Analysis has shown the important value of questions in creating an interaction between presenters and audience in a number of different ways. The study also provides clear evidence of discipline-specific differences in academic talks.

SUMMARY OF THE MIDDLE LEVEL ELEMENTS

SETTING

BACKGROUND

- * Teachers, lectures and presenters use ways to attract audience's attention during lengthy monologues.
- * Asking questions is one of these ways used by monologists to invite interaction.

RESEARCH CONTEXT

- * Thompson and Thetela (1995) pointed to the relation between questions and interactivity.
- * Biber (1988) discussed interpersonal functions and the involvement of the addressee.
- * Frank (1989) studied the use of questions in sales letters and ads to show their persuasive function.
- * Webber (1994) studied the functions of questions in scientific journal genres.
- * The study of questions in monologues was neglected previously.

* Studies on the differences in discourse features in various disciplines, and in the same text type, and which also showed that there is variation in discourse features included those done by Dudley-Evans (1990, 1994), Love (1993) and Gunnarsson *et al.* (1997).

HYPOTHESES

RESPONSE

A corpus data of academic talks from the two disciplines of linguistics and science were analysed to identify, typify and functionally describe the questions used in them.

DATA

33 academic talks by native speakers, 23 presentations and 10 undergraduate lectures of varying lengths (20-90 min.) were studied. The 33 monologues were divided in two-sub-corpora of equal nature from the 2 disciplines of English language and applied linguistics, and science and technology.

PROCEDURES

- * A manual analysis was carried out to identify examples of question elicitation by either recognising the question form or function.
- * Formal categories of questions were established and functional categories were identified.
- * These categories were compared and contrasted in both corpora (science and linguistics)

FINDINGS

- * Four formal categories of questions were identified
 - Free-stand interrogative
 - Embedded interrogative
 - Declarative + word-tag, polar interrogative

- Tag-questions

* Five functions of questions were also identified:

(Audience-oriented)

- Check

- Evoke audience response

- Seek audience agreement

(Content-oriented)

- Raise issue

- Introduce information

* Striking differences were observed between the two disciplines (e.g. Questions are more in language talks than in science ones.)

Language talks are 2 times more audience oriented

* Cultural presuppositions about values, degrees of audience involvement, and status of knowledge in the discipline were raised.

* Striking differences were observed between the two disciplines. Linguistics presenters are more raisers of issues while science ones are omniscient beings and owners of knowledge. In science talks, the audience are more passive than in linguistics talks.

DISCUSSION

COMPARISON WITH PREVIOUS STUDIES

* Webber (1994) stated that Content-oriented questions play an interactive role like questions (medical texts). -----> The present study contradicts this finding.

* Biber (1988) showed that the differences between disciplines in terms of interpersonal relations are relatively small.-----> The present study contradicts this finding.

Hunston (1993), Mulkay (1979), Latour, (1987), Francis and Kramer-Dahl (1992) were also referred to for comparison and support purposes.

OUTCOME

The findings show that the study has a value in the field of teaching academic subjects.

IMPLICATIONS

For the teaching of academic listening and speaking skills, we can state that it is affected by question strategies in our field (humanities).

LIMITATIONS

RECOMMENDATIONS

Be aware that questioning strategies must be seen in the context of the academic discipline.

It is interesting to note that the following summary is much more extensive than that of the article above because the chapter, or rather the part of the chapter summarised, reports the study of more than one experiment while the above article is reporting only one single experiment. In fact, the following summary is extracted from the part of the chapter that has been turned into an article. I chose to analyse this part of the chapter concerned because it gives an example of the outcome of the analysis of a p-text which is different from the way I analysed articles (see Appendix 4, section 4.2., for a brief

description of the stages followed to arrive at some of the top and middle level elements of this p-text). Another reason why I chose to report the analysis and the summary of this particular part of chapter, rather than the chapter from which the above linguistics article was derived, is that I wanted to give an example of an analysis from the humanities field and another from the scientific field. I wanted by this to show that the model of analysis developed in this study does work on the two types of texts explored, articles and theses, as well as texts belonging to the two varied disciplines of science and humanities.

TEXT TWO

THESIS CHAPTER (ST4)

SUMMARY OF THE TOP LEVEL ELEMENTS

QUESTION

The experiments reported in this chapter used the silver nitrate staining technique to investigate the effects of thermal on the surface of composites.

ANSWER

Although it was possible to cause considerable degradation of the surface by extended storage at 60°C or high rates of temperature change, the clinical experiment indicated that these processes are unlikely to be effective clinically. The temperature fluctuations in the mouth may increase the depth of penetration of oral fluids.

SUMMARY OF THE MIDDLE LEVEL ELEMENTS

SETTING

The effect of exposure to moisture and heat may result in deterioration of the mechanical properties and integrity of the filling.

Some studies were done to investigate the effect of thermal cycling and temperature.

BACKGROUND

RESEARCH CONTEXT

Marom (1985) proved that "hydrothermal ageing" has contributions from both physical and chemical reactions.

Recent investigations used prepared samples/ones stored in static environment.

Marcos-Montes (1986) found that TC caused an increase in the solubility and abrasion rate of dental composites.

Kaeble and Dynes (1977) found that in epoxy resins the combined effect of heat and water caused a network of microcracks throughout the matrix of industrial composites and anticipated that they will be susceptible to staining.

HYPOTHESES

RESPONSE

The effect of thermal cycling rather than constant temperatures was studied because it was more comparable to the clinical situation. A second experiment investigated the effect of temperature alone. Two additional experiments were performed to enable clinical interpretation of the results. The temperature changed at the surface of a restoration *in vivo* were determined and compared with temperature profile in the thermal cycler.

DATA

Silver nitrate and seven dental composites

PROCEDURES

a. Thermal Cycling

Samples treated with silver nitrate were put in opaque plastic bottles (3 mole/litre) to avoid dangers of using open beakers.

Three groups of samples were prepared and treated differently: 36 samples were prepared; 12 were cycled in silver nitrate by placing them in a cycler, then cycled for 2.25 min at 60°C and 6°C. The time of the cycles corresponded to the time of doing 1000, 5000, 10,000 and 50,000 cycles; another 12 samples were cycled in water then dried and immersed in silver nitrate for 42 days; the last 12 samples were stored uncycled in silver nitrate. For each interval 9 samples were processed.

b. Individual Temperatures

48 samples of the four materials only were explored (P30, Occlusin, Silux and Pro-file-TLC). 12 groups of samples were processed in the following ways: (i) Thermal cycling in water/silver nitrate at 60°C and then (ii) at 6°C. (iii) Other samples were stored in silver nitrate at room temperature and (iv) some samples were thermal cycled using the methods described earlier for comparison. Samples from each group were removed and processed after 14, 21, 42 and 90 days.

c. Measurement of Temperature Changes *in vivo*

Using two thermocouple probes, the temperature changes of the surface of a composite restoration of a

patient eating hot and cold items of food as well as the temperature of the food he was eating were monitored and measured.

d. Characterisation of the Thermal Cycle

One probe of the multi-channel thermocouple was placed in the plastic bottle containing the sample cycled in silver nitrate. A second was placed on the surface of a specimen openly cycling in water and a third was buried in the middle of this specimen. The recording apparatus was set to simultaneously record the temperature every 10 seconds during immersion and every 2 seconds during change over.

FINDINGS

First Experiment

Thermal Cycling increased the depth of penetration of the silver nitrate but the order of the increase was the same (Profile is the highest and Occlusin the lowest).

The stain progression was analysed by linear regression of the depth of stain v (time) 0-5.

With the exception of Heliomolar, the depth of the silver stain after thermal cycling was greater than in the unconditioned samples.

Second experiment

For all the materials heat and thermal cycling caused increase in the depth of the stained layer after 90 days at 60°C.

Third experiment

Samples cycled in water attained the same temperature extremes but the rate of change was slower deep in the sample.

In samples cycling in silver nitrate both temperature extremes and rates of change were diminished.

Fourth experiment

Although the temperature of the snack was 90°C, the surface temperature of the composite did not exceed 55°C. However, when in contact with ice cream, the surface temperature dropped to 4°C.

Drinking hot soup had little effect on the surface temperature.

FURTHER ANSWERS PROPER

First Experiment

The different ageing temperature and thermal cycling produced both quantitative and qualitative effects.

The former resulted in increased depth of diffusion and the latter the formation of different-coloured layers in the surfaces of the materials.

The colours observed included shades of silver, black, yellow, green, orange, and brown.

The most pronounced examples of layering occurred with Profile and Occlusin samples which were stored in silver nitrate for 90 days at 60°C.

For all the thermal cycled samples with silver nitrate, the most significant effect was an increase in the depth of penetration of silver nitrate.

For specimens subjected to thermal cycling in water plus 42 days in silver nitrate, except for Heliomolar, there was a greater depth of diffusion of silver nitrate after 42 days than had been for those samples preconditioned by thermal cycling.

Second experiment

For all materials, both heat and thermal cycling increased the depth of the stained layer, while a decrease occurred at 6°C.

Third experiment

Generally, the rates of temperature change were comparatively low, although at the cold/hot transition a rapid change of 30°C occurred.

DISCUSSION

INTERPRETATION OF FINDINGS

Appearance of the stained layer in Silux could be explained by the "Fickian" model. An explanation for the increases in depth of the stain and layering that occurred after preconditioning by TC and subsequent immersion in silver nitrate is that it is due to thermal cycling rather than the chemical action of silver nitrate.

There is no direct relationship between degradation and the coefficient of thermal expansion (CTE) of the composites.

In the second experiment, the main effect of cycling was to increase the depth of diffusion and this would have resulted from the well-established dependence of the diffusion coefficient on temperature.

Explaining which effect predominates in the mouth - (a) increased depth of diffusion of oral fluids or (b) surface microcracking as a result of rapid dimensional change. (a) is the likely effect because of the interesting case of soup drinking - flow of hot liquid is directed away from the teeth by soft tissue and therefore it would seem that change in temperature will increase the depth of penetration of fluids.

COMPARISON WITH PREVIOUS RESEARCH

Thomas and Windle (1978) discussed the Fickian diffusion and its relation with increased temperatures.

Browning (1978) and Hashinen and Fairhurst (1984) also discussed the relation between degradation and the CTE.

Jacobs et al. (1973) also discussed with more elaborate explanation a similar clinical experiment. Occasionally materials are stored in high temperatures to accelerate ageing and this was always criticized for being clinically unrealistic - The present finding endorses this criticism.

OUTCOME

IMPLICATIONS

The results of the present study are important in the interpretation of *in vitro* experiments.

LIMITATIONS

RECOMMENDATIONS

Having applied the model to the above texts to produce summaries of their overall content organised according to their top and middle level elements, it can be argued that the model seems workable and can give a reasonably coherent overview of the content of texts as well as their overall organisational structure. Therefore it was feasible to use it in the analysis of theses/chapters/p-texts and the articles

derived from them to distinguish between both text types in terms of the semantic organisational patterning. In fact, it was applicable to almost all the investigated texts explored. It is also interesting to note that the model was also applicable to both applied scientific and linguistic research works and could in fact be used to highlight any variations in these representatives of the “scientific” and “humanities” fields. Furthermore, it was interesting to see how this model helped to identify the elements that are mandatory or optional choices in these types of texts. For example, in the chapter analysed above it was clear that Hypotheses, Limitations and Recommendations are optional elements as they did not appear in the text, though they may appear elsewhere in the thesis.

It should be noted that the above propositional representation of the semantic organisation of the texts explored above is in many cases the result of using the rules suggested by van Dijk and Kintsch (1983). In the above cases, especially in the extraction of middle level propositions, generalisation and construction rules were used often as it was necessary to summarise a great number of clauses and sentences to represent the main propositions and to construct others that were extracted from the more indirect clausal representations given by the writer. However, in some cases the actual clauses that were used by the writers of the texts were condensed enough to be used to represent their top and middle level elements. The analysis was confirmed by consulting natives about the outcome of the propositional analysis of these texts. However, in the present study the discussion of how the propositions were arrived at is not the main concern (for a brief description of the procedures used to arrive at these propositions, see Appendix 4). Instead, the study focuses on the actual differences, or rather types of differences, that appear between the propositions identified under the top and middle levels of both types of texts explored in terms of the content reflected and the overall organisation of this content. It also attempts to interpret the reasons for making such differences. In most cases, I attempt to refer to the actual wording used to represent these propositions to allow for the investigation of the differences in linguistic wording as well. In other cases when this is not feasible or appropriate I only focus on the propositions constructed for that purpose.

In the following chapters the results of the analysis of the data explored in this study are given. First, the results of the analysis of the top level elements are reported (chapter 5), followed by the results of the analysis of the middle level elements (chapter 6).

CHAPTER FIVE: ANALYSIS OF THE SEMANTIC ELEMENTS OF THE TOP LEVEL OF ORGANISATION

5.1. Introduction

This chapter aims to present the major findings of applying the model of analysis discussed earlier (chapter 4) to the data investigated in the present piece of research (chapter 3, section 3.2.1.). The present chapter reports in particular the findings of the semantic top level of the texts explored. It is divided into two main sections. The first section (section 5.2.) reports the findings of the study of the Question proper element, while the second section (section 5.3.) reports the findings of the study of the Answer proper element. Throughout this chapter, examples that support the findings of the investigations are given.

5.2. The Analysis of the Question Element

The present section focuses on the analysis of the Question element and the various categories for identifying and differentiating it in the two types of texts explored. The first sub-section on the research Question (section 5.2.1.) gives a detailed definition of the element and specifies how it is identified in texts. The following sub-section (5.2.2.) discusses where the various types of Questions identified are positioned in the texts investigated. Section 5.2.3. discusses the major findings of the analysis of the Question element, especially how the different forms of thesis Questions and their different positions may influence the type of research Questions extracted from them. This section also deals with what is in many ways the main issue for this study, the kind of strategies writers follow in transforming research Questions in theses/chapters/p-texts into research articles, and the changes entailed in using these strategies.

5.2.1. The Question Element: What is it and How is it identified?

As mentioned earlier (chapter 4, section 4.5.1.1.), the Question element in academic texts is the semantic element that reflects a particular research Problem/Question that the researcher wishes to

investigate in order to find a Solution/an Answer to it. In order to identify this element in texts, the Question-Answer method discussed in chapter 4, section 4.5.1. was used. This entailed posing the Question “What is/are the proposition(s) that seem(s) eligible to represent the main Question/Aim of this study?” and attempting to find an Answer to this Question in the theses and articles explored. This search was guided by the common convention reflected in the model of analysis, which assumes that the research Question, as an organisational element, almost always appears in the early parts of reporting any study and particularly after introducing the general background to it.

The process of identifying Questions was also guided by the knowledge of the linguistic signals that help in locating Questions in texts. These were mainly related to identifying the common forms of Questions, “wh-questions” and “yes-no questions”, either direct or indirect. The following are two examples from my data that show how writers use these forms to present their research Questions.

ex. 5.1

With the above theoretical basis underpinning the study, the central question should, therefore, be: What are the desirable qualities (Values Orientation) within the ARA and how are they expressed?
(HT3.CH4)

ex. 5.2

The purpose of this study was to determine if cephadrine was useful for prophylaxis in the rabbit model for experimental streptococcal endocarditis (McGowan et al. 1983)
(ST1.A2)

It is clear from the above examples that writers may choose either to present their research Questions by using wh-questions or yes-no questions forms. The first form as in ex. 5.1 indicates that the researcher at the end of this study is expected to present a report of the different categories that show the desirable qualities expressed in academic research articles she is exploring and the ways in which they are presented. This information is likely to have not been identified earlier by others in the field, at least not in the same way. On the other hand, the second form is also interrogative, but the

underlying Question is meant to limit the research to a specific Answer that aims to confirm or disconfirm the truthfulness of the Question posed. In ex. 5.2 the research Question could be understood as a “yes-no” question and hence the use of “whether or if” is necessary. It is clear that the researcher already starts with a certain Question in mind about the usefulness of a kind of drug, cephadrine, in the prophylaxis of a specific heart disease, streptococcal endocarditis. The Question may be perceived in the minds of the reader as follows:

ex. 5.2a

Was cephadrine useful for prophylaxis in the rabbit model for experimental streptococcal endocarditis (McGowan *et al.*, 1983)?

Consequently, the Answer expected is a statement that confirms whether this fact is “true” or “false”.

As the examples above show, the two types of Questions may be presented as direct or indirect Questions; and they may also be presented as “inferred” Questions. Direct questions are in the interrogative form which relies on using question words, inverted structures and the use of a question mark as with ex. 5.1 above. They could be also presented in their indirect question form as with ex. 5.2 above in which case they are likely to start with words like “whether”, “if” or other “wh-” question words. In some cases, writers may choose to combine both forms of direct and indirect questions. The following is an example of this. The first statement in this example gives the top level Question in the form of an indirect question, while the following Questions, that seem to develop the earlier main research Question, are given in the form of direct interrogatives.

ex. 5.3

The intention of this chapter, then, is to address the question of whether or not the enterprise zone in South Kirkby "worked". Did it provide new jobs for people in a pit-closure zone, and if so, at what cost? In particular, how did the cost-per-job to the taxpayer for the enterprise zone compare to the cost-per-job involved in subsidising the local coal industry? Were there grounds for arguing that some claims for financial assistance from industry/business were met, while others were refused, because some claims were more ideologically acceptable than others to the Conservative government led by Mrs Thatcher, rather than on the grounds of

objective economics or public expenditure criteria? In short, was there a "politics" of industrial subsidies in existence in the 1980s and early 1990s?
(HT5.CH6)

Research Questions may be also presented as what I call "inferrable" Questions. These are basically declarative statements that could be turned in the minds of readers into direct interrogative questions. The linguistic signals that help in identifying such Questions are the use of words like "aim", "objective" or "purpose" of the research. In other cases, they refer to the research that the researcher has carried out as part of following a certain research Question in mind. Hence, these statements usually include research action verbs like "examined", "investigated", "surveyed", etc. In most cases, however, the two types of signals are mixed up. Some examples of these types of "inferrable" questions found in the data are as follows. The linguistic signals that helped in identifying them as question statements are underlined.

ex. 5.4

The aim of this study was to compare the efficacy of amphotericin B and 5-fluorocytosine with itraconazole in the treatment of experimental rabbit model aspergillus endocarditis.
(ST1.A1)

ex. 5.5

... This paper aims to contribute to our understanding of the diverse processes involved in the creation of one type of "successful" written product ... research articles (RAs) in international English-language scientific journals.
(HT2.A4)

If we consider the above statements of research aims/objectives and report of research acts, it is clear that the researchers are considering specific research Questions which are expressed indirectly in their wording, but could be easily extracted by the professional reader as research Questions. The research Questions of the first example above thus could be stated as follows.

ex 5.4a

Which is better in terms of efficacy in the treatment of experimental rabbit model:

aspergillus endocarditis, amphotericin B or 5-fluorocytosine with itraconazole?

Unlike the above forms of research Questions which were mainly found in experimental, argumentative and comparative studies, investigation of further data showed that there is a group of studies which all can be seen as expressing a single type of “inferred” research Question, that is “What has been observed in the course of this study?” These research texts are more descriptive in nature. That is they report a certain phenomenon that is observed by the researcher rather than revolve around a research problem that the researcher needs to solve by carrying out an investigation. However, it still seems that there is a research problem in such cases which is the Lack/Gap of Knowledge noted in the area of investigation under consideration and which invites the making of more observations in order to fill this Gap or Lack of Knowledge. This concept has already been discussed by Hoey (1988) (see sections 2.2.2.4. and 4.4.). In the present study, I believe that even with these types of studies, there is the underlying general Question specified above, which I may call the “observation” Question, which is probably expected to be revolving in the heads of the readers of such texts. The generalisability of the elements of Question and Answer in the case of the analysis of my present data is perhaps why the present model does not consider Problem, Gap in Knowledge or Goal as the basic semantic organisational elements at the top level as they seem to be more specifically related to some, but not all/most, types of studies I have explored. In fact, Problem, Gap in Knowledge and Goal are elements which were also convertible to question forms and hence this was another reason for using the term Question instead of Problem, Gap in Knowledge or Goal. The following are examples of the “observation” research Question:

ex. 5.6

This paper reports on one important component of language by means of which scientific RA writers structure textual interaction with the external community, namely choice of unmarked theme, i.e. grammatical Subject.
(HT2.A3)

ex. 5.7

This investigation describes the clinical wear of two amalgams and three posterior

composites after 5 years' clinical service. It examines the sites of maximum wear on the occlusal surfaces and the relationship between various measurements which have been used to characterize wear.

(ST4.A10)

In general, not many examples of the “observation” Question were identified in the data, as most of the data featured experimental studies that used the discussed above forms of Question: direct, indirect and inferrable Questions. However, linguistic signals that helped in identifying this type of Question was the use of descriptive verbs like “to report”, “to show”, “to describe”, “to present”, etc.

For further confirmation of the fact that the identified propositions in the texts explored were the actual Questions meant by the author, eight competent readers were consulted. All the readers essentially approved the identified propositions and added some modifications, all of which were incorporated in the report of the findings of the analysis of this element (see Appendix 5 for samples of the readers' responses).

5.2.2. Where is it positioned?

A note must be made here about the position of the Question element in the type of texts explored in this study. In theses, as a result of the size of the text it was found that Questions are likely to appear more than once throughout the text. They appeared in the Abstract, in the general Introduction to the whole thesis, and were usually re-introduced in other sections like the Results and the Conclusion sections as a reminder to readers of the original Question (ex. 5.8). In fact, it was found that the reoccurrence of the Question and its different reformulations throughout the thesis depend a great deal on the type of the organisation of the whole thesis and the type of research Question investigated. Sections 5.3.3.1. and 5.3.3.2. below gives a detailed discussion of this issue. On the other hand, in research articles, it was found that the Question was usually mentioned in the Abstract and the Introduction only (ex. 5.9). In very few cases, the Question was repeated in different places in the research article (ex. 5.10).

ex. 5.8

This work is concerned with: why were particular policies/strategies for economic regeneration adopted in particular localities? Did the strategies “work”?
(HT5, Abstract)

This work is concerned with: why were particular policies/strategies for economic regeneration adopted in particular localities? Did the strategies “work”?

... this work is essentially an exercise in policy analysis: how and why particular economic regeneration policies were embarked upon, and how successful these were.
(HT5, Introduction)

The exercise in comparative analysis detailed here is essentially a study of policy “outcome”; in other words, a study of what actually happened as a consequence of policies pursued.
(HT5, CH6)

ex. 5.9

Objectives

The purpose of this study was to evaluate subsurface fatigue in seven dental composites.
(ST4.A9.Abstract)

The purpose of this study is to investigate the pattern of subsurface fatigue in seven dental composites that were subjected to cyclic compression
(ST4.A9. Introduction)

ex.5.10

The wear of three posterior and two amalgams was assessed clinically and measured on replica models.
(ST4.A5.Abstract)

This paper discusses the two processes of wear that occur with dental restorations and investigate their effects on three posterior composites and two amalgams.

...This paper reports a large scale assessment of the clinical performance of three posterior composites for which wear has been studied clinically and measured indirectly.
(ST4.A5.Introduction)

The question has arisen previously as to whether wear data should be presented as “chairside clinical data” or values measured on replica models.
(ST4.A5.Discussion)

In all the above cases, the Questions that seemed to correspond more clearly to one another in both the thesis and the article derived from it were compared and contrasted to see how far they vary or resemble each other.

5.2.3. The Results of the Analysis of the Question Element

Analysis of the Question element in all the texts explored showed that there are a number of options available to writers in terms of the type, position and process of transforming thesis Questions into article Questions. These options represent two opposite extremes of a cline of choices which writers may select from.

5.2.3.1. Type of Question: Single or Multiple?

Analysis has shown that writers may build their study around **single research Questions** or **multi-research Questions**, each of which may be investigated in a single context or multiple contexts. To define these two major opposing options, the following simple example can be used to illustrate the difference. If the researcher decides to base his/her study on the Question "What is the effect of air pollution on the environment of Alexandria?", the researcher seems to be concerned with the investigation of a single research point, in this case **THE EFFECT OF AIR POLLUTION**, in a particular research context, Alexandria. This type of Question may be termed single as it attempts to follow only one single feature and to identify a single Answer to it, presumably in this case all that is relevant to the effect of air pollution, which is the particular research point in this Question. If the researcher decides to ask the Question "What is the effect of air pollution on the environment of Liverpool and Alexandria?", the researcher may be thought to be adding a new point to his/her research question. However, this is not really the case, because the researcher will still be discussing the same point of the effect of air pollution, but in relation to two different contexts, Liverpool and Alexandria. The introduction and methods for this study will probably not vary a great deal from those in the first study because of the singularity of the research point. On the other hand, if the researcher chooses to widen the scope of his/her study by asking a Question that entails the investigation of more

than one feature, the resultant Question will be a multi-research Question. Thus if the above Question is changed to “What is the effect of air pollution and water pollution on the environment of Alexandria?”, it becomes a multiple Question as the study resulting from inquiring about this Question will cover two different research points. Although this Question covers two distinct features, it can still result in a unified study that attempts to relate the two varying features together in one piece of study. Yet, the Question will still be considered multi-natured as it combines more than one topic for exploration. It is likely that this Question will encourage the use of multi-methods to investigate both of these aspects and in turn will result in multi-findings, which link to the particular points investigated, air pollution and water pollution. A change in the context of this multiple Question will not change its status, though it will definitely widen its scope. The following is the same **multi-research Question** given earlier as studied in two different contexts, “What is the effect of air pollution and water pollution on the environments of Liverpool and Alexandria?”. In this example the research is still **multiple**, although its applicability is widened by applying it to further research contexts. The above types of Questions represent all those which were found to be available options to academic writers presenting their research Questions in the different fields explored by my data. The following are representative examples of single Questions applied to various contexts as they appear in different texts, scientific and non-scientific, drawn from my corpus.

ex. 5.11

The purpose of this study is to investigate the pattern of subsurface fatigue in seven dental composites that were subjected to cyclic compression.
(ST4.A9)

ex. 5.12

This study looks at the ways in which evaluation works through a text to convey the overall purpose of the writer of the text.
(HT3.A1)

The first example is drawn from the field of dentistry, thus representing the field of “hard” sciences, while the second is derived from linguistics, thus representing the “softer” sciences arena. If we

consider the first example, it is clear that the study reported revolves around a single feature, sub-surface fatigue, which is investigated in the context of dental composite materials, in this case seven, using the method of cyclic compression. The second study also revolves around a single research point, the investigation of the ways of presenting the purpose of the writer through evaluation explored in the context of written texts. The above examples are clear-cut examples of single Questions. On the other hand, the following are clear-cut cases of multiple Questions. The first is drawn from a linguistics thesis, representing the “softer” sciences, while the other represents dentistry, one of the “harder” sciences.

ex. 5.13

This thesis investigates the nature of interaction in research presentation monologue. The main aims of the study are to examine interactive features in a corpus of research presentations, and to consider how these features can be related to the contextually-determined communicative purposes of the presentation. Interaction is viewed from two perspectives: interpersonally-oriented and information-oriented.
(HT1)

ex. 5.14

The aim of this thesis was to investigate the wear of three posterior composites together with a study of sub-surface permeability and degradation.
(ST4)

In the first example above the multiplicity of the Question comes from the fact that the writer has decided to focus her attention on the study of interactive features in academic presentations as well as the communicative purposes of the presenter. These two related features are investigated from two perspectives, the interpersonal aspect and the informational aspect of texts. It is interesting to note that the formulation of this particular multi-research Question, although it presents the multiple research points explored clearly, does that under the umbrella of a general topic, the study of interactive features of research presentations. This gives a clear idea of the point raised earlier that studies that deal with multiple Questions are likely to bring all these different points together in a way to give a unified feeling of the final Question that helps the reader to accept the study and the text reporting it as unified. The second Question indicates very clearly that the text is about the study of three features of

dental composites, that is wear, sub-surface permeability and degradation. These three distinct features are studied in the context of posterior dental composites.

Further analysis of the data, however, showed that not all Questions are such clear cases of single or multiple questions. Sometimes writers seem to be working with Questions that tend to be, rather than clearly are, single or multiple. The following Question is a case in point.

ex. 5.15

This paper concerns the indirect measurement and analysis of abrasion in the CFA.
(ST4.A3)

In this particular example it is not quite clear whether the study is about only one feature or two. From one point of view, the study could be on “abrasion” which includes the investigation of the two varying aspects “indirect measurement and analysis” in the context of the CFA. This would make the study a single Question type. On the other hand, the same Question could be considered multi-type if the reader takes it as being about the two distinct features of the “indirect measurement of abrasion” and the “analysis of abrasion” in the context of CFA. The problem of distinguishing which is more valid may lie in the fact that sometimes the study may be wavering between the two clines or that more context is needed to decided accurately if the treatment of this Question is a treatment of a single or a multi-research Question. In the present case, the investigation of the rest of the article in which this Question was identified showed that the article is multi layered, as it discussed “indirect measurement and analysis” as two varying features that are reported as two separate sub-texts.

In addition, writers vary in the degree of coverage of topics. In other words, some writers cover more points than others which makes their Questions look more multiple. The following are two examples that show this variation in the degree of multiplicity as presented in two different research Questions, first by giving an example of a Question that covers only two major points, the minimum number needed to produce a multiple Question, related to the study of the reactions of substances in simulated

estuary conditions with other chemical materials, and the second referring to a study of various properties of two amalgams. The number of the properties examined is extensive (5 main ones that are divided into further 8 other sub-properties).

ex. 5.16

The chapter is divided into two sections, the first of which deals only with those reactions that take place between different dissolved components and lead to the formation of insoluble products. The second section describes some interactions between organic matter and a variety of clay minerals under conditions of varying salinity.

(ST5.CH2)

ex. 5.17

This study attempts to determine and compare the following properties of two conventional and two non 2 amalgam alloys.

1. Mechanical properties:

a. compressive strength

b. diametral tensile strength

2. Thermal properties:

a. differential scanning calorimetry (DSC)

b. thermomechanical analysis (Dilatometry) TMA

c. thermogravimetry (TG)

3. Metallography and Microstructure

4. Tarnish and corrosion

5. Clinical Assessment:

a. marginal breakdown

b. anatomic form

c. caries recurrence

(ST2)

The second Question is wider in terms of coverage than the first and hence it is possible that this particular Question will allow the writer to produce more research articles, based on single Questions each of which follows one of the points covered in the thesis. The earlier Question will most likely produce only two articles based on the two points covered. I am referring here to the ideal situation, because it is also possible that neither of these theses may ever produce any articles if the students writing them fail to exploit their theses as a source of publication. In this case it would be external factors, rather than the type of the Question and in turn the type of the thesis, which is the main cause for this shortcoming. In these two particular cases, however, the first thesis produced a single article

that incorporated the two above points together (a multi-Question article), while the second produced two articles on only two of the properties mentioned in the Question, each of which thus discusses a single Question. The following are the Questions of the articles produced.

ex. 5.16a

The present paper reports the results of two series of experiments. The first of these was designed to examine the reactions between a freshwater humic compound and a number of the more important cations found in seawater; and the second to examine the interactions of two humic compound with three clay minerals under saline conditions.

(ST5.A1)

ex. 5.17a

The present work includes the results of dimensional change measurements during the setting of conventional and high-copper alloys.

(ST2.A1)

ex. 5.17b

Pure single amalgam phases were prepared and studied with the objective of determining the structured origin of the transitions occurring in both DSC and TMA investigations.

(ST2.A2)

It was indicated earlier that limiting the categorisation of Questions to only the two options of single and multiple does not give an absolutely true picture as research Questions in both theses and articles may vary in their degree of singularity and multiplicity. Allowing for this fuzziness in the categories, however, analysis of the Questions in various theses and the articles derived from them showed that all the thesis Questions were best categorised as multi Questions (the 10 Questions of the 10 theses explored), while articles Questions tended to be single ones (22 Questions out of 33 Questions of the articles explored). This goes with the general expectation that theses, being extensive pieces of study, are likely to present multi-investigations. In many cases, the context of these studies were also multiple and hence the outcome was extensive complicated pieces of work. On the other hand, articles, being short and specific reports of studies, are likely to describe studies that are limited to particular features in more depth than breadth. Hence they often revolve around single Questions. It should be

noted however that some articles also handle multiple Questions, yet of a limited nature. Moreover, the contexts in which the Questions are set in theses and articles were found to be both singular and multiple. This affected the overall size and content structure of the theses/articles. Theses and articles that had Questions set in multi-contexts showed more variations and extension than those focusing on a single context. In most cases, however, theses were set in multiple contexts, while articles tended to focus on either single contexts or contexts that are limited in their multiplicity.

It should be noted that Questions may also differ according to the way writers position them within their texts. The position of this top level element and how it affects the overall organisation of the thesis is discussed in the following section.

5.2.3.2. Type of Organisation: Modular or Integrative?

As mentioned earlier (section 5.2.2.), investigation of the Question element in the various theses showed that it appears in different positions. In some of these positions, the Question element appeared as a major semantic component that is essential for the build up of the texts, while in other cases its presence appeared to be incidental or repeated just to pave the way for types of semantic elements (e.g. before stating the methodology or the results of the study). In the first situation, the writer seemed to present the Question using full sentences, while in the second situation the reference to the aim typically appeared as a clause or phrase attached to a sentence which is not primarily meant to refer to the Question of the study. In the present study, only the propositions that represent the major statements of the Question were considered.

According to the conventional organisation of theses and research articles commonly expected by researchers in different fields and the established model of the present study (chapter 4), these Question propositions should typically appear in the early chapter/sections of the thesis/article. This was always true in the case of the article, but not as much in the thesis. In the thesis, it was found that writers have two main options concerning the position where their Questions may appear. In the first

option, the writer may decide to present his/her Question in the conventional way and hence the Question appears in the first introductory chapter following the element of background and preceding the report of the previous studies and actual methods to carry out this study. In this case, if the study is multi-Questioned, then all the Questions that refer to the mini-studies incorporated in the main study presented in the thesis will be reported together in this first chapter (it may be useful to recall that all the theses in my data are multi-Questioned). The major multi-Question is not likely to appear again, nor are any of its constituent parts, i.e. mini Questions referring to parts of the multi-Question and their mini-studies, in any of the following chapters except as incidental reminders of the major Question stated at the beginning. Moreover, the following chapters are likely to present information about all the mini-studies in a collated form. Thus, for instance, the methodology chapter will include the description of all the similar/different methods used in all the mini-studies conducted in this multi-type study. This type of organisation may be termed an **integrative organisation** which results in producing **integrative theses**. In these theses, the various elements and sub-elements springing from attempting to answer the multi-Question are presented in an integrative way by collating all of them together in a unified manner in all the following chapters (see figure 5, overleaf, for a visual representation of this type of thesis organisation and its typical Question).

Thus the major position of this top element in the introductory chapter seems to affect the overall organisation of the elements/sub-elements that spring from it on the middle and lower levels. In addition, this type of organisation of a thesis is influenced by the type of Question posed, whether it is multi or not, and its position will in turn affect the way researchers select and manipulate their thesis in order to derive articles from it. Thus, in integrative theses where the major Question will be positioned only once in the text, near the beginning, the Question could be easily compared with the Question of the article. If it is a single Question it is likely that the Question will appear in the introductory section followed by the usual sections of the thesis all linked to one another in a way that does not allow any of them to be easily separated from one another. It will also be taken up by the article produced from this thesis, though in a condensed form. In this case, which was not represented

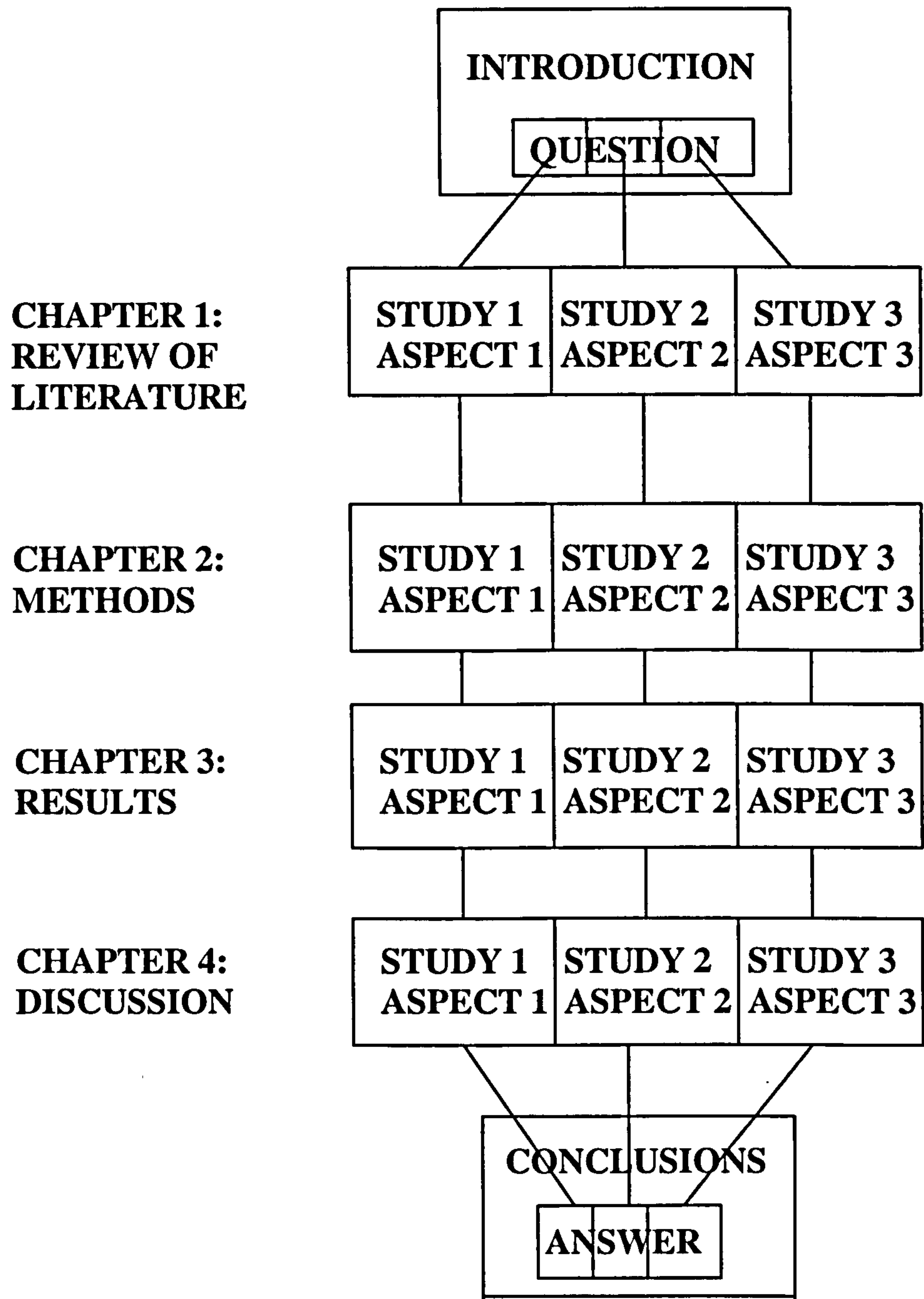


Figure 5. The Organisation of an Integrative Thesis with a Multiple Question

by any of the theses in my data, writers will produce the article by producing a summary of the following elements that spring from the research Question. On the other hand, if the Question is multiple, it is likely that the article will focus on only one of the mini-Questions of this Question or a number of them together. In this case it is expected that writers will produce articles by following one/some of the mini-studies presented under the multi-research Question, picking out from the various chapters of the thesis the parts that link to this/these particular mini-Question(s) (see figure 6 overleaf for a visual representation of this process).

In both cases, however, writers will be following what may be termed a **Vertical Processing** of the different parts of the thesis in order to produce an article with a single research Question. This is because they will typically go systematically in a vertical manner through all the various chapters to collate the relevant sections that may make up the p-text for the article they want to produce. For the analysis of these theses and the articles derived from them, it was necessary to compare and contrast the Questions that clearly relate to the article research Questions. These included the main Question in the introduction section of the article and the introductory chapter in single and multi-research Question theses.

On the other hand, the writer may decide to position his/her research Question differently. Although he/she may decide to present his/her Question in the introductory chapter, he/she may also decide to follow this chapter with various other chapters each of which gives a specific sub-research Question that develops the general research Question in the introduction, but which instigates a particular study reported in this particular chapter. All theses that have this kind of positioning of the Questions and mini-Questions have a multiple Question as their major research Question. The result of this type of Question and positioning of the Question and its various sub-elements is what I call a modular organisation which results in producing modular theses (see figure 7 on page 153 for a visual representation of this different way of organising theses).

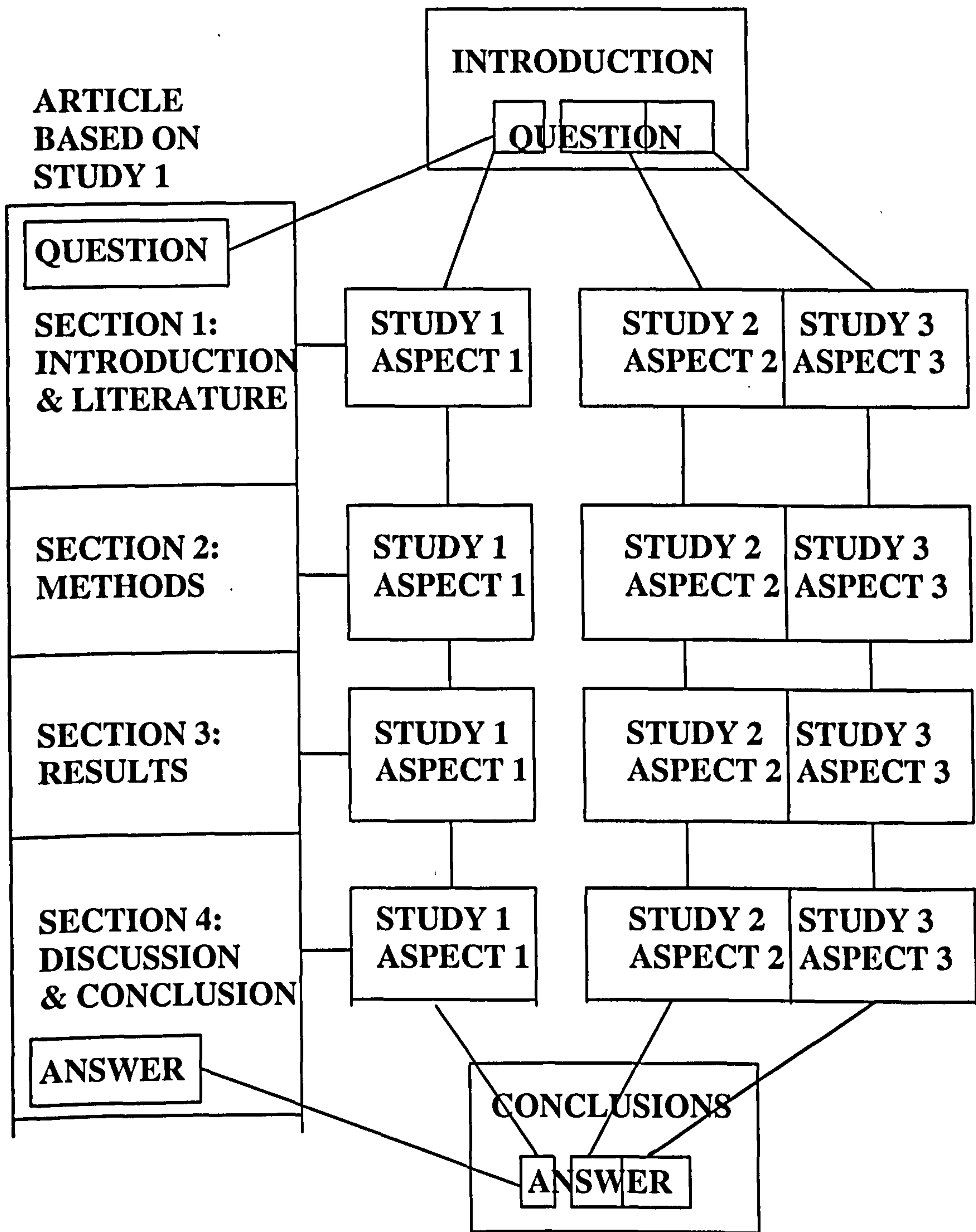


Figure 6. The Process of Producing an Article from an Integrative Thesis with a Multiple Question

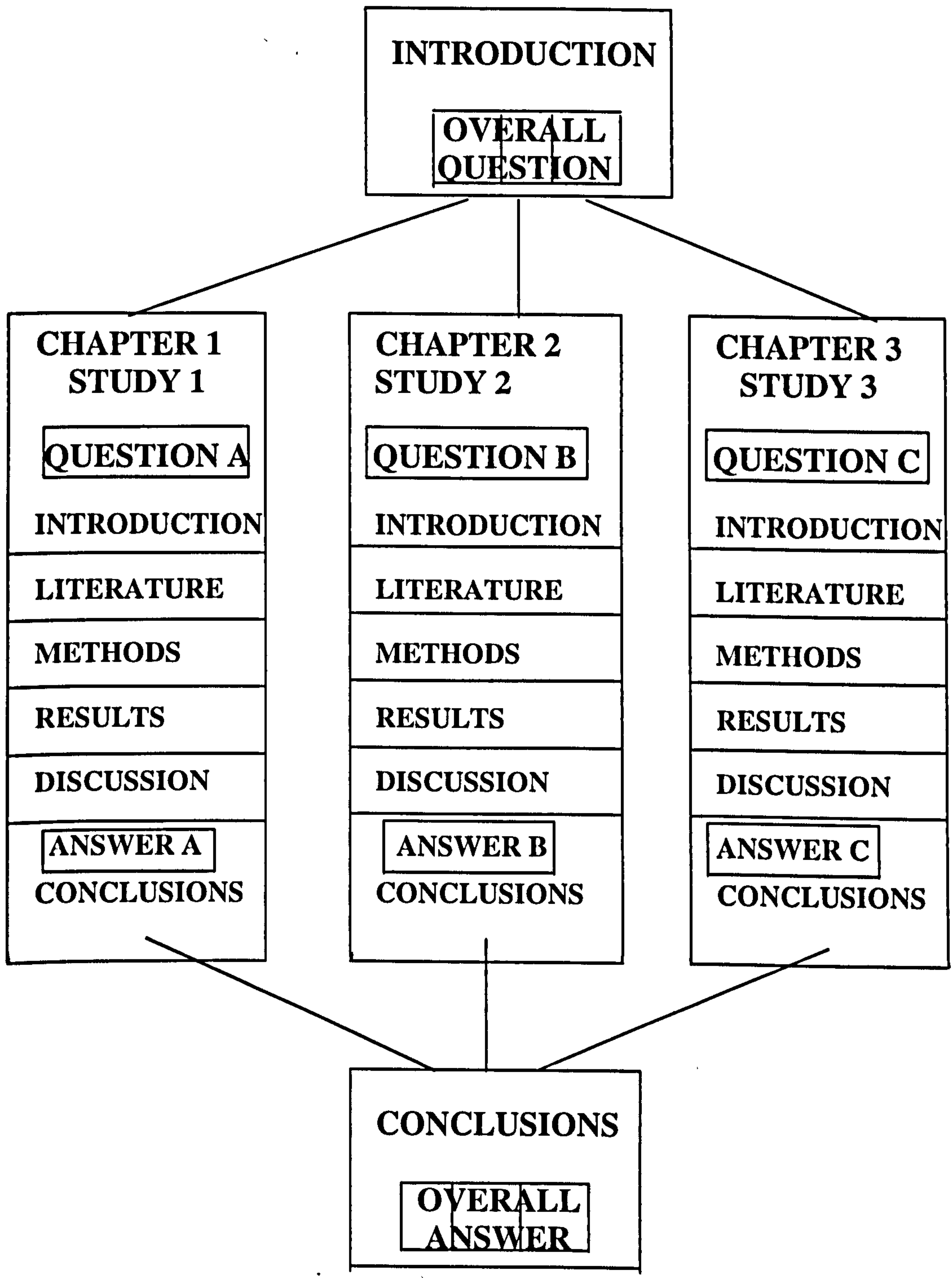


Figure 7. The Organisation of a Modular Thesis

In these types of theses, the studies are presented as separate studies joined together by a major introduction that reports the overarching research Question and a final conclusion that usually gives a general Answer section. In between, a number of chapters appear, each of which represents a particular study with a reformulated research Question that links to the major Question of the study but focuses on the particular study in hand. Thus, it would seem as if these chapters are more like single articles separated out from one another, yet they are collated together in a single thesis text under a general introduction and a final conclusion.

For the process of deriving articles from such theses, it is possible for the writer simply to extract some parts from the general introduction and conclusion, and reproduce one of the chapters that make up the body of the thesis. This processing, in contrast to what happens with integrative theses, is more **Horizontal** in nature. This is because the writer only needs to go through a particular chapter to modify certain aspects of it, like adding parts that come from the general introduction and conclusion, to be able to produce an article from it. See figure 8 overleaf for a visual representation of this possible type of process for deriving articles from a modular thesis.

In the case of the analysis of modular theses, however, identification of the Question may be a trickier task as the Question is likely to appear on two levels, at the beginning of the thesis and the beginning of the chapter reporting a particular study. In fact, in some modular theses, it was found that Questions may even appear on three levels (for example, in HT2). This happens when a chapter includes a multi-Question relating to different mini-mini-studies and hence the writer may pose a more general Question at the beginning of the chapter and then pose further sub-sub-Questions in the various sections relating these studies. Thus, in the analysis of these theses it is necessary to compare the Question element as mentioned on at least two levels or more, depending on the number of the mini-Questions developing the general Question and their positions, in order to relate it to that of the article. It is necessary sometimes to restrict the analysis to the level that matches more closely with the Question of the article in order to identify the actual alterations that were made to the original text

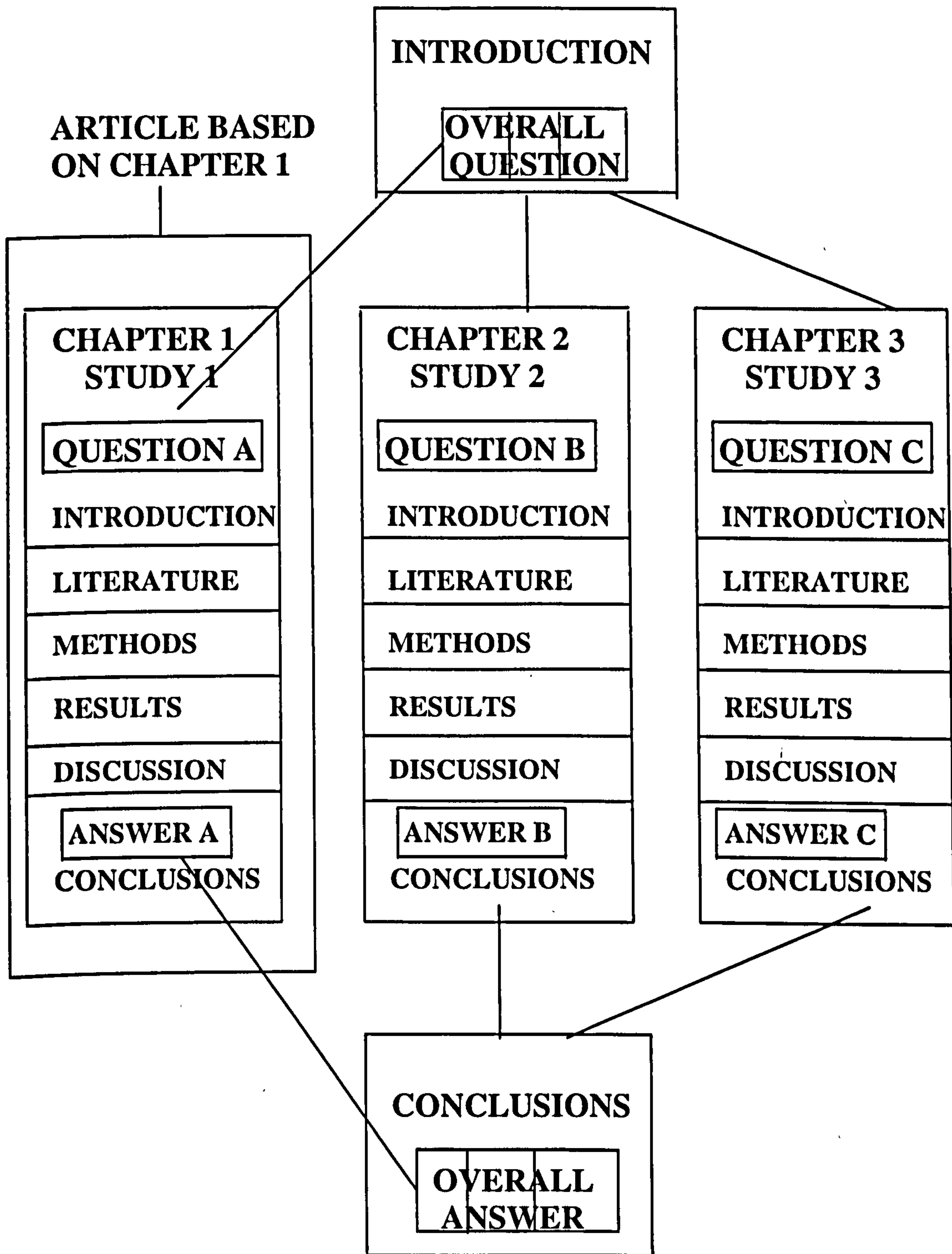


Figure 8. The Process of Producing an Article from a Modular Thesis

during the processes of transformation.

Analysis of the corpus in terms of the two categories established above showed that six theses were modular (HT1, HT2, HT3, HT5, ST4, and ST5) while four were integrative (ST1, ST2, ST3, and HT4). However, the various theses also varied in the amount of their integration and modularity. In the following section I give examples of related theses and articles based on multi- and single Questions elements appearing in integrative and modular theses in both science and linguistics. The aim of this is to illustrate the difference between manifestations of this element as it appears in each text type in terms of its type and position. Further attention will be given to show how some Questions appear more related to their original Questions in the thesis, while others seem to vary a great deal from this original source.

I would like first to consider an example drawn from a thesis in the field of dentistry (ST1) and one of four articles that were derived from it (ST1.A2). The fact that the Question is set at the beginning of the thesis and appears only once reflects the fact that it is an integrative thesis. Thus it was compared directly to the Question of the article produced from it, which appeared at the end of the introduction section. The Questions concerned are related below.

ex. 5.18

1.10 AIMS OF THIS THESIS.

This thesis will investigate several aspects of bacterial and fungal endocarditis ... The ability of amoxicillin-resistant oral streptococci to cause experimental endocarditis is examined and the efficacy of amoxicillin prophylaxis, against these resistant bacteria, will be evaluated.

*... The ability of erythromycin to prevent *S. sanguis* endocarditis will be evaluated in this thesis. In addition, an orally active cephalosporin, cephradine, will be investigated to see if it is a suitable alternative to erythromycin.*

*... The production of ECP in strains of *S. sanguis* will be investigated, as will the ability of these streptococci to cause experimental endocarditis.*

(ST1.CH1)

ex. 5.18a

The purpose of this study was to determine if cephadrine was useful for prophylaxis in the rabbit model for experimental streptococcal endocarditis (McGowan et al., 1983). It was also decided to compare the efficacy of cephadrine and amoxicillin in prophylaxis in this model.

(ST1.A2)

The Question of the thesis is a multi-Question as it revolves around the exploration of several aspects of two main types of endocarditis. The study involves therefore trialing a number of medications on rabbits to investigate the effect of these on controlling infective endocarditis in the case of patients receiving chemoprophylaxis for dental treatment. One of the trials involves the drug cephadrine which is compared with erythromycin and amoxicillin (part underlined in ex. 5.18). The article focuses on only this latter aspect that is investigated in the thesis, which is the assessment of the drug cephadrine and its effect on the prophylaxis in the rabbit model for a specific type of endocarditis, streptococci endocarditis, as well as comparing it to the effect of amoxicillin. Thus, it may seem then that the article is related to the thesis in a relation of the “part” to the “whole” as it takes one of the points covered in the thesis; but it adds a comparison with amoxicillin which is implied but not explicit in the thesis Question.

Now I turn to consider another example of the difference between the type and position of research Questions in theses and their derived articles in another integrative thesis. The aim of bringing this example in is to show how the research Question of this thesis, unlike the earlier case, varies a great deal in type and form from that of the article drawn from it.

ex. 5.19

This study attempts to determine and compare the following properties of two conventional and two non 2 amalgam alloys.

1. Mechanical properties:

a. compressive strength

b. diametral tensile strength

2. Thermal properties:

a. differential scanning calorimetry (DSC)

b. thermomechanical analysis (Dilatometry) TMA

- c. *thermogravimetry (TG)*
 - 3. *Metallography and Microstructure*
 - 4. *Tarnish and corrosion*
 - 5. *Clinical Assessment:*
 - a. *marginal breakdown*
 - b. *anatomic form*
 - c. *caries recurrence*
- (ST2)

ex. 5.19a

The present work includes the results of dimensional change measurements during the setting of conventional and high-copper alloys.
(ST2.A1)

Like the previous example, the two Questions were drawn from similar positions, the introductory parts of the thesis chapter and the end of the introduction of the article. However, they vary in other aspects. It is clear that the Question of the thesis is a multi-one while that of the article is a single one (see earlier discussion of this example as ex. 5.17). While the thesis covers a great number of points, the article focuses only on one particular point - the dimensional change measurements of the same four amalgams discussed in the thesis. This aspect, although not expressed linguistically in the aim of the thesis, can be understood by experts in the field and by identifying the section in the thesis that this article reports, which comes under the study of the mechanical properties of materials. Thus, this shows again that the relation between the thesis Question and the article Question is a relation of the "part" to the "whole". The fact that the Question of the article does not bear any direct resemblance to that of the thesis, in layout, grammatical status or lexical repetition, makes it look as if it is a completely different Question. This is in fact partly true, as the analysis of the rest of the article shows that although the researcher focuses on one of the aspects of the study, he attempts to reshape it in many ways that make the final article looks quite different from its original source. This is unlike the earlier case where the researcher tended to more or less repeat part of the Question of the thesis in her article.

I move now to consider a different example that comes from a modular thesis, where the Question appears in two positions. This is drawn from a dentistry thesis (ST4). In this particular example of a

modular thesis, it was noticed that the researcher presented his mini-studies as different episodes that link together to report a staged story of scientific observation. Thus, each chapter gives an account of a particular aspect of the overall study as a free-standing mini-study and at the same time the chapter leads in to the following chapter which reports a further development in the research story of the whole study represented in the thesis. This varies from the kind of overall semantic organisation of the chapters of all the other modular theses investigated in the present study which seem to work as separate texts that can hold irrespective of the other chapters that precede or follow them. However, in all these theses the chapters were meant to produce a unified work at the end. Nevertheless, although the thesis to be discussed below in terms of its Question was considered modular as a result of the position of its research Question, it seemed also to be integrative in the way its chapters were connected to each other. They seemed to be far more organically related than was the case with the chapters of other modular theses. Figures 9 and 10 overleaf help to visualise the difference between these two types of modular theses in terms of the connectivity of their chapters, and subsequently the relation between the mini-studies they represent and how these are related to the main Question of the whole thesis.

The figures show that the organisation of the second type of modular thesis is more organic and developmental in nature than that of the first - hence the resemblance between it and integrative theses which are similarly organically closely related and are expected to be progressive as each chapter leads to the next step in research. This finding further supports the issue that I raised earlier that the classification of theses into modular and integrative theses, which was based on the positioning of their research Question, should again be seen in terms of fuzzy categories, or even more appropriately as a cline along which theses may fall and vary in the degree of their integration and modularity.

It is worth mentioning that the thesis to be discussed now has produced a large number of articles (11 articles) and its writer continues to write more articles from it. This particular active researcher is in fact one of the case studies reported on in chapter 7.

Two Different Types of Modular Thesis According to the Connectivity of the Chapters

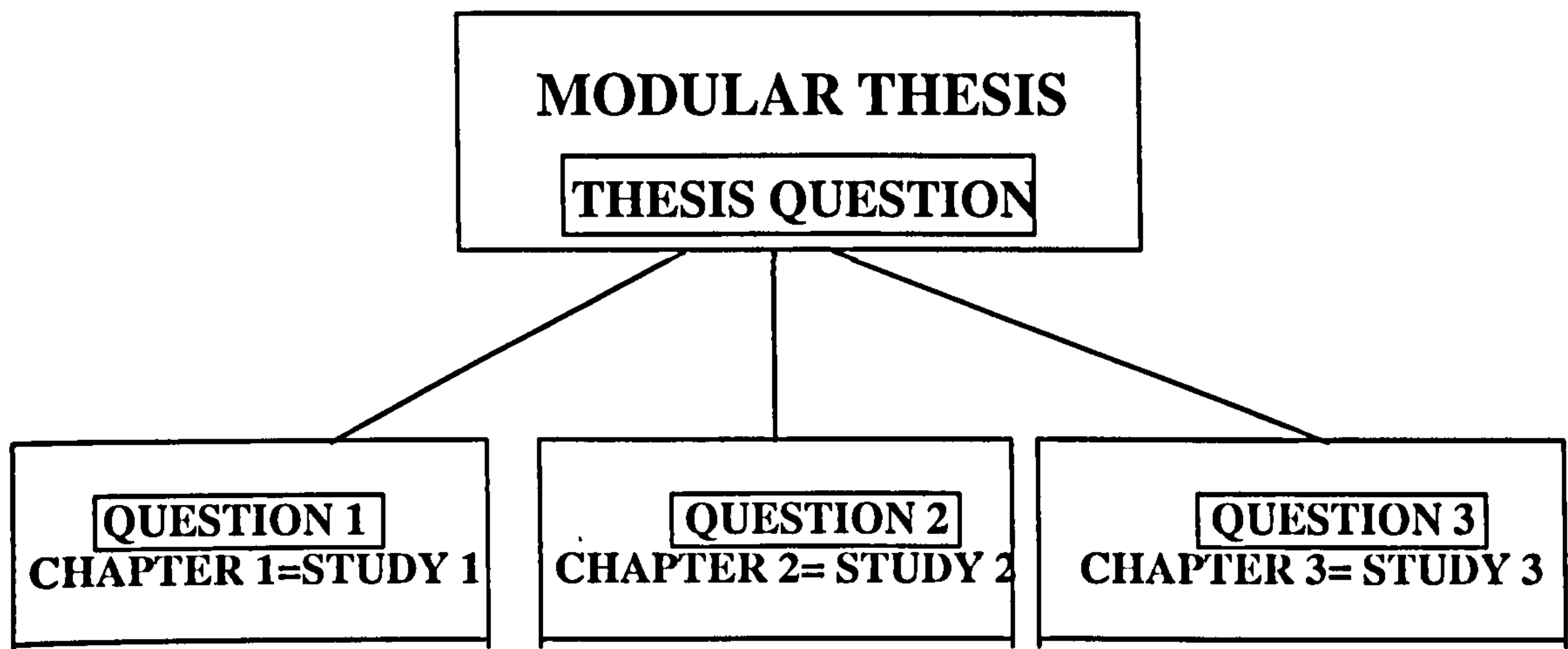


Figure 9. Modular Thesis (Type One)

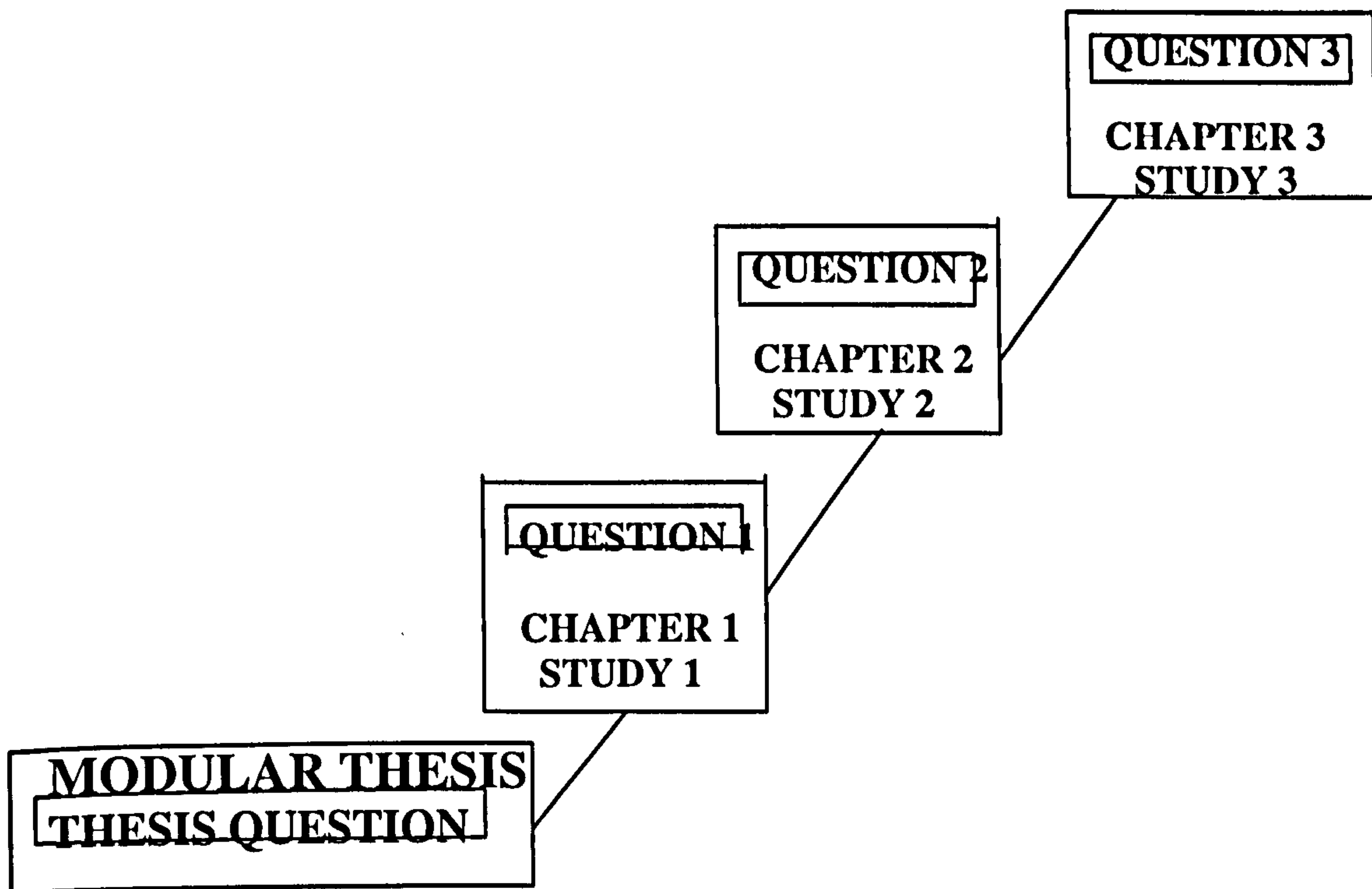


Figure 10. Modular Thesis (Type Two)

I will look now at the specific Question of this thesis (ST4) as well as the Question of one of the thesis chapters (chapter 9) from which an article was derived (ST4.A5). The Question of the article is then compared and contrasted to that of the Question of the chapter in particular.

ex. 5.20

The aim of this thesis was to investigate the wear of three posterior composites together with a study of sub-surface permeability and degradation.
(ST4.Abstract)

ex. 5.20a

An extensive evaluation of three posterior composites (clearfil, Occlusin, and P-3) and two amalgams had been commissioned by the Department of Health and this was the basis of the clinical investigation reported in this chapter.
(ST4.CH9)

ex. 5.20b

This paper reports a large scale assessment of the clinical performance of three posterior composites for which wear has been studied clinically and measured indirectly.
(ST4.A5)

It is clear that the three Question statements are informationally-related. The main key lexical item that links all of them is the phrase “posterior composites”. In this case, these are the particular materials studied throughout the research, and hence are also the ones studied in the chapter and subsequently the article. However, while the thesis Question is involved in the investigation of the three phenomena of dental wear, permeability and degradation, the chapter focuses on the clinical study in general. This presumably includes investigation of the three aspects but specifying a clinical rather than a laboratory environment. Reading of the chapter confirmed this presumption. The study reported in the article, on the other hand, focuses on the study of the clinical investigation of wear in particular. In general, it could be noticed that each of the text Questions is a step further towards more focus on a particular aspect included in the preceding text Question.

Concerning the type of Question, the thesis Question is multiple, while those of the chapter and the

article tend towards singularity as they report one single investigation, the clinical investigation. The context of all the three Questions is shared. This is the only key lexical element that links them, the posterior composites. However, in the chapter and the article this context expands to include two further amalgams that the researcher needs to study for comparative purposes to show the validity of using composites in comparison to amalgams. This reflects the same types of Questions that were reported by the linguistics thesis/chapter and its article.

If we focus now on the similarities and the differences between the two comparable Questions of the chapter and the article, both statements of the Question seem to match in the way that they represent a particular research situation. This is evident from the similar research entities they refer to, “chapter”/ “paper”, “An extensive evaluation of three posterior composites (clearfil, Occlusin, and P-3) and two amalgams had been commissioned by the Department of Health”/ “a large scale assessment of the clinical performance of three posterior composites”. The entities are not expressed using the same words, but they are more or less the same. The variation of wording is clear in the instance of referring to “a large scale study” instead of a “study commissioned by the health department”. This change may be due to the fact that the author thought that in the article reference to this particular detail may not be important to the readers, while in the thesis it is meant to boost the position of the researcher, in a way that may be useful in the examination situation. In spite of this degree of matching, there are two semantic elements which were present in the article but not in the chapter. These are the reference to “wear” and “indirect measurement of it clinically”. This addition seems to highlight two points to which the writer was directing readers’ attention in the article but were mentioned differently in the chapter or in an incidental manner. The first point relates to the fact that the study in the article is reporting the clinical trial on wear only, rather than anything else, which composes only one part of the chapter. The second point refers to the problem of the inability to carry out clinical trials on humans that could have dangerous consequences and hence, although the study is clinical, it uses indirect means for experimenting rather than using humans. This issue being very problematic is further highlighted in the article and actually appears again as part of the final part of the conclusion

section where the researcher states that the study could be considered valuable clinically despite the fact that it depended on indirect measurements of wear.

To conclude, this section has discussed the Question element in the thesis/thesis chapter and the article derived from it in terms of its type and position. It is common for theses Questions to be multiple, while those of the chapters and articles are generally single. This is probably explained by the need to reduce the size of the text and focus attention on particular topics in the article. Even in the case where article Questions were multiple this multiplicity seemed to stem from developing the Questions in areas beyond the ones reported in the thesis. On the other hand, it was noticed that, in terms of the position of the Question element in the thesis, this element influenced the way theses are organised in general, and in turn the way the article was derived from the thesis. Further analysis of the Questions as represented in theses/theses chapters and articles showed that they may vary in the way their lexis and research experience are represented. Most of the time this change indicated a reorientation of the Question to highlight specific points that were not highlighted in their original sources.

The above two categories for identifying the differences between theses and articles, the type of Question posed and its position which affect the type of organisation of the thesis, are more “product-oriented” as they link to the way that the final Question propositions in texts look. Another set of options that seem to be available to writers as part of transforming theses/thesis chapters into articles is related to the type of strategies that they may follow in deriving the second from the first. This set, unlike the two categories discussed above, is more “process-oriented”. It refers to possible ways of going about the process of changing the Question of the texts into another type of Question. However, it is worth pointing out that these strategies are inferred from the analysis of the products and by examining the differences between them, rather than actually following the process of writing while it is undertaken or through the retrospection of writers on this process. This latter perspective is introduced in chapter 7 on the case studies of two of the writers whose theses and articles comprised part of the data for this text analysis in order to compare and contrast their comments with the findings

about the strategies of transformation inferred from the text analyses. The following section presents the findings of this particular aspect, the strategies followed in transforming research Questions from theses/thesis chapters into articles.

5.2.3.3. Strategies of Transformation

While transforming one text type to another, writers seem to use a number of identifiable strategies. These strategies of changing the form of Questions can be discussed under the heading of the changes made to the management of the ideas expressed in Questions. Writers can manage the main ideas of their research questions by changing their **Scope** and **Direction**. In terms of scope, when producing a research article from a thesis/thesis chapter/p-text, writers may decide to **Extend** their research Question by adding new points or aspects to those discussed in the thesis or **Focus** it by picking out only one of the points or aspects raised in the original text. On the other hand, in terms of direction, these writers may decide either to **Reshape** the content of the Question and hence direct it to other areas for discussion or **Restate** the Question in a similar way as it appeared in the thesis/thesis chapter/p-text. On this basis, it is clear that there are four possible changes that writers may make to their research Questions while managing their ideas in order to produce articles from theses. These possibilities are options available for writers, who may vary as individual writers in the amount of management they make of their ideas. In other words, these options should be seen in terms of clines along which writers may be placed differently according to the level of the manipulation of the strategies suggested. The four possibilities of change based on the four strategies suggested earlier are discussed below.

Analysis of the various theses and the articles derived from them showed that writers:

1. may decide to focus on only one aspect or point of the Question raised in the thesis and restate this part without making any significant changes to it in the article. So the new Question looks similar in content, but not in scope, to that mentioned in the thesis/thesis chapter/p-text. This is the **Focus-**

Restate Strategy.

or

2. can focus on one aspect or point that has been discussed in the thesis and at the same time reshape it. Thus the new Question will probably cover one area of interest that appears in the thesis/thesis chapter/p-text but in a way that is different from the way it was handled in it. This is the **Focus-Reshape Strategy.**

or

3. may feel the need to extend the scope of the Question and reshape it so it appears as if they are dealing with a new research Question which covers ground not mentioned in the original text, and discuss the areas related to the original text differently by giving them a different direction. This is the **Extend-Reshape Strategy,**

or

4. may want to extend the content to cover new points of discussion raised by the Question but restate the other points more or less as they appear in the thesis without significantly changing any aspect of them. Thus the new Question will look as if it is similar to that in the original text but is wider in scope as it deals with further points not discussed in the thesis/thesis chapter/p-text. This is the **Extend-Restate Strategy.**

A fifth possibility is also available but it is not considered here because it does not involve the writer making any changes. This is when the writer chooses to lift one part from the thesis to publish it without making any modifications. In this case the writer is more or less **Copying** the research

Question of the thesis and **Restating** it. Some articles were derived in this way but these are not our concern, not only because they make up a small percentage of the data collected, but also because for pedagogic purposes it is more important to know the active strategies writers use while transforming theses into articles.

In the following part I present examples of the various types of strategies that were identified in the data using the actual wording of research Questions in both the thesis and related articles in the case of integrative theses and from the theses/chapters/p-texts and the articles in the case of modular theses.

Strategy 1: The Focus-Restate Strategy

This type of change in Questions was the most common in the data. 20 articles from 8 theses which were both integrative and modular had Questions which were transformed using this type of strategy. In all these articles, researchers chose to focus on only one aspect or point mentioned in the thesis and restated it without making significant changes. The following are examples of this.

ex. 5.21

1.10 AIMS OF THIS THESIS.

This thesis will investigate several aspects of bacterial and fungal endocarditis ... The ability of amoxicillin-resistant oral streptococci to cause experimental endocarditis is examined and the efficacy of amoxicillin prophylaxis, against these resistant bacteria, will be evaluated.

*... The ability of erythromycin to prevent *S. sanguis* endocarditis will be evaluated in this thesis. In addition, an orally active cephalosporin, cephadrine, will be investigated to see if it is a suitable alternative to erythromycin.*

*... The production of ECP in strains of *S. sanguis* will be investigated, as will the ability of these streptococci to cause experimental endocarditis.*

*... These triazole antifungal drugs will be evaluated for their ability to treat and prevent experimental *Candida* and *Aspergillus* endocarditis. ... the prophylactic efficacy of fluconazole against *C. albicans* and *C. parapsilosis* endocarditis will be studied ... serological investigations will be used to study the immunological response of rabbits with experimental *Aspergillus* endocarditis. It would also be of value to monitor the progress of FE in response to therapy.*

(ST1.CH1)

ex. 5.21a

The purpose of this study was to determine if cephadrine was useful for prophylaxis in the rabbit model for experimental streptococcal endocarditis (McGowan et al., 1983). It was also decided to compare the efficacy of cephadrine and amoxycillin in prophylaxis in this model.
(ST1.A2)

The second text is more or less a presentation of one of the aspects that are covered by the first. The article Question focuses on only one aspect of the thesis Question (the prophylactic potential of erythromycin and cephadrine were compared to that of amoxycillin, in an endocarditis model), that is the investigation of a number of medications and comparing their efficacy in the prophylaxis of streptococcal endocarditis. This is part of attempting to evaluate some aspects of the prevention and therapy of some types of bacterial and fungal endocarditis which forms the more extensive thesis Question. There are many lexical items or their paraphrases which are shared, reflecting the closeness of the topic of the article to much of what is covered by the thesis. Examples of these repeated words include “prophylaxis”, “cephadrine”, “model”, “streptococcal endocarditis”, “compare”, and “amoxycillin”. In general, all these items point to the key entities involved in research and the process and circumstance of this particular piece of research. The only difference between the two Questions is the fact that the article does not include reference to the effect of erythromycin which is covered in the thesis but not the article, and that it considers first the potential success of cephadrine on its own before comparing this medication with amoxycillin. This point is also covered by the thesis but brought out as a result of the comparison in general. Overall, though, the Question of the article represents a focused and a restated Question in relation to its comparable version in the thesis.

Strategy 2: The Focus-Reshape Strategy

Investigation of the data yielded a smaller but still significant number of examples of this type of strategy of changing thesis Questions into article Questions. In this strategy the writers focus their Question on a specific point or aspect that appears in the thesis and attempt to represent it again in the article but tackling it from a different angle or with a change in focus. Five articles drawn from four theses, three of which were modular, were produced by means of this strategy. The following is an

example which has been already quoted for other purposes, but which reflects very clearly this strategy of transforming research Questions.

ex. 5.22

This study attempts to determine and compare the following properties of two conventional and two non 2 amalgam alloys.

- 1. Mechanical properties:*
 - a. compressive strength*
 - b. diametral tensile strength*
 - 2. Thermal properties:*
 - a. differential scanning calometry (DSC)*
 - b. thermomechanical analysis (Dilatometry) TMA*
 - c. thermogravimetry (TG)*
 - 3. Metallography and Microstructure*
 - 4. Tarnish and corrosion*
 - 5. Clinical Assessment:*
 - a. marginal breakdown*
 - b. anatomic form*
 - c. caries recurrence*
- (ST2)

ex. 5.22a

In general, previous dimensional change measurements on dental amalgams have led to controversial results. Some of these results, obtained from measurements on many modern amalgams, have been discussed by Philips [10]. The situation has become more complicated following the introduction in recent years of high-copper amalgams, whose dimensional change patterns are still not well established. The present work includes the results of dimensional change measurements during the setting of conventional and high-copper alloys.

(ST2.A2)

The researcher focuses in his article on a single point which is the results of the dimensional study of a number of amalgams. This comes in the thesis as part of studying the thermomechanical properties of these same amalgams. However, unlike the case in the thesis, the researcher does not attempt to compare and contrast the results of this study with other types of studies of the various properties of these amalgams. Instead, he raises the theoretical issue of the contradictory results of previous studies of low-copper amalgams and the lack of studies of high-copper amalgams. Thus, the outcome of the article seems to differ in direction from that appearing in the thesis although both texts tackle the same topic. Due to the difference of space available to the RA text, it would be difficult for the researcher to

pursue the more extensive comparative/contrastive analysis of the four types of alloy he was studying in the thesis. The fact that he focuses on this type of study is presumably related to the fact that the article was published in the journal of *Thermal Analysis* which is interested in studies related to TMA and the comparison and contrast of the results of these studies with similar ones done previously in the same field. Overall, the research Question of the article is a focused, yet reshaped, form of the Question of the thesis/chapter/p-text.

Strategy 3: The Extend-Reshape Strategy

In 5 articles drawn from two theses, one modular and one integrative, it was found that writers presented new research Questions which seem to extend the topic already covered in the thesis and also reshape it so that ideas are directed towards another area of interest related, but not central, to that mentioned in the thesis. The following is an example of this process of changing Questions which writers may make to their thesis Questions. The research Question of the thesis is presented first followed by a research Question of one of a number of articles drawn from this thesis (HT4), which is an integrative linguistics thesis.

ex. 5.23

This thesis examines evaluation in experimental research articles in terms of the meanings made and their contribution to the organisation of the articles.
(HT4.Abstract)

The aim of this thesis is to investigate the linguistic phenomenon known as evaluation... it is proposed to examine texts solely from the point of view of evaluation, and to examine the functions of that evaluation, without comparing evaluation with non-evaluation. It is hoped that by this means a picture of the type of categorisation needed to accommodate evaluation will emerge.
(HT4.Introduction)

ex. 5.23a

The paper deals in turn with three main topics: conflict relevance, the presentation of knowledge claims, and conflict resolution. My central concern is to describe the linguistic strategies by which the writer attempts to achieve the required outcome: persuasion of the readership to accept the writer's claim above all opposition. In addition, I shall compare the conflict presentation in three disciplines in order to

throw light on the choices available and to link the strategies chosen with the value-system of each discourse community. For the sake of simplicity, I shall distinguish between the knowledge claim made by the writer under discussion (Proposed Claim) and that made by opposing writers (Opposed Claims).
(HT4.A2)

Looking at the Question of the thesis which refers to the intention of the researcher to explore the linguistic feature of evaluation, as already discussed earlier, and comparing it to that of the article, it becomes clear that the article is exploring one of the features of evaluation that has not been part of the overall research Question of the thesis, conflict relevance. Although the original thesis describes the developed term relevance, it does not discuss the issue of the conflicting relevance evaluation. In addition, the article seems to extend further the exploration of this particular aspect of evaluation, in comparison to the way it is explored in the thesis, by analysing it in texts drawn from three representative disciplines. In the thesis, the research focused on only one discipline, that is biochemistry. Since this article was published 4 years after the publication of the thesis, it is clear then that the writer has developed her ideas about one of her early findings on evaluation, the feature of relevance. Because of this, she discusses in her article a new form of relevance evaluation that relates to expressing the evaluation of academic writers' opposing claims. In this way, she is not only extending the scope of the findings reported in her thesis, but also reshaping them to discuss a new point.

Strategy 4: The Extend-Restate Strategy

Analysis of the data showed that there are 3 articles drawn from two theses that fall under this type of strategy. Both of the theses were modular in terms of their organisation. In these instances writers more or less repeated the same topics that were incorporated in the Question of the thesis/thesis chapter in the same way they were developed in this original source, and extended these topics of discussion by adding relevant points that are on similar lines. The following is an example of the use of this strategy drawn from a chapter of a modular linguistics thesis and one of the articles developed from it.

ex. 5.24

*... As indicated above, this chapter aims to explore participants' perceptions of language-related aspects which may influence the judgement of the merits of NNSs' scientific RA drafts, in particular the influence of the 'appropriateness' of thematic choices at specific stages of RA discourse on perceived 'success'.
(HT2.CH4)*

ex. 5.24a

*This article focuses on the varied linguistic and socio-pragmatic skills required for effective international research reporting.
(HT2.A2)*

The research Question of the article is similar in direction but wider in scope than that of the thesis chapter. This is because the author chooses to continue to investigate the aspects which may influence NNS research publications as perceived by NS editors, but decides to study the varied linguistic and socio-pragmatic skills required for effective international research reporting instead of focusing only on the NS editors' perception of the language-related aspects which may influence the judgement of the merits of NNSs' scientific RA drafts, in particular the influence of the 'appropriateness' of thematic choices. The fact that the author decides to include in his article the socio-pragmatic skills of reporting in addition to the language-related aspects explored in the thesis has widened the scope of the Question. Support for this view was sought by looking at the Answer to this Question, which was also found to be wider in scope. In particular, the article included the full results of a questionnaire given to NS editors that discussed both their judgement of linguistic issues and other socio-pragmatic aspects, whereas the chapter covered only selected parts of the questionnaire. Therefore, the discussion section is different and more extensive from that presented in the thesis. This decision to tackle more points that are relevant to the thesis Question is probably related to the fact that the author was attempting to publish his article in a journal concerned with education and the social problems entailed in it. Hence, for the sake of attracting editors to his study and also the expected readers, educationalists, the author needed to add a more practical part that may cater for this audience as well as present the results of the theoretical outcome of his own study that focused mainly on the analysis of thematic choices in research articles. Thus, the Question of the research in the article is on the same lines as the original

Question in the thesis but is more extensive.

I have outlined above the various types of strategies writers follow in transforming their Questions from theses to produce articles. It can be seen that the commonest type of transformation is that of type 1 (The Focus-Restate Strategy) in which writers focus their attention on a single aspect that was brought up in the thesis and restate it as it is. Probably this is because of the directness of this process which may not cause many complications in reproducing part of the thesis text. However, it should be noted that this usually happens only when the form of the thesis allows for it. As seen above, authors may present their topics in separate chapters that could be publishable in their own right (e.g. ST5 and HT5) or they may produce an integrative type of thesis where various parts could be collated from various chapters to produce an article (e.g. ST1). It is clearly the former type which lends itself most easily to the Focus-Restate Strategy. The second more common type is that of type 2 (The Focus-Reshape Strategy). Again because of the fact that this process is basically a process of focusing, it seems more likely to be adopted. However, because the writer reshapes the Question in such a process, it is less common as it needs more effort on the part of the researcher to adapt the article to the new environment it will appear in, for various reasons such as the specific journal in which it is published and the like. The other two types (The Extend-Reshape Strategy and the Extend-Restate Strategy) are even less common, probably because they require making more changes to the Question of the thesis/chapter. This usually seems to happen when the study of the article is produced some time after the thesis and the researcher seems to be interested to present further points that have occurred to him/her as a result of further exploration of the topic or new illumination on the same points of interest he/she had already raised in his/her PhD study.

I move now to the discussion of the second element of the top level of organisation of research theses and articles: The Answer Proper.

5.3. The Analysis of the Answer Element

The present section reports the outcome of the investigation of the Answer element. Following a similar organisation to the section reporting the results for the Question element, I begin this section by defining the Answer element and specifying the means by which it could be identified in texts (section 5.3.1.). Then I refer to the main position of this element as identified in the investigated theses and articles (section 5.3.2.). Finally I report the results of the analysis of this top element in the interrelated texts and link these results to the results of the analysis of the Question element (section 5.3.3.).

5.3.1. The Answer Proper Element: What is it and How is it Identified?

As mentioned previously (chapter 4, section 4.5.1.1.), the Answer element is the semantic category that includes all the information that represents the final conclusion(s) the researcher arrives at after the investigation of his/her main research Question(s). The Answer element is thus the final outcome of the attempt to respond to the research Question posed by the study.

The variety of forms of this part of text is immense. This is because of the various possibilities of Answers that could be given by researchers, not only in terms of content but also in terms of the linguistic realisations of these meanings. However, the Answer is basically determined by the Question set first by the researcher and therefore should be always compared against it. Thus, if the Question is a wh-question, it is likely that the Answer is an extensive report of findings that are discussed and rearranged by the researcher. On the other hand, if the Question is a “yes-no”, the Answer is expected to be essentially a positive or a negative response to this research Question. In the case of “inferrable” Questions the Answer may be of either form depending on the form of the converted Question. Furthermore, if the Question is single, the Answer is likely to be limited to this single aspect explored, but if it is multiple and covers a number of related aspects under the same topic, then the Answer is likely to be elaborate.

On the other hand, in the case of descriptive studies, the Answer is expected to be a report of the researcher's observation of the phenomenon under investigation. This means that the Answer is likely to be more elaborate in nature than the other types of Answer.

The Answer is, therefore, different from a Question as a result of its developed semantic content but it is always closely linked to its Question in terms of its form and scope. However, in some cases it was not possible to identify only one single statement or even two as the Answer proper of the research Question identified. Instead, a single proposition is extracted by the analyst as an expert reader. The example given below is one of the shortest Answers that were given textually in any of the data explored.

ex. 5.25

After 5 years service the overall wear of three posterior composites exceeded that of two amalgams: however for a number of restorations the difference was not significant. The maximum depth of wear for any individual restoration was not necessarily caused by attrition and cannot be determined by measuring enamel exposure at the margin.
(ST4.A10)

Some of the linguistic signals that can be used to identify the Answer element are lexical items like “in conclusion, to conclude, to sum up, in summary”, etc. It was also noted that Answer elements usually include nominalised forms that refer to the research process carried out and/or to the process being investigated, and also include the researcher's evaluation of these processes. The following example includes clear linguistic signals that point to the fact that the selected extracts represent an Answer element. Note the underlined words that refer either to summative lexical items (e.g. “in summary”) or the evaluation of processes (e.g. “a very modest contribution”). All of these signals in addition to the informational links that this particular Answer has with its Question help in determining its identification as an Answer element.

ex. 5.26

In summary, the impact of this particular business and innovation centre appeared to have been less than “direct”, It would appear that relying on a body such as an innovation centre in a locality formerly so heavily associated with coal mining would result in only a very modest contribution towards the diversification and innovation process which would lead to technological modernisation of a local economy, and only then over the very long term.

(HT5.A2)

In the case of a lack of lexical signals of this kind, the Answer element is identified by means that depend on the comprehension of the text at hand and deciding on the semantic propositions that could be representative of Answers to the Questions of the research investigated. Overall, therefore, the key to identifying the Answer is the Question, with supporting evidence in some, but by no means all, cases from the linguistic signals. This may seem unsatisfactory in some respects, but it does reflect the process of the ordinary reader of the texts, who is primed by knowledge of generic conventions, etc. to identify a Question and then to be on the lookout for a plausible candidate for an Answer to it.

The identification of this element in my data, even with using both linguistic and non-linguistic clues, was not always easy. This is because this element often appeared mixed up with other sub-elements, like the report of results and discussing them (see chapter 4, section 4.5.1. for the discussion of this point). In other cases, no direct propositions representing the Answer element were given within the main body of the text. In this case, either a constructed proposition was developed and used in the analysis or the Answer proposition represented in the Abstract of the thesis or the article were used instead. It was felt that resorting to the Abstract for the identification of the different elements of the text, especially Questions and Answers, is legitimate as it represents the summative propositions that were developed by the writer of the text and put in his/her own words, and therefore are better than depending on the propositions and wordings constructed by the analyst. All this was usually checked by second readers who are expert in reading similar texts (see Appendix 5 for the samples of the responses given by expert readers extracting the Question and the Answer elements of texts depending on reading their Abstracts)

5.3.2. Where is it Positioned?

In terms of position, according to the conventional expectations of academic readers and as represented in the model applied in the present study, this element appears in the final parts of the texts explored, following the report of the results and the interpretation of these results. It appears before the final part that discusses the recommendations and limitations of the study. In many cases, the Answer is reported under a section entitled “Conclusions”. If not, it comes as part of the “Discussion Section”. Knowing the position of the Answer element helps methodologically in identifying it and linking it to the Questions it is meant to respond to.

5.3.3. The Results of the Analysis of the Answer Proper Element

In the present section the results of the analysis of research Answers in all the explored data are presented and discussed to show how theses and articles may vary in the way they represent this top level textual element. The Answers given in the various texts can be seen as a reflection of their research Questions, in terms of their type, their position in relation to the text in which they appear and the strategies used in transforming them, as they are simply the outcome of responding to these Questions. Thus, as with research Questions, they may be categorised differently in terms of the type of Question they are answering (i.e. single or multiple) and its organisation (modular and singular). See figures 5, 6, 7, and 8 above for a representation of their position in modular and integrative theses, of different types, and how they are represented in the articles produced from them. They also seem to follow the same strategies of transformation as their Questions do. So they may be focused, extended, reshaped, restated or copied as the case may be to reflect the change that the text has undergone while transforming it from a thesis/thesis chapter to an article.

However, as noted above, the Answer element varies from the Question element in that it is usually of a more elusive nature than the Question. It generally seems possible for the writer to formulate the Question in a very straightforward way. The Answer, on the other hand, is more complex to formulate especially because it usually contains a number of claims which are presented cautiously to the reader,

and which may consist of a series of increasingly generalised interpretations of the findings which each have a claim to be seen as part of the Answer. As a result of this, the Answer is often more elaborate and heavily modalised than the Question as it is cautiously worded and tentatively put forward. This variation between Answers and Questions also helps in identifying Answers as they are usually represented by modalised propositions. This is clear from the use of modality expressions like “appeared to have been, it would appear that, would be”, etc. This point will be picked in the following sections while treating some of the examples that show clearly this distinctive feature of the Answer element.

5.3.3.1. Types of Answers: Single or Multiple?

The following examples attempt to show the link between thesis/article Questions and their Answers in terms of type. This is done by giving illustrations of the two main types of Question as identified in the previous section, single and multiple, and the Answers given to them in the same text, whether a thesis or an article. It is necessary to note this link in terms of the amount of coverage of content for both Questions and Answers which is needed to create the necessary unity between the beginning of a text, where the Question is usually posed, and its end, where the Answer is finally given to this Question.

ex. 5.27

A Multiple Question and a Multiple Answer

Thesis Question

This study attempts to determine and compare the following properties of two conventional and two non 2 amalgam alloys.

- 1. Mechanical properties:*
 - a. compressive strength*
 - b. diametral tensile strength*
- 2. Thermal properties;*
 - a. differential scanning calorimetry (DSC)*
 - b. thermomechanical analysis (Dilatometry) TMA*
 - c. thermogravimetry (TG)*
- 3. Metallography and Microstructure*
- 4. Tarnish and corrosion*

- 5. Clinical Assessment**
a. marginal breakdown
b. anatomic form
c. caries recurrence.
(ST2)

Thesis Answer

From this study one can conclude that:

- 1. The introduction of high copper amalgam did not change the dental picture as to the property of tensile strength. High copper amalgam had the highest early and late compressive strength which reflected on their distinguished clinical performance.*
- 2. Among the two high copper amalgams, the Sybralloy which has a higher compressive strength value was not necessarily the best when tested clinically.*
- 3. The differential scanning calorimetry DSC proved to be a fairly informative technique, not only as a simple method to identify the presence of dominant phase in dental amalgam but also serves to check the homogeneity of phase distribution in the alloy particles.*
- 4. The thermomechanical analysis TMA (dilatometry) has been successfully used to record the dimensional changes of different amalgams during setting continuously over a 24 hrs. period in fractions of a micrometer. The Amalcap and the Dispersalloy showed the classic dimensional change curve of initial contraction followed by expansion; while the Spheralloy and the Sybralloy amalgams showed continuous contraction.*
- 5. The thermogravimetric analysis TG confirmed the clinical assessment and the invitro corrosion test as the dispersion phase alloy was the most resistant among the tested amalgams to thermal decomposition, marginal degradation and corrosion attacks.*
- 6. The in vitro tarnish corrosion test used in this study classified the four amalgams in the same order proposed by the clinical assessment. Dispersalloy emerged favourably, followed by Sybralloy, then spheralloy and finally Amalcap. One can conclude that invitro corrosion tests and thermogravimetric analysis could be used to predict clinical performance of amalgam.*
- 7. From both direct and indirect techniques used for the clinical assessment of amalgams Dispersalloy rated highest as compared to the other three types of amalgams.*
(ST2)

ex. 5.27a

A Single Question and a Single Answer

Article Question

Thermomechanical analysis, TMA, was used to evaluate the linear thermal expansion coefficient, Δ , of four different types of dental amalgams: Conventional lathe-cut

alloy, conventional spheralloy, high copper dispersalloy and high copper ternary alloy.
(ST2.A2)

Article Answer

Thermomechanical analysis has confirmed previous results achieved by DSC in characterising mercury-containing phases in dental amalgams.
(ST2.A2)

The above two examples show the Questions and the Answers to two related texts, an integrative scientific thesis and an article derived from it. As seen in the example, the thesis Question is multiple as it aims to compare the outcome of the analysis of various properties of four dental materials by running a number of experiments on them. Due to the multiplicity of the research Question, the Answer to it is also multiple as it reports the final conclusions of these varied studies. It is also interesting to notice the similarity in the form of the layout of the Question and the Answer as the author chooses to set the aim in a form of a list and also the Answer is given in the form of a list of the main conclusions which are relatable to this same list of properties. On the other hand, the article, focusing on only one particular study related to the thermomechanical analysis of the same materials (ex. 5.27a), has a single Question and in turn its Answer is limited to the final conclusion found concerning this particular study.

It can therefore be assumed that Answers are usually reflective of the Questions they are answering in terms of type. This strong link between these two elements contributes to creating the unity between the beginning and the end of the research text in which they appear. If the researcher fails to capture this link by giving an Answer that is not relatable to the Question posed at the beginning of the text, this will lead to the creation of a confused piece of work. In all the studied theses and articles no example of such a case has been found.

5.3.3.2. Type of Organisation: Modular or Integrative?

Concerning the issue of the differences in the position of the Answer element depending on the different positions of the Question, it was found that in integrative theses, like the example given

above (ex. 5.27a), the Answer element usually appeared only once at the end of the thesis in the conclusion section and as part of reporting the overall Answer of the whole thesis. On the other hand, in the case of modular theses, where Questions are expected to appear twice - in the earlier introductory chapters and at the beginning of the chapters that relate particular studies - the Answers were also found in two distinct places, the end of the chapters relating the particular studies compiling the whole research and in the final chapter where the overall conclusions are reported in general. It must be noted however that, as with research Questions, in many cases the content of the results represented in the two positions are difficult to match as the Answer of the whole thesis corresponds to the overall Question of the thesis and hence it covers a wider ground and at the same time may thus have a wider perspective than that of the Answer of the chapter. This particular Answer, which is directly linked to the Question of the chapter, is therefore more limited in size and perspective than that of the thesis. The following is an example of the Answers extracted from a modular thesis related to the Questions they are attempting to answer.

ex. 5.28

Question

This work is concerned with: why were particular policies/ strategies for economic regeneration adopted in particular localities?
(HT5.Abstract)

Answer

A central recognition in this work is that decision-making, policy implementation and, indeed, policy evaluation takes place in a political environment. Policy is about politics.
(HT5. Abstract)

ex. 5.29

Question

The objective of this study was to examine the level of contribution an innovation centre could make to the regeneration of an economy in a locality previously heavily dependent upon coal mining.
(HT5.CH8)

Answer

In summary, the impact of this particular business and innovation centre appeared to have been less than “direct”, ...

It would appear that relying on a body such as an innovation centre in a locality formerly so heavily associated with coal mining would result in only a very modest contribution towards the diversification and innovation process which would lead to technological modernisation of a local economy, and only then over the very long term. To say that it was modest and long term, however, did not mean that it was not worth doing: for the prospect of technological modernisation, even if only in the long term, had at least the chance of seeing the development of a sustainable local economy built upon the new rather than the old. So at the very minimum, this innovation centre was trying to be something more than a place simply within which ordinary small businesses were fostered and encouraged.

(HT5.CH8)

Considering the same example still, it was found that the article derived from the specific chapter referred to in this example produced an article that was in many ways similar to the chapter and hence the Question and the Answer of both are identical.

The difference in the position of the Answer in the integrative and modular theses does not affect the produced article in general, yet it may affect the process of deriving the article from the thesis, as it is expected that the Answer in the integrative thesis will be produced out of a p-text that can be recognised as the original source of the article and specifically the final parts of the chapter reporting the conclusions of the overall study, especially in the case of single-Question integrative theses. In the case of multi-Question integrative theses, the Answer element typically appears in one section of the final part of the conclusions chapter that includes the conclusions of other different mini-studies. It also typically derives part of its conclusion from the final conclusion chapter for the whole thesis. On the other hand, the article derived from a modular thesis is typically derived from the chapter in the thesis that is dedicated to their shared study but may include some elements from the concluding chapter for the whole thesis in both single and multi-Questions modular theses. It appears from this description that the derivation process of the article from the integrative thesis is more complicated than that of the same process undertaken in relation to modular theses. This indeed will have its implications for the number and type of changes made in this process of transformation.

To discuss these possible variations in more detail, I move now to discuss the variations that take place in the Answer element as a result of following the various strategies of transforming the Question of the thesis/ thesis chapter/p-text into the article.

5.3.3.3. Strategies of Transformation: Effect on the Answer Element

Following from the discussion of these strategies while transforming Questions (section 5.2.3.3. above), the results of the analysis of the Answer element in the various texts explored in this study showed that they reflect the same strategies used for transforming the Question. This is indeed common sense as the Answer is a reflection of its Question in type and form; hence it is expected that it would be derived using the same main type of strategies of deriving the Question. The following examples are therefore presented under the four types of strategies already mentioned in the section 5.2.3.3. In order to maintain a relation between the examples given above and to show the link between Questions and their Answers I will use some of the examples referred to above (ex. 5.21, ex. 5.21a, ex. 5.221, ex. 5.22a, ex. 5.23, ex. 5.23a, ex. 5.24, and ex. 5.24), focusing only on the Answers elements in the paired texts. I also focus on the most comparable bits to attempt to show all other relevant changes made to the derived texts that are affected by the type of strategy undertaken to transform the thesis/chapters/p-texts into the article form.

Strategy 1: The Focus-Restate Strategy

Analysis showed that the Answer proper of a Question that has undergone the strategy of focusing and restatement also undergoes the same type of strategy when it is transformed into the article. An example of this case of transformation is presented below. Using the same examples I referred to earlier (ex. 5.18, and ex. 5.18a), it could be seen that the writer in this integrative thesis had decided to investigate a number of issues related to “the evaluation of some aspects of the pathogenesis, diagnosis, prevention and therapy of bacterial and fungal endocarditis” and therefore the Answer stimulated by this research Question is extensive enough to cover the aspects investigated in this study. The abstract of the thesis below shows the extent of the Question and the Answer concluded

from the study, divided into mini-Answers that represent the responses to the mini-Questions composing the major research Question of the thesis. I only quote some parts from this abstract below.

ex. 5.21b

...The incidence of amoxicillin and erythromycin-resistant oral streptococci was determined in patients at risk from infective endocarditis (IE) who were about to receive chemoprophylaxis for dental treatment. No oral streptococci were recovered that had a minimum inhibitory concentration (MIC) to amoxicillin of greater than 24 mg l⁻¹ (mean peak serum concentration of amoxicillin after 3 g of oral amoxicillin). In contrast, 22% of patients susceptible to IE and 9% of control patients had erythromycin-resistant streptococci with an MIC that exceeded 3.5 mg l⁻¹ (expected mean peak serum concentration following 1.5 g oral erythromycin stearate)

The rabbit endocarditis model was used to assess if amoxicillin-resistant oral streptococci could cause IE and if so whether amoxicillin prophylaxis would be efficacious. Amoxicillin-resistant strains (3) of S. sanguis reliably caused IE in the rabbit. Amoxicillin was found to protect 80% of the animals infected with amoxicillin-resistant strains. It was concluded that antimicrobial prophylaxis may be mediated by mechanisms other than by bacterial killing and that the empirical use of amoxicillin for prophylaxis was justified.

The prophylactic potential of erythromycin and cephadrine were compared to that of amoxicillin, in an endocarditis model. Rabbits were infected with an antibiotic-sensitive strain of S. sanguis. Amoxicillin protected 80% of rabbits, cephadrine and erythromycin approximately 50%. It was concluded that neither erythromycin or cephadrine were suitable chemoprophylactic agents for the prevention of infective endocarditis.

It has been suggested that extracellular poly-saccharide (ECP) production by oral streptococci is a possible virulence factor....
(ST1.Abstract)

The underlined section in this abstract focuses attention on the part that I select for close analysis. This part represents the Answer to a particular Question that was picked up in one of the articles published from this thesis. This particular Answer, which can be considered part of a p-text, is compared with the Answer proper of the article, which is given below.

ex. 5.21c

In one or two dose regimens cephadrine was found to be inferior to a single 400 mg/kg prophylactic dose of amoxicillin. Cephadrine is not recommended for prophylaxis against streptococcal endocarditis.
(ST1.A3)

It is clear that the Answer element in the article represents only one part of the overall Answer in the thesis. This is due to the focusing strategy that has been applied to the Question at first and which was subsequently applied to the Answer element. Thus, whereas the thesis Question covers about six aspects, each of which is described and conclusions about which are drawn in the six paragraphs of the abstract, the article focuses on only one of the aspects discussed in paragraph three (the study of cephadrine and its prophylactic potential) and the conclusion drawn from this particular study. In fact, in the thesis the writer compares both cephadrine and erythromycin and finally evaluates them against amoxicillin, which is a widely used drug. In the article, the writer focuses her attention further by dealing with cephadrine only and comparing it to amoxicillin.

Comparing the two related parts drawn from the abstract of the thesis and that of the article (see underlined parts), it becomes clear that the writer uses the restate strategy as she does not change the propositional representation of the Answer in general; she states in both cases that cephadrine is not suitable for the prophylaxis of endocarditis. The fact that many of the major lexical items are repeated in both Answers indicates that the two Answer elements are semantically linked and are more or less restatements of each other. These lexical items include “cephadrine”, “prophylaxis” and “endocarditis”.

However, some differences between both Answer representations were also detected through the use of different lexical items. These were mainly related to the way in which the experience is presented in each text. For example, the items ‘neither .. suitable’, ‘concluded’ and ‘for the prevention’ were replaced in the article by the items ‘not recommended’, ‘found’ and ‘against’ respectively. The major difference between the Answer in the thesis and the article is that the thesis (at least in the abstract) gives a direct Answer element introduced by a clear language signal (“It was concluded that ...”), whereas the article does not give a direct formulation of the Answer proper. Instead, the Answer proper in the article is deduced by the negative description of the main result of the study (“In one or two dose regimens cephadrine was found to be inferior to a single 400 mg/kg prophylactic dose of

amoxicillin.”) and the negative Recommendation given as an Outcome of this main result (“Cephadrine is not recommended for prophylaxis against streptococcal endocarditis”).

Another difference between the two formulations is that in the thesis the starting point of the Answer element is amoxicillin, whereas in the article it is cephradine. This shows a change in the way the writer represents the point of departure of her message, the theme, according to the context of the text. In the thesis, having digested the study and knowing that amoxicillin is the most successful drug for the prophylaxis of endocarditis, the writer starts with it in her abstract and then refers to the other drugs to be compared with it. In the article, because the title of the study was mainly about the effect of cephradine in prophylaxis, the researcher had to begin her main propositions with this particular medication and refer to amoxicillin only as a standardised drug that it is evaluated against. As a result of this variation in the starting point of the two elements, the Answer element in the thesis sounds more positive than that of the article as it begins with the reference to the more successful medication and its level of success (Amoxicillin protected 80% of rabbits, cephradine and erythromycin approximately 50%) while the article begins with the reference to the “inferior” drug and the reference to its limited effect in comparison to amoxicillin (In one or two dose regimens cephradine was found to be inferior to a single 400 mg/kg prophylactic dose of amoxicillin).

Strategy 2: The Focus-Reshape Strategy

It was found that when the writer chooses to focus and reshape his/her research Question in the article, the Answer of this Question consequently becomes a focused and a reshaped form of the Answer in the original source of the text, the thesis/thesis chapter/p-text. This is clearly evident in the following examples which show the Answers given in an integrative thesis and one article derived from it. The research Questions of these examples were already discussed earlier in this chapter (ex. 5.22, and ex. 5.22a) under the focus-reshape strategy. In the thesis I only give some parts of the Answer, underlining the specific part that matches with the Answer of the article compared with it.

ex. 5.22b

From this study one can conclude that:

1. The introduction of high copper amalgam did not change the dental picture as to the property of tensile strength.

2. High copper amalgam had the highest early and late compressive strength which reflected on their distinguished clinical performance...

5. The thermomechanical analysis TMA (dilatometry) has been successfully used to record the dimensional changes of different amalgams during setting continuously over a 24 hrs. period in fractions of a micrometer. The amalcap and the Dispersalloy showed the classic dimensional change curve of initial contraction followed by expansion; while the Spheralloy and the Sybralloy amalgams showed continuous contraction.

6. The thermogravimetric analysis TG confirmed the clinical assessment and the in vitro corrosion test as the dispersion phase alloy was the most resistant among the tested amalgams to thermal decomposition, marginal degradation and corrosion attacks...

(ST2.Conclusions Section)

ex. 5.22c

Thermomechanical analysis has confirmed previous results achieved by DSC in characterizing mercury-containing phases in dental amalgams.

(ST2.A2)

Inspection of the Answers given in the thesis and the article shows that the Answer of the thesis is much wider than that of the article due to the more extensive Question it attempted to cover. While the thesis attempted to find the Answers to a number of mini-Questions related to the same type of dental materials and finally gave a section that sums up in eight points the final conclusions deduced from the findings of studying these aspects, the article, on the other hand, focused on only one of these aspects (thermomechanical analysis of a number of dental materials) and therefore its conclusion is much more limited in scope than that given in the thesis. Thus, the Answer element of the article coincides only with point number 5 in the conclusions section of the thesis (the underlined part above) as both parts handle the final conclusion of running the thermomechanical analysis on the same dental materials studied by the researcher.

The article does not only give a focused form of the Answer in relation to that of the thesis, it also

manages its ideas in a different way by following different arguments in presenting the final conclusions of the specific study reported. While the thesis Answer reports the outcome of the thermomechanical analysis of the four dental materials in a descriptive manner by referring to the successful measurement of the dimensional change of these materials and their order in terms of the phases of this type of change, the article directs attention to the fact that the conclusion of the thermomechanical analysis of the same materials coincides with the established results already found in the field yet of another type of analysis, the DSC analysis, which lays emphasis on the effect of the amount of mercury in dental materials on characterising their dimensional change phases. From this, it is evident that although both Answers discuss relevant issues, they seem to follow different arguments. Thus, it could be stated that the Answer element in the article is a reshaped form of that given in the thesis.

A further confirmation of the reshaping of the ideas of the Answer element in the article is the fact that not many lexical items are shared between the two of them. Only two lexical items are shared, “thermomechanical analysis” and “dental amalgams”, which show the basic relation between them as they deal with the results of a specific type of analysis on dental amalgams. All the other specific details about the conclusions reported differ as the writer rewrites the Answer to suit each context using different lexical items.

Strategy 3: The Extend-Reshape Strategy

Under this strategy the writer chooses to develop the research Question of the thesis further and hence introduces in the article new elements that have not been discussed in the thesis/thesis chapter/p-text. The researcher also decides to reshape the Question in a different way to suit the new context for the published article. As a result of this variation of the article Question, the Answer of the article is subsequently extended and reshaped as a response to the change in the Question. Examples 5.23 and 5.23a which were drawn from a linguistic integrative thesis (HT5) and one of the articles derived from it (HT.A2) gave completely different Answers as a result of the variations between their research

Questions. While the thesis focused on the description of evaluation, how it is recognised in biochemistry research Articles, its various features/functions and the effect it has on the organisation of the articles, the article only mentioned the outcome of the analysis of the feature of relevance of evaluation, one of three aspects discussed in the thesis, and in parts where researchers are proposing claims that oppose other established claims, and not only in biochemistry but also in other social and humanity disciplines. Due to the variation in the direction of the line of argument as well as the extended scope of the article Question in relation to that of the thesis, the Answer of the article was much wider in scope and varied in direction. The width of the Answer of the article comes from the fact that the writer includes results on data that have not been covered in the original research work, while the change in direction is mainly reflected by the fact that the Answer of the article reports the working of an aspect of the relevance of evaluation which has not been discussed in the thesis, i.e. conflict relevance. Since the Answer of the thesis is too long and in many ways different to compare with that of the Answer of the article, I present below short extracts from the Answers of the two related texts on the issue of relevance that show clearly the difference between them in scope and direction.

ex. 5.23b

Relevance also acts interactively in the sense that Relevance Markers inform the reader explicitly of the significance of what he or she is reading, that is, its relevance to the reader's world and to the ongoing discourse. There is a cumulative chunking of the text by RMs which interacts with the reader's processing of information.
(HT5)

ex. 5.23c

This discussion of instances of conflict in academic discourse has illustrated writers' exploitation of linguistic resources, particularly associated with evaluation, as part of the process of influencing their discourse community in favour of one knowledge claim over another. ... The site of the conflict and the grounds for value that are invoked [by the writers in the data investigated] divide the papers along discipline lines, but more attitudinal language is used in the papers which challenge earlier findings...
(HT5.A2)

Whereas the first extract reports an observation that resulted from the analysis of the notion of

relevance of evaluation of texts on its interactive nature and how evaluation influences the reader's processing of information and relate to his/her world, the second text, though it also singles out evaluation as an element that may influence readers, is concerned with evaluation that deals with opposing claims in particular. It further demonstrates a difference among disciplines in that particular aspect which the thesis cannot claim as all of the data used in it are drawn from one discipline only. In general, thus, it must be reiterated that the change made to the Question element in the article, by choosing to reshape the Question of the study of the relevance aspect of evaluation and to extend its scope to cover the linguistic realisations of more than one discipline, has resulted in the change in the Answer as witnessed in the above extracts.

Strategy 4: The Extend-Restate Strategy

The final strategy to be discussed was the least common in the data explored, probably because it is difficult to extend a text and yet keep its information intact without any modifications. This is because in this strategy the writer restates part of the work done in the thesis but extends it further by adding more information that is on the same line of the restated part. When the writer decides to do so to the Question element this is indeed reflected in the Answer element as well. The following example shows this strategy at work in the Answer element of a study reported in part of a thesis chapter and an article derived from this part. The Answer element in the article is found to be much wider in scope than that of the thesis, although both of them are more or less covering related grounds. The fact is that, although the writer of the thesis has done some work in investigating the views of non-native editors about the various linguistic and non-linguistic aspects that may affect them while accepting new publications, especially thematic control, he decides not to report all his findings by keeping the part on their views concerning the non-linguistic elements on hold. The reason for this, as mentioned by the writer himself in the thesis, is that the study reported in the thesis focuses on linguistic features and there is no space to bring in factors from the wider context. However, having collected the data, it seems sensible to make use of them; and he chooses to report this part as well as the part already reported in the thesis in a separate article. Thus, the article contains the overall outcome of his study of

the views of NNS editors concerning linguistic and non-linguistic features. In this way it is clear that the writer extends the content of the article but does not try to modify the argument already raised for the overall study, that is what effect does editors' views have, especially those about what should be the standard of published articles in terms of language and otherwise, on the process of accepting articles for publication.

Due to space limitations again I depend on the abstracts given in the thesis and the article to pinpoint the similarities and the differences between both Answer elements. The parts that could be considered the Answer elements are underlined below.

ex. 5.24b

...The primary method of study adopted here is corpus-based and initial discourse-functional analysis and description of marked and unmarked thematic choices are based on a corpus of 36 published RAs in the physical and life sciences written by 'experienced' NSs. This corpus represents a base 'norm' of thematic usage against which other corpora are compared, namely, published RAs written by 'experienced' NNS scientists and unpublished first and final RA drafts written by NNS novices. Major findings indicated that 'appropriate' thematic selections in the RA genre are constrained by the changing rhetorical purposes, signalled by means of moves, which operate throughout the different stages of scientific RA discourse; thus, the textual metafunction of Theme plays a significant role in the characterisation and dynamic within-text structuring of the scientific RA genre. Furthermore, background surveys by means of questionnaires and interviews of the participants in the process of international research communication, in particular, of 'expert' NS journal editors, confirmed that 'appropriate' thematic control was clearly associated with the judgement of the merits of NNSs' RAs, and thereby, their 'successful' publication. With the pedagogical application of such theoretical insights in mind, the use of the teaching/research tool of Propositional Clusters (PCs) was explored in the EAP classroom as a heuristic for raising NNS novices' awareness about the manipulation of Theme in drafting and redrafting RA sections. Data collected from PCs exercises indicated their potential to raise awareness about the role of 'appropriate' thematic control in helping to create 'successful' texts.

This study contributes to our understanding of aspects of the functional relationship between elements of discourse structure and lexico-grammatical components such as Theme/Subject. In addition, reflecting the social-semiotic perspective of a systemic-functional framework, this work strongly emphasises the social-constructionist nature of the processes involved in international research communication through the medium of the scientific research article.

(HT2.Abstract)

ex. 5.24c

This article focuses on the varied linguistic and sociopragmatic skills required for effective international research reporting. In order to understand more clearly the demands of the immediate audience many English NNS (non-native speaker) researchers are writing for, a survey of journal editors in North America and the U.K. was carried out. This article reports the results of this survey; of particular interest are the language related criteria which may most influence consideration of NNS researchers' papers. As a result of survey findings, implications and suggestions for the teaching of research writing to NNS researchers are discussed.

(HT2.A2)

Analysis of the above two underlined parts shows that the thesis covers a wider ground in general as it gives a more extensive Answer than that of the article. This is also a reflection of the wider Question posed in the thesis (ex. 5.24). However, the Question of the article (ex. 5.24a) covers only one point in the thesis and goes beyond that point. This is clear from the fact that the article discusses both the varied linguistic and sociopragmatic skills required for effective international research reporting while that of the thesis covers only linguistic aspects, especially thematic control. Although the article's Answer underlined above does not state directly what are the major conclusions of the study as is the case in the thesis, it hints at the fact that there is an equal emphasis like that shown in the thesis on the language related criteria which may influence consideration of NNS researchers' papers. This in particular shows the link between the two Answer elements, and indicates that the relationship of the article to the thesis is one of restatement. The other part on the sociopragmatic skills is the part added in the article which does not show up in the thesis but which follows the same line of investigating the requirements for producing successful publications.

To sum up, it can be said that the Answer element, like the Question element, follows similar strategies of transformation and that these reflect the specific kind of strategy the Question has undergone. As the case with the Question element, therefore, the focus-restore strategy was at the top of the list, while the extend-restore strategy was the least common in the data explored.

CHAPTER SIX: ANALYSIS OF THE SEMANTIC ELEMENTS OF THE MIDDLE LEVEL OF ORGANISATION

6.1. Introduction

The present chapter reports the main findings of the analysis of the semantic elements that compose the middle level of the organisational structure of the two text types explored. It focuses on the general types of difference that were found between theses/thesis chapters and the articles derived from them with regard to the elements of Setting, Question, Response, Answer and Outcome. At the same time, the report highlights some particular types of variation that, though related to the major types of variation identified, are most of the time specific to the elements discussed.

Three issues that need to be discussed before the actual report of the results of the analysis are the amount of coverage of the analysis of the middle level elements, the way in which these elements could be described semantically, and the relation between the analysis of the Question and the Answer elements and the analysis at this level.

Concerning the first point, the analysis of the elements of the middle level differs from that of the analysis of the Question and Answer proper discussed in chapter five in that these elements are not as easily identifiable as the Question and Answer elements. To fully understand this remark and its repercussions on the analysis of the middle level elements, it is necessary to go back to the elements of the Question and the Answer to find that they are represented by relatively a limited number of propositions placed in different but identifiable parts of the texts in which they appear. They are in fact more easily identified and compact than the middle level elements. The middle level elements, on the other hand, are usually expressed by a larger number of propositions placed in a wider range of positions. Therefore, in some cases, when presenting the outcome of the analysis, the elements are expressed by propositions that are either generalised or constructed from a number of clauses to give the overall meaning expressed under each of the elements investigated. Furthermore, these elements,

unlike the Answer proper and the Question proper elements, are composed of a number of sub-elements that make them up and which at the same time are part of the bottom level of the text semantic organisation. Thus, in order to identify such elements and refer to them the analysis must refer to some, in some cases all, of the propositions at the bottom level of the text. However, it should be made clear that the analysis of this level is not equivalent to that of the analysis of the bottom level of the text, which would mean the analysis of all the propositions that are equated with all the statements of all the elements of all the texts explored - something which is not attempted in the present study. Instead, the middle level analysis is directed at the investigation of the overall propositions that represent the four main semantic elements that make up the Question and Answer Domains (see figure 4, page 113). Examples drawn from the actual texts however are likely to refer to propositions that are also part of the bottom level analysis. The final point to be discussed here is the status of the analysis of the Question and Answer Domains in the present study of the middle level. The analysis of the middle level will focus only on the parts that have not been reported in the previous chapters on the analysis of the Question and the Answer elements. It will not refer to the Question proper or the Answer proper even though these are clearly elements of the domains in which they occur. Instead, it will focus on the elements that represent further details under the Question and the Answer Domains (see chapter 4, section 4.5.1.2.). This is simply to avoid repetition and coverage of the information already given in chapter 5.

Before reporting the results of the analysis, I will outline the overall organisation that I have followed in presenting these results in the following sections. Section 6.2. begins by giving a brief report of what was identified as the general types of variations in the various elements as a whole and linking these variations to the changes made at the top level of the semantic organisation of the original texts. Similarly to the organisation of the sections reporting the analysis of Question proper and Answer proper, the following sections (sections 6.3., 6.4., 6.6., 6.7., 6.8., 6.9., 6.10. and 6.11.) begin by defining what is the type of element investigated, and where is it usually located in the texts and how it was identified in them. Then a number of examples drawn from the corpus investigated and which

illustrate the major types of variation identified are discussed in relation to the specific element reported in each section. The examples are drawn from a variety of texts that represent the humanities and the scientific trends as well as the different types of theses, modular and integrative, and articles explored. Conclusions are usually drawn at the end of each section to highlight the specific ways in which the general types of variation are realised in each of the elements.

6.2. General Analysis of the Middle Level Elements: Overall Types of Modifications

The overall analysis of the data and the type of changes made while transforming a thesis chapter/p-text to an article show that there are two major types of variations writers make. These types of variations seem to link to the major types of change identified on the top level analysis which were related to the changes in the Scope and the Direction of the ideas presented in the Question and Answer proper. This is to be expected because the middle level elements are, more or less, an extension of the top level elements and thus any changes in terms of scope or direction on the top level are expected to be reflected on the more detailed middle level. The two main variations identified are therefore:

Condensation

and/or

Reorientation

It is clear that the first type of modification is linked to the change in the scope of the new text, while the second refers to the change in the direction of the ideas presented and that they reflect the four types of strategies writers were found to use while transforming Questions and Answers of theses/p-texts into articles as identified earlier (chapter 5, sections 5.2.3.3. and 5.3.3.3.).

It is worth noting that at the middle level writers sometimes mixed both types of changes in the same text: some parts of some of the explored articles were condensed, while other parts of the same articles

were reoriented. Thus the writer, for example, may decide to reorient the Setting and the Answer elements, but only condense the Response element. In general, however, it was found that out of the 33 articles investigated the middle level elements in 17 articles were condensed, while in 6 articles they were reoriented and in 6 articles they were both condensed and reoriented. Some articles showed little variations of either type (4 articles). These were not considered in the present analysis, although the existence of this option is kept in mind in drawing overall conclusions.

These two types of changes are general, but when they are related to the different semantic elements that make up the middle level they are realised in further types of variations that may be specific to making these changes to the element in which they appear. For example, in the Setting element, the clipping of some of the references to previous research occurs as one means of condensation. On the other hand, under the Outcome element writers may decide to re-produce the recommendations of the study in a way that suits the new more practical approach of the article. In this way, the new text is reoriented in terms of one of its particular aspects. On the whole, condensation and reorientation are the umbrellas under which different specific types of change may take place. The specific means by which condensation and reorientation are done are discussed and exemplified more thoroughly in the various sections below.

6.3. Analysis of the Setting Element: What is it, Where is it Found and How is it Identified?

As described earlier in chapter 4 (see figure 3, page 94), the Setting element is the first semantic element in the middle level of the organisation of the text, and is composed of both the **Research Background** and the **Research Context**. While the first sub-element focuses on the general statements, definitions, etc. that help in giving a wide view of the topic explored, the second sub-element refers to the relevant research done on the same topic or relevant topics.

In terms of position it was found that this element, being introductory to the whole text, is usually located at the beginning of the thesis or the article. However, this was only true in the case of the

integrative thesis where the article was drawn from the whole thesis. In the case of the article being derived from a p-text, the new text was often derived from the early sections of the thesis where the extensive background to the study is usually given. In the case of modular theses, this part appeared at the beginning of the chapter from which the article was drawn.

Furthermore, this element was usually presented in a condensed form at the beginning of the abstract of the two types of theses as well as their articles, though to varying degrees. In some cases it was found that the Setting element was condensed to the bare minimum due to the size constraint on writing abstracts. In other cases, the Setting of the study in the thesis abstract was almost non-existent. In very few cases a relatively longish Setting was given in the abstract.

It is interesting to note that although the above was the common position of the Setting element and its sub-elements, in some cases this position varied. Thus, the sub-elements would appear in the middle of the text or even at the end of it. This happened only when the study presented was composed of more than one particular study, mini-studies, and hence the writer may have felt the need to bring the setting for this particular study before embarking on the report of the findings.

In addition to the early position of this element in the original text as well as the article(s) derived from it, this element was identified by a number of linguistic signals that indicated the two main sub-elements composing it. For the Background sub-element, it was possible to identify general statements as they may be preceded by common introductory phrases such as "It is well known that ..." (HT2.A2), "It is generally agreed that ..." (ST2.A1). However, in many cases these general statements were mainly identified by their position at the beginning of the section entitled "Introduction" and by the fact that they are expressed using the present simple tense and/or adverbs that refer to their frequency and reflect their general status. Examples of such statements follow. The first shows the use of the present tense and the second the use of both the present tense and frequency adverbs.

ex. 6.1

Those of us who teach and talk about our research in lectures and research presentations are all too aware of the effort required to engage the attention of our various audiences and to maintain their interest throughout what might be a lengthy and complex monologue.

(HT1.A1)

ex. 6.2

Aspergillus endocarditis is a life threatening condition frequently only recognised at autopsy.

(ST1.A1)

However, in many cases these general statements were very limited in occurrence, especially in articles. Instead, the writers would use definitions to set up the background to the study and thus use statements that include the lexical items "define", "definitions", "term X is used to refer to ...", "X describes ...", "X is" etc. The following are three examples of these definitions, one from a humanities text and the other two scientific. The signals that indicate definition are underlined.

ex. 6.3

In contrast, writing in the professional-academic community is defined as "norm-developing".

(HT2.A2)

ex. 6.4

Two terms are used to describe wear in posterior composites: "abrasion", which describes general wear across the restoration surface, and "attrition", which occurs in areas of cuspal contact.

(ST4. A3)

ex. 6.5

Antibiotic prophylaxis is the prevention of infection by the administration of antimicrobial agents.

(ST1.A4)

The writer may also decide not to present any straightforward background section; instead he/she immediately refers to previous research and mixes the report of the research of the past with the

common statements and definitions that are prevalent in the field and which are based on these previous studies. This was a common feature in many of the texts. As linguistic signals for these statements, it was usual to pick out statements that are written in the present tense and are preceded or followed by citations of the authors of the studies from which such facts or quotations are taken. The following are examples of these cases which seem to be a mixture of Background (due to the use of present tense statements) and Research Context (due to the use of a citation form).

ex. 6.6

The position of the Conservative central administration, in power since 1979, appears to have been that local authorities are simply not to be trusted, or are inefficient, in relation to fostering the changes "necessary" in local urban economies (Haughton and Roberts, 1990)
(HT5)

ex. 6.7

In three body abrasion the abrasive particles are in slurry (the third body), whereas two body abrasion results from the sliding action of two surfaces (bodies) in contact (Pugh, 1973).
(ST4.A7)

ex. 6.8

The product-orientation provides a focus on text modelling (Cummins, 1995), stressing, in particular, familiarity with the rhetorical characteristics which differentiate the genres required in academic studies.
(HT2.A5)

In other cases the reference to previous research, Research Context, is mainly directed at reporting what these studies have found and linking these findings to the present study. In these cases the use of the reporting verbs is common; the tense may be past or present. The following examples are pure Research Context.

ex. 6.9

Wu and Cobb (1981) reported that it (silver nitrate) could be used to stain subsurface porosity in restorations which had been removed from the mouth.
(ST4.A8)

ex. 6.10

... indeed, Weber (1993) refers to the problem of dealing with the "many-to-many relations".

(HT1.CH6)

In the above examples the reference to the researchers is integral to the statement (see Swales, 1990, on integral and non-integral citations). In other examples it was incidental and hence the use of reporting verbs and tenses were not the main signals for picking up these cases. Instead, only the citation of the author's name and date of his/her study is considered the main clue that this statement is part of the Research Context. The following are examples of this particular type of Research Context which is identified only by the citation system.

ex. 6.11

A substantial proportion of the organic compounds passing into estuaries from rivers consists of humic compounds or "geopolymers" (Reuter, 1977), which are residual compounds resistant to biological degradation.

(ST5.A1)

ex. 6.12

This was not the case in all Coalfield localities (Howell, 1989, p.6) - there were exceptions particularly in the Lancashire and Nottingham Coalfields - but the point held true in sufficient localities for it to be significant.

(HT5)

Having discussed in detail the element of Setting, how it is defined, located and identified in the texts explored, the following step is to report the general findings of analysing this particular element in the theses and the articles derived from them to identify the particular changes made while attempting to condense and/or reorient the Setting element and its sub-elements.

6.4. The Results of the Analysis of the Setting Element

There are a number of specific types of changes made under each of their sub-elements as a result of condensing and/or reorienting this element. In the following sections, sections 6.4.1. and 6.4.2., the changes made as a result of condensation are described, exemplified and discussed, then the changes

resulting from reorientation are given.

6.4.1. Changes Resulting from Condensation

It was found that most of the Setting elements of the theses/thesis chapters/p-texts investigated underwent a process of condensation (8 theses out of 10) while being transformed into research articles. This process was done to both integrative and modular theses from both the humanities and the science fields alike. However, the process of condensation was more obvious in integrative theses than in modular ones as the amount reduced from the Setting element in these theses (four cases in the present data) was far much more than that of the amount dropped in modular theses. This is because the Setting element of the articles derived from integrative theses were always extracted from a rather longish Setting element that introduces the background and research review to the whole thesis, but in modular theses it is usually derived from more focused Setting elements in p-texts or chapters only. For example, in the case of the integrative thesis ST2, this text had a very long Setting element (86 pages) that covered the background to a wide range of studies reported in the thesis. Out of this thesis an article (ST2.A1) was published on only one of the mini-studies that compose the whole thesis. The Setting element for this particular mini-study consisted of about 12 pages (pp. 23-34) from the 86 pages dedicated to the Setting of the thesis as a whole. On the other hand, the size of the introduction of the related article which comprised the Setting element for the published study was limited to two thirds of a page (three paragraphs of about 240 words in total). From this it becomes very clear that the Setting of the article is a very radical condensation of the Setting of the thesis/p-text. This case was the same with the other three integrative theses (ST1, ST3 and HT4). On the other hand, in the case of modular theses the amount of condensation was substantially less than that witnessed in integrative theses. For example, in thesis HT1, the Setting element in chapter five consisted of about 6 pages, while that of the article derived from the same chapter consisted of three paragraphs. In the case of thesis ST5 the Setting element of the chapter from which an article was derived was about 3 pages long in comparison with one page in the article. This shows a clear difference between the general size of the Setting element in both types of theses, integrative and modular, in relation to its size in the

articles derived from them.

It is also worth pointing out that in the case of two theses which were not considered clear cases of modular theses (HT2 and ST4), but were rather nearer to being modular if considered along the cline between modularity and integration, they had a longish Setting element that appeared early in the thesis and had no further Setting elements in some of the chapters from which some of their articles were derived. In these cases the Setting elements in the derived articles were very radically condensed versions of the Setting element of the thesis - in other words, they were closer to integrative theses in this respect.

Despite this general tendency towards condensation, there were a few cases where the Setting was either of the same size and nature in the thesis chapter/p-text and the article (some of the texts drawn from HT2 and HT5), or was longer than and/or of a different nature in the article from the corresponding section in the thesis (some texts drawn from HT2, HT3, and HT5). This point will be discussed later in this section.

It should be stressed that although in all the above cases the Setting element was condensed in size while being transformed into the article, this reduction does not necessarily mean that both Setting elements contain the same information. In other words, the Setting element in the article is generally not a mere summary of the same Setting element in the thesis/thesis chapter/p-text. In fact, the process of condensation of this element entailed cutting out large parts that include basic information and unnecessary details from the Background to the study as well as part of the Research Context that does not link directly to the part of study published in the article.

Sometimes condensation also entailed reformulation and streamlining of ideas. However, for clarity purposes, I will not attempt to discuss the two changes together, leaving the discussion of the changes made due to reorientation to section 6.4.2. below. Thus, in the following sections, I will begin by

discussing the changes resulting from condensation in the Background sub-element (section 6.4.1.1.), and then the Research Context sub-element (section 6.4.1.2.).

6.4.1.1. Condensation of the Background to the Study Sub-element

If we consider the basic types of changes that were identified as being the result of the condensation of the Background of the Study sub-element, it was found that these were mainly done through:

- a. cutting out metadiscourse references like organisation descriptors and text references.
- b. reducing/cutting out basic information like definitions and introductory remarks.
- c. dropping unnecessary details that did not directly link to the published study.

The following are examples of these common types of reductions/omissions taken from different theses and their articles.

a. Cutting Out Metadiscourse

By metadiscourse, I refer to any reference within the thesis text, particularly in the Setting element, that refers to the thesis itself or any of its parts. This may include statements that describe the overall organisation of a section in the thesis or how the section or any part of it is displayed. I call these **Organisation Descriptors**. It may also refer to any statements that the writer uses to refer to any part of the thesis text as a text or any of its component parts, and not to the information in that text. These I call **Text References**.

It was found from the comparison and the contrast of the Background sub-element that writers tend to cut out any metadiscourse references while transforming chapters/p-texts into articles. This seems logical because these references are very much related to the original texts in which they appear and hence they are either not applicable in the new text, the article, or they are replaced by other metadiscourse references that are more suitable to the new context. In addition, it is possible to

consider these references as subsidiary when compared to the main body of information in the transformed text and hence they are likely to be dropped for the purposes of condensation.

The following is a good example of organisation descriptors which appear in a modular thesis chapter from earth sciences (ST5) and which were dropped in the Setting element of the article derived from it. This outlines in general two major lines of study that are included in the chapter. In the article this description is omitted probably because in the article the writer chooses to talk about the text in a different way by referring to the two lines of study as one study including two varied methods. In addition, it seems that such a description is not necessary in the new text that no longer has the same organisation or context.

ex. 6.13

The chapter is divided into two sections the first of which deals only with those reactions that take place between different dissolved components and lead to the formation of insoluble products. The second section describes some interactions between organic matter and a variety of clay minerals under conditions of varying salinity.
(ST5.CH2)

The second type of metadiscourse that is usually cut out in the process of transforming the thesis/thesis chapter into an article is Text References. These references are used to point to the different parts of the text in which information is located. The following is an example of similar references extracted from a modular linguistics thesis (HT2). As seen below (the underlined part), the writer refers back to a preceding chapter of the thesis, and the following parts of the same thesis, parts II and III. The aim of these text references is to show the readers the relation between the findings of the preceding study on thematic distribution in research articles (RAs) and how it has led to the study in the present chapter on RA writers as well as the following parts of the thesis.

ex. 6.14

Data and discussion in the preceding chapter on thematic distribution and its correlation with scientific RA discourse structure in the form of Theme-Move maps (section 3.10) led to a pedagogic interest in how NNS novice RA writers deal with

thematic structure. In particular, we are interested in the influence of the appropriateness' of thematic choices at specific stages of RA discourse on perceived 'success' (defined here by acceptance for publication), when NNS RAs come under review by editors of international English-language journals. The main objective of Parts II and III of this thesis then is to apply the insights gained from thematic analysis reported in Part I to a specific EAP audience and situation, namely NNS doctoral students writing their first RAs in English.
(HT2.CH4.Introduction)

In general it was found that metadiscourse statements that are cut out, whether they refer to the organisation of the text, or just locate the information in the text, mostly appear in native speakers' texts and linguistics theses more than scientific ones. This perhaps shows that usage of these references is reflective of writers' awareness of the need to refer to the text to guide readers through it especially if it is a longish one. This knowledge may be lacking in non-native speakers as they are less likely to be able to handle such conventions because of their need to concentrate on avoiding errors at the level of the sentence. In the case of native speakers, especially scientists, perhaps they sometimes do not use such metadiscourse statements as they might be less likely to worry about what they might regard as mere 'stylistic' matters which do not affect the value of the content.

b. Reducing/Cutting Out Basic Information

Analysis of the Setting element in all the theses showed that writers include longish parts giving readers basic information about the science that helped in producing the main research work presented in these theses. This basic information included giving definitions of well-known terms in the field, describing basic techniques of analysis, or giving historical background information about the topic under discussion, etc. In many cases, when writers transform their thesis chapters/p-texts into articles these parts are either reduced or cut out. It is plausible that these parts get reduced or omitted because they could be considered basic material that probably the readers of the article are aware of and as a result they may not be considered essential to keep in the article. Therefore they usually either get reduced to the minimum or get deleted.

Again, as with metadiscourse, it was found that this type of condensation is found in all types of

theses, modular and integrative as well as scientific and non-scientific. The following are examples extracted from the various theses to show this type of condensation.

The first example is extracted from thesis ST2, which is the integrative scientific thesis I referred to earlier in this section. In this thesis, as mentioned above, the writer has a very long section (about 10 pages) giving basic information about different types of analyses that materials scientists carry out in the field of dentistry like mechanical analyses, thermal analyses, etc. In one of the two articles produced from this thesis, the writer reports on the outcome of his thermal analysis of four types of amalgams. When the Background information on thermal analyses in the thesis was compared to its equivalent in the article it was found that they were very different. In the thesis, the writer gives an extensive report of basic Background information about the definition of thermal analysis (TA), its parameters, different types, the reasons for and the conditions of carrying out TAs, as well as the different techniques of carrying out TAs. The following are samples from such materials. The first is giving the definition of TA, and the second giving a historical report of the development of the techniques used to carry out dimensional thermal analyses.

ex. 6.15

Thermal analysis is the name applied to a group of techniques having a common operating principle: as a sample is heated or cooled according to a predetermined programme some physical property of the sample (mass, energy, dimension, conductivity etc.) is recorded as a function of temperature to produce a thermal analysis curve. (Le Chatelier 1888)
(ST2)

ex. 6.16

Historically, Differential Thermal Analysis DTA is a relatively old experimental technique. The first reported use was by Le Chatelier in 1888 for the study of calcite and clay materials. At its beginning of course, this method consisted of a direct determination of the rate of change in temperature of the sample during regular heating...
(ST2)

In the article, all these parts are cut out, probably because it is expected that such information is

already known by the readers. In the thesis, on the other hand, this information seems necessary to mention to show readers that the student has in-depth knowledge of these basic techniques.

In the following example, which is drawn from an integrative linguistics thesis (HT4), the remarks extracted are given at the beginning of the Introduction chapter. They refer to the problem faced in determining the definition of the topic researched, evaluation, and at the same time the need for defining such a term. In two of the articles derived from this thesis, the writer begins the articles by referring to the definition she gives of evaluation and the context of the study reported in the articles, omitting in this way the introductory remarks that were given above. While in the thesis these remarks could be seen as necessary as a lead in to the discussion of the term evaluation before introducing the author's definition of it, in the articles the need to prepare the ground in this elaborate way is outweighed by the limitations on space.

ex. 6.17

1.2. Rationale: The Study of Evaluation

A category of discourse meaning labelled evaluation is central to some theories of discourse (e.g. Sinclair) and yet does not appear to exist as a category in others (e.g. Halliday). The difficulty of its study is compounded by the fact that, even amongst those who use the term, there is no agreed definition of evaluation or the role it plays in discourse, although there is a large amount of consensus about what constitutes evaluation in individual texts. It is because of, rather than in spite of, this dubious theoretical status that the study of evaluation is of interest to discourse analysts.

(HT4)

c. Dropping Parts Irrelevant to the Study Published in the Article

This type of condensation was identified mainly in integrative theses where the Setting element was given in the form of a chapter that includes the background information about a number of aspects that are relevant to a single study or a number of mini-studies. In the case of the article(s) derived from such theses, many parts of this chapter become irrelevant due to the fact that the article(s) usually focus on a single aspect or a single mini-study and thus are often dropped in the article. This was true in the case of the four integrative theses examined in the present investigation; ST1, ST2, ST3, and HT4.

A representative example of this strategy is found in ST3. Here the Background to the Study included information about the various types of thermal analysis including thermogravimetry (TG) and thermomechanical analyses (TMA). In one of the two articles derived from this thesis, the writer focuses on presenting the results of her investigation of the effect of TMA on a number of dental materials. Thus, in the background of the article, the focus is on relating the information connected to thermal analysis, especially TMA only, without referring to TG. This is an example of deleting parts that are considered irrelevant to the study related in the article. These parts, unlike the case with the previous two types of condensation, do not refer to any part of the text in which they appear or link to the study reported in the article and hence they could be easily cut to condense the size of the chapter/p-text.

In many cases the condensation resulted from a mixture of all the above changes. However, the most common type of condensation was due to cutting out parts that give basic information, the second type of change mentioned above. This was followed by dropping parts that looked irrelevant in the new context, then cutting out metadiscourse markers.

Now I move to consider the changes made due to the attempt to condense the size of the Research Context sub-element.

6.4.1.2. Condensation of the Research Context Sub-element

In this sub-element, only one main type of condensation, which is related to cutting out some of the previous research that is mentioned in the thesis/thesis chapter/p-text, was identified. In many cases it is not clear why the writer chooses to cut out some references while keeping others. However, most writers tend to choose the previous studies that seem to be more directly linked to the new focus of the article as established by its new Question element.

The following is an example of how the writer of the thesis tends to cut out a very large proportion of

previous studies in an attempt to relate the same information, yet in a very condensed form. The example is drawn from a scientific thesis (ST4) towards the modular end of the scale, where, in the review of literature (chapter 3), the writer discusses the relation between clinical tests and laboratory tests of wear of dental materials. While in the chapter the author gives a whole paragraph that quotes seven references indicating that there is no correlation between these two types of tests, in the article the same piece of information is reduced to only two statements, quoting only two of the references mentioned above. In addition, the writer, in order to condense the report of what these two references state in the chapter, does not treat the mentioned references as an organic part of the text, but as incidental references that support the statements put forward by the writer. This is done by mentioning the references between brackets instead of placing the names of the authors at the beginning of the sentences.

ex. 6.18

As the clinical signs of inadequate wear resistance are not apparent until months or years after placement; it was obviously necessary to develop laboratory testing procedures that would be predictive of clinical wear. The multitude of tests varied in degree of complexity and ingenuity (Craig & Powers 1976). There were "almost as many wear testing devices as there were scientists who are interested in such wear" (Roulet 1987a). It became apparent that tests failed to correlate with clinical findings or even with each other. Lutz (1979) indicated that comparative measurements of composites and amalgams do not match clinical experience because they are strongly influenced by experimental design. Gettleman (1980) reviewed the situation in 1980 pointing out that the wear of composites measured against the wear of amalgam varied between 0.8 and 22.4 times in various reports. Lambrechts et al (1984) described the correlation as "at best inconclusive" and other authors draw attention to the inconsistencies (Harrison & Moores 1985, Harrison 1985). However this does not mean that laboratory tests have no place in the wear testing of dental materials; but that more thought needs to be given to the basic processes that underlie each test and the factors which will affect them.
(ST4.CH3)

ex. 6.19

Composite restorations are subject to wear, and numerous in vitro tests have been devised to study this process. However, there has been little correlation between clinical wear and the results of these tests (Lambrechts et al., 1984; Roulet, 1987)...
(ST4.A6)

The following example, from the field of humanities, shows references being omitted because they are

not crucial for the study reported in the article. In the thesis, the author discusses the Research Context on the use of English as a medium of writing for academics and the problems inherent in using English by non-natives for publication purposes. In the article derived from this chapter, the author uses similar information to introduce the same study on academic writing and non-native writers' problems in publishing academic articles.

However, the thesis refers to studies that have used questionnaires, the main tool used in the study reported, as well as the previous studies related to the tasks of writing academic materials, especially those focusing on novice students. In the article, none of these references is reported. These citations appear to function primarily as evidence of the writer's wide reading in the field, since they are not directly drawn on in his study. The article retains only the references to Swales's works (the underlined parts in the quoted texts below), which show that little attention has been given to the problems of teaching writing research articles to PhD students and the new interest in written studies. These points provide a direct lead in to the problem the study is targeting both in the chapter and the article derived from it; they survive in the article because their function is less display and more integral.

ex. 6.20

Despite some criticisms concerning the methodology of survey questionnaires and the reliability of data [Johns (1981); Horowitz (1986a)], over the past decade or so, a number of surveys have addressed the question as to what kinds of academic writing tasks students are required to perform and how that writing is evaluated by their instructors [see Kroll (1979); Ostler (1980); Johns (1981); West & Byrd (1982); Bridgeman & Carlson (1984); Horowitz (1986a); Weir (1988); Canesco & Byrd (1989)]. A few studies have focused on novice NNS researchers [see Richards (1988); Shaw (1991); Casanave & Hubbard (1992); Jenkins et al. (1993)]. However, 'the writing requirements and problems of doctoral students have not been targeted in writing survey research' (Casanave & Hubbard 1992:33) and, in general, the teaching of Research English (RE) to novice NNS researchers has received relatively little attention (Swales 1985c, 1987b)

This neglect may be due in part to the task RE aims to support. In written research communication, writers are no longer attempting to satisfy the internal criteria of what Swales (1988) calls 'norm-developed' tasks. For example, ...

(HT2.CH4)

English is an important medium of research communication for countless English NNS (non-native speaker) researchers around the world. However, the teaching of Research English [RE] has received relatively little attention (Swales, 1985, 1987) and this may be due, in part, to the task RE aims to support. In written research communication, writers are no longer attempting to satisfy the internal criteria of what Swales (1988) calls "norm-developed" tasks. For example, ...
(HT2.A2)

From the above examples, it is clear that the change outlined above is applicable in both scientific and non-scientific texts. It was also found in both modular theses, as with the above examples, as well as integrative ones. In fact, the possibility of reducing the number of references and cutting them out was higher in the integrative theses, as Research Contexts in such theses were very extensive in comparison to those of modular thesis chapters. A case in point is the Research Context of the article drawn from ST2 on reporting the Dimensional Changes of some materials due to thermal analysis. In the thesis chapter the Research Context part reports on the results of a number of studies made on similar materials to determine their dimensional changes. Out of the six studies reported in detail in the chapter, only four are mentioned in the article and briefly as ancillary references.

Now I would like to move to consider the changes that were made due to the need to reorient the Setting element, and its sub-elements, Background and Research Context, as a result of reorienting the Question element in the published article.

6.4.2. Changes Resulting from Reorientation

Reorienting the Question element (see 5.2.3.3.) not unnaturally leads to a reorientation of Settings. It proved difficult to pinpoint generalisable types of changes that were related to the reorientation of the text; therefore in the following section I will discuss in detail only one representative example. This is taken from a humanities thesis, since only a very small number of scientific articles were reoriented in terms of their Setting element.

6.4.2.1. Reorientation of the Background to the Study and the Research Context Sub-elements

It should be noted that the two introductions given below do not include the Question part as it was left out to focus on the changes made under the element of Setting only. This particular case of transformation of the Setting element is drawn from a humanities thesis that is modular in nature and hence the introduction of the article is compared to that of the introduction of a particular chapter from which the article was derived.

ex. 6.22

INTRODUCTION

This chapter (based on Thetela, 1997) is concerned with the second dimension of evaluation as proposed by the study: parameters of value in the ARA. Before going into the actual analysis carried out in this study, it is useful to reiterate some of the important assumptions on which this chapter is based. First as has been discussed, the study assumes the existence of a specialised register of the ARA which is influenced by the aspects of ideology and genre of scientific investigation (see the hierarchical relationship among register, genre and ideology by Martin, 1992, discussed in Chapter 2 above) If we take register to be "what you are speaking at the time, depending on what you are doing and the nature of the activity in which the language is functioning" (Halliday and Hasan, 1989: 41), it is reasonable to assume that the writer's choice of evaluation should be harmonious with the register of the text and thus relatable to the ideology of which it is an expression. This assumption is shared by Hunston (1989) who sees evaluation as register specific and suggests therefore that when analysing evaluation:

Rather than suggesting that some value-words are "universal" and others are "register-specific", however, it may be more profitable to deem all evaluation register-specific, but to note that many registers share sets of value judgements (Hunston, 1989: 185).

Another assumption that has been made in this study is that evaluation in text is not always explicitly signalled but can also be implicit. As has been discussed in chapter 2, evaluation is instantially created by the text and what is evaluative in one text might be evaluative in another - central to the identification of evaluation in text is that of recognising the Goals of the text which are both personal and institutional (Hunston, 1989). Thus anything which helps towards the achievement of these goals has a positive value whilst anything which detracts from that achievement has a negative value (ibid., 204). While the evaluation in this study is based on goals, it is important to say that in this chapter I use for my discussion relatively non-problematic and explicit cases of evaluation to support the points I am raising. Examples of implicit evaluation are discussed in detail in Chapter 6 below.
(HT3.CH4)

ex. 6.23

INTRODUCTION

In contrast to earlier claims about non-interactive nature of scientific academic writing, recent sociological and linguistic research has shown how professional writers can - indeed must - successfully maintain interaction with their readers without compromising the factual information which is traditionally the concern of the research article (RA). Several researchers have demonstrated how interaction in the RA can be realised by, among others, modality and hedging (see, for example, Myers 1989; Hyland 1994; Salager-Meyer 1994; and reporting (see Tadros 1989, 1994; Thompson & Ye 1991; Shaw 1992; Thomas & Hawes 1994). The present paper looks at evaluation, the judgement of good and bad, as one of the most important realisations of interaction in the academic research article (ARA).

The study can be seen to have pedagogic implications, especially in the teaching and learning of EAP (English for Academic Purposes). My assumption is that there is a need for students to be trained in realising the important interactive role of evaluation and in identifying the kinds of evaluative judgements being made in ARAs that they read. This may help in reading comprehension and partly help them improve their own writing skills.

Although evaluation has been shown to play a central role in text and discourse, its identification in text is not always straightforward. This can be seen in the lack of consensus among researchers on which lexical items are evaluative, even in isolation. Many researchers have argued that evaluation is a product not of lexico-grammar, but of discourse, and that a single evaluative item is often ambiguous until supported by other items that make the same point (see for example, Hunt & Vipond 1986: 67). This view of evaluation as a discourse product is carried further by Hunston (1989, 1993, 1994) who argues that evaluative language is instantially created by the text and that the "goals" (as set up by the writer of the text) of the text are important in determining what is evaluative in text. Thus, anything that helps towards the achievement of these goals has a positive value whilst anything that detracts from that achievement has a negative value (Hunston 1989: 204). This concept of "goals" is relevant in this study whose focus is on the analysis of a specialised type of genre, the ARA. While this study draws mainly on Hunston's (1993) notion of the influence of ideology and goals on evaluation, because of the presence of apparently contradictory evaluation in text, it was necessary to work with different groupings/categories of evaluation. The result is that this study proposes simpler and more generalised categories of value than those established by Hunston.

(HT3.A1)

The comparison between the content expressed in both introductions shows a difference between them in terms of the element of Research Background. The first introduction, being part of a bigger piece of work, does not need to provide a general framework in terms of the approach that is being taken in the thesis, since this has been established at the start of the thesis. The writer is more concerned with linking the present chapter to earlier ones in her thesis and with restating the relevant points mentioned in the previous wider background stated at the beginning of the thesis. Nothing is mentioned in the thesis introduction about the implications of the study, which are probably left out at that stage because they are discussed at the end of the chapter/thesis. However, it does restate two of the basic

assumptions which are particularly relevant to the chapter, i.e. that evaluation is register specific but many registers share value judgements, and that evaluation is not always explicitly signalled. Both these two assumptions link to identifying what evaluation is in general.

On the other hand, the introduction of the article frames the study in terms of a general approach to the analysis of written text, and revolves around the significance of studying evaluation as part of helping academics to learn more about this interactive element and its role in achieving its goals in texts. The new introduction thus locates the study in its more general context, as is appropriate for a 'free-standing' article, and projects a more specific interest in relating this study to the field of teaching academics. Probably this reorientation of the content of the second introduction is due to the new setting of the text. The article is aimed at readers of the journal *English for Specific Purposes* and seems to be more interested in showing the significance of the outcome of this study for ESP students who are the concern of ESP practitioners; and thus it emphasises the implications of the study in teaching contexts.

Both introductions refer to the issue of "goals" and how they help in recognising evaluation in texts. This restatement of the point of "goals" is the only similar but re-worded part that appears in both texts. Another difference in re-phrasing of the same content is that in the thesis this issue of "goals" is discussed as part of setting the main assumptions on which the definition of evaluation is based whereas in the article it comes as part of what other researchers argue to be necessary for the identification of evaluation in texts in general. This is perhaps because by this stage in the thesis these ideas can be presented as 'basic assumptions' because they have been established earlier in the thesis; but in the paper the establishing needs to be done from the beginning, as it were, by drawing on the relevant literature.

It is worth noting that reorientation in this case leads to more or less the opposite effect to that brought about by condensation. Rather than cutting out the general background and focusing more closely on

the aspects of Setting which prepare specifically for the study reported in the article, the writer establishes a Setting which is more general than that in the thesis chapter (though the overall space devoted to this is about the same as in the chapter). This is partly because in the thesis some of the general Setting has been outlined in earlier chapters, and the writer draws on this for the article; but it is also because the writer signals more clearly in the article the specific 'gap' that her study will fill (a different categorisation from Hunston's). This gives the article a more sharply focused purpose than the thesis chapter. In the thesis, this chapter sets out one part of an overall model of evaluation, and it is the model as a whole that the writer puts forward as her contribution to the field; in the article, on the other hand, the single aspect of the model described has to stand on its own merits, and its value to other researchers (and teachers) therefore needs to be highlighted.

If we now consider the element of Research Context, the same issues arise. Reference to previous studies in the article seems to be wider than and different from that of the thesis chapter. In the thesis chapter the reference is only limited to the support of the two issues raised and most of the time readers are referred to earlier chapters where an extensive review of the relevant literature was already given. In all these cases the writer used direct quotations and incidental references to other relevant studies. In the article, on the other hand, the writer brings in reference to previous research as part of attempting to situate her own study in the field. Thus, they may not be directly related to her own study but they cover a wider area around it. An example of this is her reference to the studies done on modality and hedging although her study does not cover these two main areas. The only reference which the writer makes use of in both the thesis chapter and the article is that of Hunston's studies on evaluation, which are referred to as the most closely related studies to the one published in the thesis and the article in hand but showing a different treatment of evaluation as an element in the texts investigated. This relates to the same point mentioned above: the article is 'free-standing' and needs to go (fairly rapidly) through the process of framing the study and establishing basic concepts; the thesis does this but at different points (and at a different pace). Thus, the chapter can draw on what has gone before in the thesis as its context, but the article needs to create a context for itself.

Another interesting difference between the two introductions is the fact that the thesis chapter includes a quotation from a previous study which is absent from the article's introduction. One possible reason for this is that thesis writing encourages more substantiation of theoretical ideas by referring to relevant studies and that thesis writers often feel that quotations make the piece of writing look more academic, while in the article what really counts is not what previous studies have actually said in terms of quotes but the fact that what they have said supports the new findings of the study. Hence, while the article used an indirect way for referring to previous studies, the thesis chapter was more direct in referring. This change seems to reflect a general tendency for thesis writers to rely on quotation to a greater extent than more experienced writers. In articles, the fact that writers do not use quotations as much may be partly because ideas can usually be expressed in a more compressed form instead of writing the exact words of previous researchers; but it also often reflects a greater degree of digestion where the writer blends the cited author's ideas into the writer's own report more smoothly, and it demonstrates publicly that the writer has achieved this greater degree of digestion and is therefore further along the road to being an initiate in the field.

To sum up, the Setting element in different theses, scientific and humanities based, modular or integrative, showed variations when it was transferred into the article. The main two types of changes that were made to it were mainly related to the writer's need to condense the size and the scope of the setting element of the article and/or reorient this element once again to suit the overall change of the context of the article. Condensation was found to involve cutting out large parts that include metadiscourse markers, basic information and irrelevant details from the Background to the study as well as parts of the Research Context that do not link directly to the part of study published in the article. On the other hand, the reorientation of the Setting element is affected by the change in the aim of the study. This change usually entails the deletion and/or the re-wording of certain parts of the Background and the Research Context as well as the addition of some parts or further studies that clarify the new context and re-direct the readers to the new line of argument taken in the article.

6.5. The Question Element and The Hypothesis Sub-element

The element that usually appears after the Setting element, according to the mental template that we can expect readers to have of the various semantic elements composing text types like theses and articles, is that of the Question. Therefore, most of the time it was found that the introduction section which realises the Setting element ends with the expression of the main purpose of the study which is often the Research Question proper. As we have already discussed the Question element in detail in section 5.2. in chapter 5, as part of discussing the top level elements, it is unnecessary to go through the description of the whole of this element on the middle level again. Yet it is essential not to ignore the fact that the Question element may include one of the possible transitional semantic elements that may be expected by readers besides the Question proper. This is the Hypothesis element which is a possible expected Answer to the Question that is supplied by the researcher (see figure 3, page 87). This element which may appear as a finer detail of the Question seems to build a bridge between the element of Question and that of the Answer, and at the same time it seems to prepare for the following element of Response as the researcher begins to seek an answer by attempting to find ways to operationalise the Question in a more concrete form in which it can be investigated and suggest the kind of Answer that might be expected. A word needs therefore to be said below about this sub-element before moving to discuss the findings on the Response element.

Analysis of all the theses, both integrative and modular, scientific, linguistic and economic, showed that only one of the theses (HT2) used the Hypothesis element to present its suggested answers before arriving finally at the conclusive answer, the Answer proper. In the rest of the theses the writers used linguistic forms that could be considered pure Questions and did not attempt to give any Answers until the end of their works. Even in the case identified above, the articles derived from the thesis also did not represent the Question by referring to their suggested answers (that is by setting Hypotheses). This indicates that it is not a common sub-element. Therefore this element may be considered highly optional. What matters to us here is not whether it is obligatory or not in the types of texts explored, but the fact that the articles derived from the thesis having such an element did not include it. In order

to understand how this change is accommodated, analysis showed that the writer used more direct research Questions instead of the hypothetical statements about the expected answer. The following is an example of this modification drawn from one of the chapters in the thesis concerned and the article drawn from this chapter. It is worth noting that this chapter was not greatly modified while transforming it into the article form as with the other three articles that were drawn from the same thesis. However, the original chapter in the thesis included a longish section about the initial Hypotheses set for the particular study reported, while the article did not include this section. Instead it gave a very direct idea about the aim of the article without postulating the possible findings. This again gives evidence of the fact that there is pressure to avoid this sub-element, Hypothesis, in similar texts.

ex. 6.24

3.3 INITIAL HYPOTHESES

From the above discussion, it is hypothesised that both unmarked and marked components of Theme perform a variety of discourse functions. Consequently,

[HYPOTHESIS #1]

a detailed functional analysis of both Topics and Context Frames in a corpus of refereed, published scientific research articles will highlight the changing options for, and constraints on, thematic choices across RA sections as the discourse proceeds with developing rhetorical goals. More specifically,

[HYPOTHESIS #1a]

a functional analysis of marked Context Frames will elucidate their potential to describe the rhetorical organisation and conceptual macrostructure of scientific RAs. In addition,

[HYPOTHESIS #1b]

a functional analysis of unmarked Topics/Subjects will give insight into how experienced writers use such Theme choices to balance interactional and topic-based thematic components throughout RA discourse. This would help clarify the social construction of the RA product and how it is developed as an instrument of social interaction...

*[followed by more detail and Hypothesis 2]
(HT2)*

ex. 6.25

*This article on the discourse functions of unmarked theme (i.e. grammatical subject) in scientific RAs is a part of a broader study of thematic choices across a variety of genres.
(HT2.A3)*

Now I move to consider the following element, Response.

6.6. Analysis of the Response Element: What is it, Where is it Found and How is it Identified?

According to the model developed in the present study and as discussed briefly in chapter 4, section 4.5.1.2., the element that leads to identifying the Answer to the main research Question is Response. The Response element is the report of the action(s) taken by the researcher in order to find the Answer to the Question stated at the beginning of the study and which the Setting element helps to pave the way for. This element is usually realised by what the researcher specifies as his/her **Research Data** (i.e. materials, tools and instruments used, but also data - information about the study sample, texts analysed, and the like). It is also realised by the writer's description of the **Research Procedures** (i.e. steps carried out to investigate the research Question by exploiting the Research Data described earlier).

It is common sense to state that this element usually follows the Question and precedes the Answer as it constitutes the researcher's reaction to the former in order to find out the latter. Yet, as might be predicted from the fact that the Question may be placed in different positions in the thesis according to whether the thesis is integrative or modular (see chapter 5, section 5.2.3.2), it was also found that the position of the Response element varied according to the type of the organisation of the thesis examined. Thus, in the integrative theses, the Response element usually appeared in one main position only within the body of the thesis. This was usually in a chapter that follows the Setting element and the representation of the Question. Even if the study contained a number of mini-studies, the Response element, which was usually entitled in theses and articles the Materials and Methodology section, appeared as a chapter that is sub-divided into different sections each of which describes the materials and procedures of each of the mini-studies concerned. This element also appeared in the Abstract of the same type of thesis in a very brief form. On the other hand, in the modular theses, as mentioned earlier, it was found that the Response element may appear on more than one level depending on the

number and the organisation of the aspects studied in the whole thesis. In most modular theses investigated, the Response element appeared on two levels. In some cases, however, this element appeared on three levels. This happened when the mini-studies described in the individual chapters of these theses were in turn composed of further sub-studies each of which had its own Response element. Thus, the chapter would have a general Response element at the beginning and then specific sections appear before introducing the results of the sub-studies of the mini-study described in the chapter. For analysis purposes, I always give more attention to the Response elements in the thesis which are most comparable to those in the related article: that is usually those which appear at the lowest level in the thesis chapter. Other Response elements appearing on other levels may be referred to only if necessary.

In articles, the position of the Response element was most of the time limited to the Methodology section which usually appeared after the Question element. In some cases however, the Response element extended to some parts of the Results section where the Answer element is given. In these cases, the Response element preceded the Answer element still, but seemed to provide a more detailed description of the procedures used before reporting the results of applying them, or it repeated briefly the basic stages of research already described in the earlier section on Methodology. (Examples of such cases are discussed below, p. 249).

In order to be able to identify the propositions that constitute the Response element, it is necessary to locate the sub-elements that make it up, Research Data and Research Procedures (see figure 3, page 94). The linguistic signals that were usually helpful in identifying these propositions were the headings of "Materials and Methods", "Methodology and Data", "The Study", "Methodology", "The Survey", "Methods" ...etc. All of these headings and others refer to the Response element as they were always followed by a section that covers all that the researcher has done to find the answer to his/her research question. These sections included thus a description of the tools with which he/she worked and the steps followed in using them. The signals of the sub-element of Materials that were identified included

words like "the texts", "data ", "materials", "specimens", etc. as well as the various possible types of tools such as "interviews", "examinations", etc. All those are used in the following samples:

ex. 6.26

This study is based on a face-to-face interview with the chief executive of the Barnsley Business and Innovation Centre (BBIC), ...
(HT5.A2)

ex. 6.27

Data
The data consists of thirty-three naturally-occurring academic talks delivered by native speakers of English, varying in length from 20 to 90 minutes.
(HT1.A1)

ex. 6.28

Materials and Methods
This section first describes the materials, then the specimens and examinations. The second part describes the specimen preparation and microscopy techniques.
(ST4.A8)

Sometimes the materials used were put in a table form. This was more common in the scientific texts.

The following is a case in point.

ex. 6.29

Materials
Types of amalgams used are presented in table 1.
(ST2.A2)

On the other hand, the use of verbs of action that show the steps that were followed in carrying out the study were the main signals that helped to identify the sub-element of Procedures. Most of the time these verbs were used in the past and passive form. The following are two extracts from scientific and humanities texts that show the type of verbs of actions (underlined in the extracts) used in Response elements.

ex. 6.30

Dynamic Testing

The four types of the investigated composites materials were prepared and mixed in the same manner as that of the isothermal testing. The specimens were tested after 24 hours from the end of mixing.

In this test, the composite specimens were subjected to 5 successive runs of heating and cooling. Each run was repeated three times to ensure the accuracy of the obtained results.

The apparatus was adjusted to a heating mode and the temperature range used was 30-160°C with a heating rate of 5°C/min.

(ST3)

ex. 6.31

A total of 96 questionnaires were sent to Japanese editors, associate editors and editorial board members of 62 journals; 57 replies (59.4 % return) were received. Of these, 45 were fully completed for part 1 and data and commentary are based on this number.

(HT2.A1)

Although the above positions and signals were joint indicators of the Response element, they did not always appear together, because this element was also found in other exceptional positions and had other features than those discussed earlier. For example, reference to the Response element, identified by linguistic features, was sometimes found under the Answer element. In this case, it was used to briefly remind readers of the procedures followed before reporting the results of carrying out these procedures. The following is an example of this type of Response that is positioned within the results section. It is clear from the examples that the first sentence is a description of the procedures followed. Evidence for this is the use of the verb of action "were asked". The second sentence is reporting the "Results" as the first word in it states.

ex. 6.32

Findings and Comments

Editors were asked to judge the degree of influence that the 10 aspects might have when considering publication of NNS submissions on a 3-point scale from great (3) or some (2) to no (1) influence. Results are presented in the form of a rank order of the 10 aspects according to mean (Figure 1) and a graph comparing these mean values (Figure 2).

(HT2.A2)

Moreover, it was common to find elements other than reference to Materials and Procedures in the Response element: in these cases, it was primarily position rather than linguistic signals which prompted their inclusion as part of the Response. Although these sub-elements might not immediately be associated with this element, the data explored showed that they are as common as the other sub-elements discussed earlier but they are often related to the report of the Materials and Procedures and hence could be considered sub-sub-elements of the Response element. These sub-sub-elements include reference to Previous Research that supports the use of the methodology described or is the source for this methodology (ex. 6.33) and/or reporting a set of conditions on the use of certain procedures (ex 6.34) as well as/or explaining the use of certain materials, tools and procedures (ex. 6.35). The specific parts that refer to these meanings are underlined in the examples below.

ex. 6.33

The overall maximum depth of wear, occurring at any location on the restoration surface, was measured using a modification of the impression technique devised by Vrijhoef et al. 6
(ST4.A10)

ex. 6.34

In order to measure such small dimensions with sufficient accuracy a measuring instrument should be used which is capable of accurate measurement to at least 0.5 micrometers (0.00002 inch).
(ST2)

ex. 6.35

In these cases the whole procedure was repeated to check that this was not a problem in relocating the coping.
(ST4.A10)

In some cases it was in fact very difficult to identify a Response element in the text. An example of this is two chapters and the articles derived from them which are based on the economic thesis explored in this study (HT5). Due to the nature of the studies reported in these two chapters, descriptive and evaluative studies, they did not include any reference to particular methodologies

because they were mainly based on the personal description and evaluation of the researcher of two particular economic policies applied to towns that used to have coal mines during the 80s and the 90s. Other texts in which it was difficult to identify a Response element were two of the articles produced from a linguistics thesis (HT4). It was noticeable that these articles did not include any headings to point to the Response element. This reflected the fact that the signals usually used to refer to the sub-elements of this major middle level element were missing: only few scattered propositions in the early parts of the text could be interpreted as reflecting a description of data and procedures. The following is an extract from the first article of these two articles produced from thesis HT4 followed by a commentary on the elements presented in it.

ex. 6.36

This paper explores evaluation in one type of scientific writing - experimental research articles - with the aim of using this exploration to explicate the ideology behind such articles. (1) This will involve looking at what things are valued and how, and what constitutes appropriate expression of such value. (2) Research articles are a suitable corpus for study because the value-system they represent is uniform.
(HT4.A1)

The underlined parts above show what may be considered the Response element, including the reference to Procedures (first sentence) and Data (second sentence). These two propositions appear as part of the introduction to the article with no specific heading to indicate their status and they are the only sentences that refer directly to the Response element in the text.

On the whole, in spite of the above exceptional cases, the Response element typically appeared in the positions described earlier in this section and the signals did in most cases help in identifying it and the various sub and sub-sub-elements it contained. In the following section, I present the outcome of the analysis of the changes in this particular middle-level element in the data explored.

6.7. The Results of the Analysis of the Response Element

It was originally expected that this element would not undergo a great deal of change, and that in fact

it might remain exactly the same as it appears in the thesis/thesis chapter/p-text. This assumption was based on the fact that writers' responses to any research questions are the practical research steps that they take while manipulating their materials/tools to identify answers to their questions. These steps and samples/materials are likely to remain the same, even with the change of the scope/direction of the question. In addition, it would seem difficult to make any changes to an already established kind of sample and procedures unless the researcher aims to modify or change the study he/she has already done. Thus, the only difference expected was cutting down description of steps to focus attention on the main procedures carried out and which link to the particular study reported in the article. However, this idea was only partially supported by the findings: even with the Response element, the existence and extent of changes depended on the changes already made to the Research Question and the type of research produced.

As was the case with the Setting element, it was found that when changes are made the two major types of changes made to this particular element were related to the writer's attempt either to "condense" the text in terms of size and scope or "redirect/reorient" the line of describing the Response for the study or both. In the process of making both changes, or either type of change, the writer was found to make further types of modifications that are instigated by these major changes. These specific types of modifications are discussed and exemplified below under the two main types of variation, condensation and reorientation, as well as the two sub-elements of the Response element, Research Data and Procedures. The examples are drawn from both scientific and non-scientific theses as well as modular and integrative ones.

6.7.1. Changes Resulting from Condensation

Analysis of the two comparable texts, theses chapters/p-texts and their articles, showed that writers (8 theses out of 10 theses/23 articles out of 33 articles) condense their report of the Response element in various ways. In general, it was observed that virtually all the theses/theses chapters explored underwent some sort of reduction of size. However, it was noticed that integrative theses, or near

integrative theses, showed more reductions than modular ones. This is not unexpected, since the Response elements in the individual chapters in modular theses are already, in a sense, condensed versions of the general Response element for the thesis as a whole. These reductions were often more prevalent in the Research Procedures sub-element than in the Research Data sub-element. However, all scientific and non-scientific theses were reduced alike.

6.7.1.1. Condensation of the Research Data Sub-element

Analysis of the texts explored showed that writers usually condense the Data sub-element by making the following specific modifications:

- a. Limiting the amount of the data presented
and/or
- b. Cutting out “unnecessary” parts of the data
and/or
- c. Representing the data in more condensed forms visually

The following sections exemplify more clearly the above three types of modifications made to the Data as a result of condensation. Although I will attempt to give separate examples under each of these types of variation, it will be clear that in some texts the condensation may be the result of using one or more of these types of modification. Thus, the same example may be picked up more than once under each of the following sections if its writer applies more than one of the condensation strategies identified above.

a. Limiting the Amount of Data Presented

Analysis showed that some writers decide to limit the number of the samples/materials they are working with. This probably results from the need to limit the size of the information to be presented in the article in comparison to that in the thesis/chapter/p-text. A very good example of this type of

limitation was found in a scientific integrative thesis (ST3).

The writer of ST3 works with four main types of dental composite materials (Compact, Finesse, Prisma, and Nuva-Fil) in order to explore their various properties. In one of the two articles produced from the thesis (ST3.A1), the four materials elements are reduced to only three (Compact, Finesse, and Prisma). It is interesting that the writer decides to make this reduction in this article, although in the second article produced from the same thesis (ST3.A2) she deals with the four materials as in the chapter. It seems unlikely that this reduction is due to the fact that the writer had not yet finished her work on the fourth material when she published her first article. (This was the case in some other articles like HT3.A1 which was published during the process of writing the thesis and not after it). This is because the two articles produced were published a year after the PhD degree was granted to the student (1988). It could be that the study of this particular material was problematic in some way or too conventional to present to the international audience and hence the reduction was done either by the writer herself or suggested by the editors of the journal.

In addition, the writer manages to squeeze the amount of information to be presented by giving the responses of only one particular material as an exemplar of the other brands, especially because all of them share the same reactions. The following extract is an example of how this is done.

ex. 6.37

Figure 2 shows, as an example, the behaviour of Compact composite when subjected to several successive reheating runs (runs 3.4 and 5) immediately after cooling from the second heating run. For all the investigated composite brands, these runs produced values similar to those obtained in the second heating run.
(ST3.A2)

Thus, it seems that the extensive amount of information that the writer needed to present in both articles and the condition of the limited size of the article had made her reduce the amount of data presented in the first article, and use an exemplar to present data in a much more condensed form in the case of the second. In this way, writers can condense the Response element in the article. This

indeed has an effect on the amount of information that will be presented in later elements like the Answer. In fact, the limitation of the amount of data in this element helps writers to limit the amount of the information reported in the findings section. In this way they can plan from the early stages of the article for the condensation of the later elements.

b. Cutting Out “Unnecessary” Parts of the Data

Analysis showed that the Data sub-element in both scientific and humanities theses, modular and integrative, may include certain information that is cut out by the writer while transforming the thesis/thesis chapter/p-text into an article. The type of information deleted may be considered unnecessary in the context of the new text, the article, and hence it is omitted. The type of information involved is that which, it can be argued, is given mainly to show the amount of knowledge that the student has about the data in order to convince the examiners that he/she is worthy of the degree to be granted to him/her. Sometimes they are descriptions of how the materials/data are selected and the specific characteristics of these materials. In either case, this information is not essential to the report of the data itself, but relates to the amount of “display of knowledge” that the student wants to give and to “showing-off” his/her “due care and caution” concerning the selection and description of materials. Thus, in the article, where the writer is deemed by convention to be an initiate who no longer needs to display credentials overtly, such information is likely to be omitted. The following example illustrates this type of modification.

In HT1, which is a near modular linguistic thesis, the writer gives no description of the data in the chapter from which an article was published. Therefore, it was necessary to go back to chapter 2 which is dedicated to the report of data collection and methodology to find a comparable text about the data to be compared/contrasted with that appearing in the article. It was very clear from the comparison/contrast of the Data section in the article and that of the thesis that the article gives a very condensed form of the data. In the thesis, the Data part was about 7 pages, about 2 pages of which is

directly related to the published study, while in the article it was only a paragraph of about 100 words. Part of the information that the writer chooses to delete concerns the criteria for the selection of the data. Arguably, this is because it is necessary in the chapter to show that the researcher is careful about the selection of the Data used to ensure reliable results. In the article, however, the writer is already given the credit of being a reliable researcher and therefore there is no need to prove this reliability by giving this extensive report of the criteria of selection.

ex. 6.38

*Selection of research presentations for inclusion in the data was based on the following criteria:- appropriacy of subject matter for the corpus (see 2.2.3.2) type of presenter (see 2.2.3.3) type of presentation (see 2.2.3.4) quality of recordings (see 2.2.3.5)
(HT1.CH2)*

Another type of information deleted is the details that she gives about the different types of lectures used in the study. In the article, these details are deleted. A plausible explanation for this omission is that the writer felt the specific sources of the lectures were not particularly important in establishing the credibility of her data.

In general, it can be said that the Data sub-elements in some of the theses explored were condensed by dropping information that appears to function primarily as displays of knowledge and comments showing that the researcher has used “due care and caution”. These specific reports were even more prevalent in the report of the Procedures sub-element as will be shown below in section 6.7.1.2.

c. Representing the Data in Condensed Forms Visually

It was also found that writers, while attempting to reduce the size of the report of the data/materials used, can resort to transferring data visually into more condensed forms. A number of examples of this were found in scientific modular and integrative theses. For example, in ST3 the writer presents the materials studied in a table form only without writing about them in linear form as was the case in the thesis chapter. This form of presenting the data was found in similar articles in the field of materials

science, which suggests that it is considered acceptable and even common. It is perhaps thought to be clearer and more revealing to put the data in this visual form to present a great deal of information (the materials name, the manufacturer's name, the main characteristics of the material, its components, etc.) yet in a very concise way.

No examples like these were found in non-scientific theses, whether modular or integrative. This is not unexpected since it is less common to have non-linear representations in these fields of study, even if they are applied.

Now I move to consider the second sub-element, Research Procedures, and the type of modifications that writers were found to make while attempting to reduce the size of the Procedures section in the article.

6.7.1.2. Condensation of the Procedures Sub-element

It was found that the majority of the parts cut out from the Procedures sub-element were motivated by a need to

- a. omit/reduce "displays" of knowledge
- b. delete/reduce "due care and caution" information.

In the section above, the modifications in the Data sub-element were also motivated by a need to undergo the same two types of modifications. However, I have treated these two types as a single group in the previous sections as analysis of the Data sub-element did not show very distinct forms of changes under each of these types. In the present section, on the other hand, I split these two types of changes as data analysis has shown that each of these types of modifications are further realised by a specific number of detailed modifications. The following two sections report these particular types of modifications and give examples of these modifications that were made to most of the Procedures

elements of the texts explored (9 theses out of 10 theses/ 24 articles out of 33 articles).

a. Omitting/Reducing “Displays” of Knowledge

In many cases, analysis of the Procedures sub-element showed that writers in the thesis usually give a longish description of the steps taken to carry out the study in comparison to the same description when it is transferred into the article. It was found that the reduction of the size of the same sub-element in the article is often due to reducing/deleting the amount of information the writer presents to show his/her knowledge about the procedures used in the texts explored. This included:

- a. reducing/deleting general information about the procedures/techniques used if they are common and/or previous studies that use the same/similar methods,
- b. reducing/deleting comments that refer to the reasons for using the specific methods used, as well as
- c. reducing/deleting “common sense” knowledge (see below for discussion of this).

A good example of the first type - deleting/reducing general information about the techniques used - occurs in one of the integrative scientific theses (ST1). In this particular thesis, and in the chapter presenting the procedures followed in carrying out all the mini-studies in the thesis, the writer presents the microbiological methods used to produce cultures of oral streptococci to examine their antibiotic-resistance in dental patients using specific medications to prevent infective endocarditis. The description is as follows:

ex. 6.39

The technique chosen to identify the putative antibiotic-resistant oral streptococci was the API-20 STREP system. This is a widely used commercial system that is reliable, quick and easy to use (Phillips & Eykyn, 1990). This system as described in the introduction (see section 1.3) does not use the amended nomenclature for the oral streptococci (Coykendall, 1989; Kilian et al., 1989). The amended classification of oral streptococci is not yet widely adopted for clinical isolates. To allow the results in this thesis to be compared with previous publications the API classification has been used.

(ST1.CH4)

In the article, however, the definition and the general description of this technique is deleted. Instead, the writer just mentions the technique used without giving any of the above general comments.

ex. 6.40

Pure cultures of the isolated strains were identified by the API-20 Strep System (API, Basingstoke) and stored at -70°C, ...
(ST1.A5)

It seems plausible to see this omission as reflecting the fact that the need to display knowledge to probably impress the examiners is no longer as important in the context of the article.

The second type of “display” of knowledge identified in the texts explored was related to deleting/reducing general comments that help explain to the reader why certain steps were taken. An example of this is drawn from a modular scientific thesis (ST5) where the researcher reports the preparation of certain solutions some of which were used in the experiments while others were kept as “blanks and standards”. In the thesis, the writer attempts to explain the reason why the “blanks” were needed, while in the article this part was completely deleted.

ex. 6.41

Appropriate blanks and standards were prepared for each mixing experiment and put through the same equilibration and centrifugation procedure. Blanks were particularly important in some of the later experiments when sea water, which itself had a significant absorbance at the wavelengths utilised, was used to provide mixtures with different salinities.
(ST5.CH2)

ex. 6.42

Quantitative estimates of ... were made ... after the correction for the appropriate blanks.
(ST5.A1)

The fact that the article still mentions blanks but without comment suggests that the concept is a

standard one in the field and that the purpose of using blanks would be familiar to the readership.

In addition to deleting/reducing parts that explain the reasons for using certain procedures in the thesis, it was found that writers in the thesis also omit/reduce “common sense” knowledge which the readers of the article may be already aware of. An example of this was found in HT2, a modular linguistic thesis, and one of the articles published from one of its chapters (HT2.A2). The following are the extracts that show some of the “common sense” information that appeared in the thesis but was deleted in the article. All the extracts were drawn from the methods section of this particular study which dealt with editors’ attitude towards the international publications of NNS academics. Ex. 6.43 refers to the fourth criterion for the selection of the research articles that were examined in the study, while ex. 6.44 and ex. 6.45 exhibit the statements of the reasons for using multiple-choice questions and open-ended questions in the questionnaires sent to the editors who act as informants in this study.

ex. 6.43

(iv) all submissions undergo a critical peer-review process.
(HT2)

ex. 6.44

Part 1 comprised closed, multiple-choice section yielding quantifiable statistical data;...
(HT2)

ex. 6.45

Part 2 consisted of a series of 10 open-ended questions which provided more anecdotal qualitative data about the problems NNSs face.
(HT2)

In the first extract, it is understood that all published materials that the researcher has selected for the study must have gone through a long process of revision and editing by the editors, but it may be methodologically difficult to give evidence of this process if the texts explored have already been published and their writers are difficult to trace back. Thus it seems plausible that the writer, having

digested the study, realised that this criterion is a "common sense" notion that is also perhaps difficult to examine, therefore he decided to delete it. In the same way, knowing that multiple-choice questions will yield "quantifiable statistical data" and that open-ended questions provide "more anecdotal qualitative data", the writer decides to cross out this "common sense" information which was most probably inserted in the thesis as part of "displaying" knowledge of basic information that is necessary only for degree examination but not in articles directed at competent researchers in the field.

b. Deleting/Reducing "Due Care and Caution" Information

It was found that it is common that writers tend to omit/reduce background information that was added in the thesis in order to show that he/she has been careful in carrying out his/her study. Such information may include:

- a. report of the necessary measures taken to ensure the accuracy of the results,
- b. exact description of the composition of instruments used, and
- c. the conditions that are necessary to carry out the procedures described and the reasons for these actions.

None of this information appears in the article presumably because these points are part of reporting the general background to running experiments in the thesis which could be easily left out in the article.

HT2 and article HT2.A2 that were mentioned above also exhibit this other type of change that writers make while condensing the Procedures sub-element. A very good example of this (ex. 6.46 below) is the deletion of the report of the Procedures that the writer followed to verify the questionnaire he used in his study and which includes the pilot study he carried out and the changes he made to the questionnaire as a result of running this piloting. None of this information is carried over into the article perhaps because it is expected that the readers of the article will assume that the writer, as a

competent fellow-researcher, must have made these precautionary steps to verify his methods and therefore there is no need to mention them in the article.

ex. 6.46

A two-part pilot questionnaire was designed and distributed to the NNS and NS specialist informants mentioned earlier (section 4.1.2). Particular attention was paid to the wording of the ten language aspects to be investigated (see Figure 15 below). The aim of Part 1 of Questionnaire #1 was to investigate NS editors' perceptions of the influence of thematic structure and progression as basic components of textual cohesion and coherence; however, the outcome of the small pilot study conducted with subject specialist informants suggested that technical and non-technical usages of the terms topic and theme were likely to cause some difficulties. Following consultation, for the purposes of the present questionnaire to editors, the more general term topic was chosen (see aspect #2 in Figure 15) in preference to the specific technical meaning here of Theme which realises Halliday's textual metafunction. Nevertheless, in spite of different possible interpretations of terminology, it was suggested by informants that from topic similar functions to those of Subject/Theme would be understood by editors. Likewise, the linking of sentences (see #3 in Figure 1) was generally taken to imply reference to the important sentence boundary functions of Context Frames as cohesive text-structuring devices. A further modification to the questionnaire following piloting was that a three-point evaluative scale was chosen in preference to the originally piloted five-point scale, since it was suggested by informants that this might facilitate busy editors' completion and return of this mail-shot questionnaire.

(HT2)

A similar but much briefer statement that shows the writer's "due care and caution" that appears in another thesis (ST5), a modular scientific thesis, but not in the article published from it is as follows:

ex. 6.47

Each experiment was carried out in duplicate and the average result was recorded.
(ST5.CH2)

The following example describes the instrument used to carry out the procedures in an integrative scientific thesis, ST2. The description is omitted in the article.

ex. 6.48

... The other end of this rod consists of an iron core that moves the field of a small primary and secondary electrical coil. Any change in position of the core is observed as an electrical output from the differential transformer and the output is calibrated

so that the linear motion of the core in the field may be determined.
(ST2)

It is worth mentioning in passing another difference that was observed in the same thesis: the author in the article chooses to give pictures of the instruments used. This does not happen in the article, presumably because of the space limit and because it is expected that readers of the journal will be familiar with such basic instruments and may not need to be reminded of their shape and composition. Hence such visuals and related commentary on them were also deleted. This kind of omission occurred only in this case in my data, and does not seem to be frequent (perhaps because such illustrations are generally infrequent); but it is clearly related to the omission of details in the textual description of procedures.

Finally, there were also a number of examples in the texts explored that showed that writers tend to cut out from the Procedures in the theses parts discussing the conditions necessary for carrying out research. The following representative extracts appeared in the thesis chapter of two texts, one integrative and scientific and the other modular non-scientific (ST2 and HT1), but were deleted in the articles published from them. All of these examples show some of the conditions undertaken in analysis as reported indirectly/directly by other researchers.

ex. 6.49

When it is realised that 0.5 micrometers is comparable to one-eightieth, the diameter of a human hair, it is evident that the precision of measuring instrument must be beyond that of any ordinary micrometer or similar device (Philips 1973).
(ST2)

ex. 6.50

In analysing the use of questions in presentations, it is necessary to consider three important issues. Firstly, the different kinds of linguistic forms which realise the presenter's questions ...
(HT1.CH5)

It is expected that readers of the article are competent researchers that do not need the writer to present

to them explicitly the best conditions under which measurement of thermal analysis should take place (ex. 6.49) or the conditions under which classification of questions need to be made (ex 6.50). This is because it may be assumed that all this is basic knowledge already known to the readers in their own fields. Yet, in the source text, the thesis, this information may be necessary for research students to mention to show off their ability to be very clear in presenting the background to the Procedures they have followed in their study.

Having discussed in the above sections the changes that were made to the Response sub-elements, Data and Procedures, as a result of condensation, now I move to consider the changes made as a result of reorientation.

6.7.2. Changes Resulting from Reorientation

Considering the second major type of change, reorienting the text to suit the new context, it was observed that the writer may re-write certain parts of the thesis/thesis chapter in order to redirect the description of the data and the procedures to a new line of thought developed in the article. In integrative theses in particular, it was noticed that the writer may also produce a more localised description of the data and procedures used that directly link to the study reported in the article. In the following section I discuss a representative example. Clearly the details of the changes are different in each case of reorientation, but the example illustrates several of the main types.

6.7.2.1. Reorientation of the Research Data and Research Procedures Sub-elements

In the integrative scientific thesis, ST2, the writer is presenting his study of four types of dental alloys and their main properties. It should be remembered that in this type of thesis, unlike modular ones, the information about the data and procedures appears only once and on one level only. This appears usually in the Methodology chapter which includes the description of data and procedures for all the studies/stages of the study covered by the thesis. This reflects the organic type of unity exhibited in integrative theses which contrast with the cyclical, yet developing, nature of reporting data and

procedures as presented in modular theses.

However, comparing and contrasting the description of the Data in this thesis and one of the articles derived from it, it can be seen that the writer not only condenses the size of the part allocated to data in the thesis chapter by limiting the description of the alloys in the thesis, but also reorients his information to serve new purposes. As seen from the extracts below, the description in the thesis chapter seems to be more general than that of the description in the article as it is not tied into a particular study yet, but is rather open to the various coming studies to be included in the thesis. This is apparent from the fact that a large number of aspects of describing the materials used are given, like the composition of the materials and the level of certain elements in each material and that these are cut out in the article. Thus, it holds a general-particular relationship with the article description. This generality is probably motivated by the fact that the writer in the thesis needs to prove to the examiners that he has collected all the necessary information about the alloys studied, while he does not need to do so in the article. Here the writer seems to direct the attention of the readers to only the ratio of the alloy to mercury. This information links directly to the new aim and conclusion of the study reported in the article which sets out to explain the dimensional changes of these four dental alloys in the light of their composition and the level of mercury in them. Looking ahead the writer carefully presents the ratio of the alloy to mercury, rather than any other constituents like zinc, tin and the like, because in the findings he attempts to prove "the undesirable effect of excess mercury" and that "the lower the residual mercury in the amalgam, the better". This is, therefore, a very good example of how writers localise the description of their Data by making it directly link to the specific study reported in the article as well as reorient the description in a way that can serve the new purposes of the text.

Another instance of reorienting Data apparent in the following extract is in the way the writer reorganises the materials presented. As shown in the extracts, the third material in the chapter (Dispersion admixed high copper alloy) becomes the fourth in the article. This modification, which

may have been suggested by the editors or was the result of the writer's digestion of the study, is perhaps linked to an understanding that this specific type of material is better placed later after the presentation of the uni-composed alloys because it is a multi-composed alloy. The aim of this is to perhaps give a more natural order for the alloys presented by placing the uni-composed alloys together first, and by following these with the multi-composed alloys second. This probably does help in later sections of the article to discuss the results of each group of alloys together and hence see the similarities and differences between alloys in general and these two groups in particular. This is clear from the extracts given below, where the underlined parts are the parts that could be compared in the two texts.

ex. 6.51

MATERIALS AND METHODS

The following materials were used: (fig; 2a & 2 b)

A lathe-cut conventional alloy:

Amalcap which is scientifically preproportioned finely balanced alloy, preamalgamated, zinc free alloy, silver content 70%, alloy mercury ratio 1: 0.8 meets the requirement of F.D.I. specification No. 1.

A spherical particle conventional alloy:

Spher alloy which is a Kerr Spher alloy "Spher.A.Cap", zinc free fine grain silver alloy consisting entirely of spherical particles. Each Spher.A.Cap single spill contains 350 mg. designed exclusively for the no-squeeze, preproportion 1:1 mercury alloy ratio. Each Spher. A .Cap mix contains 48% mercury.

A dispersion admixed high copper alloy:

Dispers alloy which is a Johnson & Johnson dispersed phased alloy "Dispo.A.Cap" contains zinc. It is a type of non 2 amalgam alloy which comprises two parts by weight of conventional lathe-cut alloy and one part of spherical particles of a silver copper eutectic. In the set material the tin is in the form Cu 6 Sn 5 (ε') phase. The alloy complies with A.D.A. specification ## 1 for dental amalgam alloy. Mercury complies with A.D.A. specification ## 6 for dental amalgam. The mercury to alloy ration in each Dispo. A. Cap is 1:1.

A ternary unicomposition high copper alloy:

Sybralloy which is a Kerr product, uniquely formulated homogenous prealloyed all

spherical non-gamma-2 silver amalgam, zinc free. It is a ternary silver/copper/tin alloy in spherical form, supplied in capsule "sybralloy capsule" regular set, single spill (350 mg.)

All the above information were illustrated in explanatory catalogues from Vindant, Kerr, Johnson & Johnson companies.
(ST2.CH4)

ex. 6.52

Four types of dental alloys were used, as follows

a) Conventional lathe-cut alloy (amalcap) from Vindant co.: recommended alloy to mercury ratio: 1: 0.8.

b) Conventional Spherical alloy (Spheralloy) from Kerr Co., alloy to mercury ratio 1:1.

c) A unicomposition ternary, high-copper alloy (sybralloy) from Kerr Co., composed of spherical particles; recommended alloy to mercury ratio 1:1.

d) An admix dispersion, high-copper alloy (dispersalloy) from Johnson and Johnson, composed of two parts by weight of conventional lathe-cut alloy and one part of spherical silver-copper eutectic, with an alloy to mercury ratio of 1:1.
(ST2.A1)

Moving now to the discussion of the changes made while reorienting the Procedures sub-element using the same texts discussed above, analysis showed that this element is also modified as with the Data by making the description of the Procedures, which is rather general in the thesis, more local in the article. This entails modifying the language of the description to make it more specifically-oriented (i.e. the description is only about the particular study reported) rather than universally-oriented (i.e. it describes the procedure of the study in general terms referring sometimes to the general procedures of similar experiments). The following two related examples from each text vary in this way in the description of the same procedures. In the thesis, the description is more generally oriented to discuss the production of amalgams that copy dental environments while in the article the focus is on the method used in the experiment only. This change entailed omissions of the description of the plastic die and the reference to the produced amalgam as being comparable to dental restorations. Also, in the article there is additional information about the amalgamator that helped in producing the amalgam and the actual steps carried out to do so.

ex. 6.53

... the standardised plastic die was designed from two halves of plastic to produce an amalgam cylinder of dimension 8 x 4 mm (Fig 5). This bulk of amalgam is considered to be comparable to that used in a large dental restoration.
(ST2)

ex. 6.54

The amalgams were triturated mechanically in an S.S. white cap master amalgamator, then manually pressed in a special die to produce a cylindrical specimen with dimensions 8 x 4 mm.
(ST2.A1)

Analysis of the two comparable texts shows that the writer both condenses and reorients his report of the Procedures sub-element in the thesis so that it only links to the new research context and hence no longer appears as universal information that links to other parts of the overall study described in the thesis.

In general, it was found that reorientation modifications were more common in integrative theses than in modular ones. This is presumably because, unlike integrative theses where the Response element is more generally oriented, in some cases the chapters of modular theses, including the Response element, were just lifted out and published as they are with little or no modification, especially if they are already very specifically oriented and condensed in size. Very good examples of the modular theses whose Response elements including Data and Procedures underwent very minor modifications are HT3 and HT5. For example, in HT5 and one of the articles derived from it (HT5.A3), there is almost no variation between them.

In another article (HT5.A2) that was published from this same thesis (HT5.CH8), it was found that although there is again a similarity between the Response element in the thesis chapter and the article produced from it, some variations were identified in the article. These variations, however, were not in the wording, which is the same as in the thesis chapter, but were limited to the repositioning of the

methodology section. This repositioning was primarily due to the change that was made in producing a more elaborate Setting element in the article and hence there was a natural need to keep the methodology to a later position. Thus while in the thesis chapter the Response element, which describes the tools used to gather information and the type of informants approached, appears as part of the introduction in the second paragraph, in the article the same section comes under a separate heading "Methodology" and as the ninth paragraph in the text. Naturally, the change in the position entails a change in the way this element is related to the preceding and the following texts.

The above examples that show only minor variations between the thesis chapters and the articles produced from them were limited to two main modular non-scientific theses. In most of the rest of the theses, both modular and integrative, many more variations were identified as already exemplified in the above two sections 6.7.1. and 6.7.2. Most of these modifications relate to the need to omit/reduce "displays of knowledge" and "due care and caution" statements. This indicates that, contrary to what many novice writers might expect, it is not really true that this element is an element that usually does not need to be modified in the process of transferring it from the thesis to the article. It also raises issues about the function of certain parts of the thesis where the need to display knowledge of the field may outweigh the requirement to advance that knowledge: these issues seem well worth bringing to the attention of novice writers.

Now I move to discuss the Answer element and the various types of changes made to it as a result of transferring it from the context of the thesis/thesis chapter/p-text to that of the article.

6.8. Analysis of the Answer Element: What is it? Where is it Found and How is it Identified?

The answer element is the element where the writer begins to present to his/her readers the findings of the study conducted to attempt to formulate finally a conclusion that could be considered the Answer proper to the research Question the researcher set up for the study. As I have already discussed the Answer proper element in section 5.3. in chapter 5, in this particular section I will be only concerned

with the sub-elements of the research Answer that are not considered the Answer proper, but are still part of giving an Answer. These include the sub-elements of **Findings** and **Discussion**. As already mentioned in chapter 4, section 4.5.1.2., the first sub-element refers to all the numerical and non-numerical results which are the outcome of the analysis of the data using the procedures specified in the Response element. The second sub-element includes interpreting and commenting on the results presented as well as comparing and contrasting the findings identified with previous results and findings by other researchers in the field. In addition, the Discussion element may include presenting minor conclusions as a means of arriving at a final conclusion (i.e. the Answer proper). Examples of these sub-elements are also given in chapter 4, section 4.4.1.2. In general, the aim of all these sub-elements is to be able to present and discuss relevant information that the researcher has arrived at after conducting the study in order to produce a final Answer to the research Question.

In general, the Answer element as expected by academic readers appears immediately after the Response element towards the end of the text. Thus, the Answer element appears briefly and partially in the Abstract after the summary of the Response element, then in the main body of the text under the Results/Results and Discussion sections in all types of theses and articles. In the case of integrative theses and articles in particular, it appears immediately after the Methodology section, while in the case of modular theses, it appears in each of the chapters that represent a single study, again after the Methodology section. Moreover, in some cases part of the Answer element appears in the final concluding chapters of the theses and articles explored which are often devoted to reporting the Outcome element. The sub-elements that make up this element (i.e. Findings, Discussion and Answer proper) can be expected normally to appear in a certain order. In this order, the first element that usually appears is the Findings, followed by the Discussion and then the Answer Proper. The logic behind this order is that the reader, having read about the procedures followed, needs to immediately know the outcome of their application, i.e. Findings, which is usually followed by explaining and evaluating these observations, i.e. Discussion, and then finally the conclusion that is the ultimate outcome of discussing these findings and observations, i.e. Answer proper. However, in many cases in

my data, and as a result of the multiplicity of the research Question asked as well as the multiplicity of the observations made, I found that this order is usually repeated more than once and extended to cover the various aspects of answering the research question concerned and the different observations made. The following is an example drawn from the texts explored that show this cyclical organisation of the various sub-elements under the Answer element in the same text. It is clear that the writer in each paragraph starts by presenting his findings and then moves to discuss them, either by discussing the reasons for these findings or by comparing them with previous results found by other researchers (second paragraph) or both (first paragraph).

ex. 6.55

... Streptococci with an MIC greater than one quarter of the expected mean serum levels of 0.875 mg/L were isolated from 35% of patients in group A and from 18% and 14% respectively of patients in groups B and C. The reason for the high incidence of erythromycin-resistant strains, especially in patients requiring amoxycillin prophylaxis, is not known. Our results differ from those of Harrison et al 8. who found no erythromycin-resistant oral streptococci in healthy volunteers. However, it is difficult to compare the results obtained in this investigation with previous reports because of differences in methodology and criteria for defining antibiotic resistance.

Resistance to amoxycillin and erythromycin was found in many of the bacteria sampled. Isolates that were resistant to erythromycin also showed variable degrees of resistance to amoxycillin; one such strain had an MIC of amoxycillin of 20mg/L. This is in contrast to the results obtained by Harrison who found erythromycin-resistant streptococci to be generally sensitive to penicillin. ...
(ST1.A5)

The cyclical organisation of the Answer element as exemplified above was echoed on a wider scale in both integrative and modular theses and the articles produced from them. This made the analysis of this element much more difficult than the previously discussed elements. Thus the analysis - and the exemplification here - of the sub-elements of the Answer element is inevitably less clear-cut.

Other sources of problems in analysing this particular element include the fact that the Results section/Results and Discussion section where this element is expected to be found usually incorporated other elements in addition to the Answer; and that the division into Findings, Discussion

and Answer is to some extent an idealisation (for further discussion, see chapter 4, section 4.5.1.2.). Wherever possible, I have followed the writers' own divisions as signalled by headings and sub-headings in the text; where these do not indicate the breaks (e.g. where sections are headed 'Findings and Discussion', or where there are no relevant sub-headings) I have looked for other signals (see following discussion).

In order to identify the Answer element as a whole in texts, it was usually possible to do so by looking at the sections in the theses and articles entitled 'Results', 'Findings', 'Discussion' or 'Results and Discussion'. This was often very helpful in integrative theses where writers collate all information about the different questions/aspects of the study explored in specific differentiated chapters. In the case of modular theses, this element appeared under the same headings more than once in the various chapters that report the results of the various mini-studies making up the whole thesis. However, unlike the case with the Setting and Response elements, this element did not appear on different levels in this particular type of thesis. This is because the report of the results was presented only once attached to the particular Response reported in each of the chapters, and when the outcome of the study was referred to again in the conclusion chapter it was treated as an Answer Proper and not as an Answer element reported on another level. In the case of articles, this element, as in integrative theses, appeared only once under the same headings mentioned above focusing usually on the report of the discussion of the results of a single study. Some theses and articles separated the Findings sub-element from the Discussion sub-element, while some combined them: hence the variations in the titles of the sections in the theses and articles explored.

In some cases, however, as mentioned above such titles did not help in identifying the overall position for this element. This occurred especially in the humanities theses and their articles that were more theoretically oriented. In these studies such titles were not used and therefore other linguistic signals were necessary to identify the Answer element. In fact, in such cases it was very difficult to pin down a section that could be considered pure Answer as the Answer in such texts appeared to be developed

out of an extended discussion of observations of historical records, linguistic features and evaluation of literature, etc. Instead, other signals were explored to identify the Answer element. These included lexical nouns and verbs that introduce a display of findings (e.g. “the results/findings show/indicate/illustrate/etc.”), as well as the actual display of the findings using different types of forms (e.g. numbers, percentages, tables, diagrams). These signals helped to point to the Answer element in general and the Findings sub-element in particular. The following are two examples that contain such signals. The signals are underlined for the purposes of clarity.

ex. 6.56

The results of EDX indicated that when subsurface silver was present, it caused a small peak for silver. Fig. 5 [a] shows the peak for the p-30 specimen illustrated in fig. 1 [A].
(ST4.A6)

ex. 6.57

Moreover, the range of mean scores was 1.62-2.38 for NNSs compared with 1.44 – 1.97 for NSs.
(HT2.A1)

Concerning the Discussion sub-element, it was possible to identify its components by considering lexical signals such as the use of modality expressions (e.g. “possibly”, “perhaps”, “may”, etc.) while presenting comments and interpretations as well as using citations and lexical items to refer to the comparison and contrast with previous studies. The following are two examples, the first showing the use of modality expressions and the second using citations and comparative expressions.

ex. 6.58

There are two possible mechanisms by which humic molecules could be attracted to clay particles.
(ST5.CH2)

ex. 6.59

The analysis suggests that content-oriented questions in presentations play a similar interactive role to some of those found by Webber (1994) in medical texts: they catch

the audience's attention and challenge them to consider an issue, and they draw the audience into a kind of dialogue with the presenter.

(HT1.A1)

On the whole, the Answer element typically appeared in the positions described earlier in this section and the signals did in most cases help in identifying it and the various sub-elements it contained. In the following section I present the outcome of the analysis of the changes in this particular middle-level element in the data explored.

6.9. The Results of the Analysis of the Answer Element

The present section introduces the specific type of modifications that are made by writers in the Answer element while attempting to produce articles from their theses. It was noticed that as with the Setting and Response elements these specific modifications were made as a result of the two major types of changes, condensation and reorientation. The following section presents the main changes resulting from condensation followed by those made as a result of reorientation. In each section I start by the modifications made in the Findings sub-element, followed by those found in the Discussion sub-element, although, as noted above, in many cases it was difficult to separate out the two sub-elements as they were intertwined. The results are exemplified by drawing representative extracts from both integrative and modular theses and the subsequent articles published from them in both scientific and non-scientific domains.

6.9.1. Changes Resulting from Condensation

Analysis of the various theses/theses chapters/p-texts and the articles derived from them showed that most of the Answer elements (8 these out of 10 theses/18 articles out of 33 articles) were condensed when they were transferred into articles. The modifications made as a result of condensation were found in both integrative and modular theses, whether they were scientific or non-scientific. However, it was noticed that integrative theses underwent more variations than modular theses and that integrative theses have more varied types of variation than modular ones. Yet, on the whole, it was found that the amount of change occurring in the Answer element, especially the Findings sub-element

rather than the Discussion sub-element, was less than that identified in both the Setting and the Response elements. This is probably due to the fact that Findings, which are the raw observations of the outcome of the study, are unlikely to be modified after the study was completed, unlike the case with the setting up of the background of the study, the report of the theories leading to it or even the materials and data used as well as the interpretations of the observations made, all of which could be easily modified according to the new context.

The following section presents the various types of modification identified in the texts explored under the two sub-elements of the Answer, Findings and Discussion, specifying in particular under which type of these they usually appear.

6.9.1.1. Condensation of the Findings Sub-element

The most important types of variations relating to condensation that were identified under the Findings sub-element included:

- a. deleting/replacing metadiscourse references
- b. reducing/deleting background materials/methodology before the report of findings
- c. reducing/deleting detailed report of findings

a. Deleting/Replacing Metadiscourse References

As with the Setting element, it was found that one of the parts that usually get deleted in the Findings sub-element are the metadiscourse references that are used either to signal to the readers how the text is organised or to help to link between the various sections of the text. The most frequent deletions are the most self-explanatory and therefore least interesting ones: text references which create the cohesion between the Findings sub-element and the previous or the following sections in the thesis. Some of the deleted metadiscourse was related to a particular feature of the report of Findings, that is using visuals (e.g. Tables, graphs). In these cases, the writers, as a result of deleting the visuals, had to

delete the metadiscourse referring to them. The following is a more interesting example of a deleted metadiscourse statement that refers to a visual. Although the graph to which it refers was not omitted when the text was transferred into the article, it was still deleted, perhaps because it included information that could be easily deciphered from the graph by competent readers - in this case that the expansion goes upward and contraction goes downward.

ex. 6.60

For static procedures, expansion or elongation is plotted upward. Contraction is plotted downward.
(ST2)

b. Reducing/Deleting Background Materials/Methodology before the Report of Findings

As mentioned earlier, the Answer element or rather Results sections/ Results and Discussion sections sometimes incorporated other types of information that may not be directly considered Findings. In most cases, these elements were the first to be dropped when the writer decided to reproduce the chapter/p-text in the form of an article. One type of these elements is related to setting the background to the report of the Findings and the other is related to the brief recapitulation of the Response to the study as an introduction to the report of Findings. Because these parts are mainly related to the report of findings, they were mentioned here again as part of discussing the modifications made to the Findings sub-element, though they may be still part of the overall Setting and Response elements. These parts were more common in integrative theses because of the need to repeat briefly parts of the general background and the methodology used as a lead in before reporting the findings in the Results and Discussion chapter(s) which is (are) often set apart from the two early Introduction and Methodology chapters. The following are two extracts drawn from the introduction to the Results section in an integrative scientific thesis (ST5) and the corresponding article produced from it (ST5.A2). Comparing the two extracts it becomes clear that the writer reduces the lead into the report of Findings by deleting the aim of carrying out the study concerned (statement 1), in this case the analysis of the thermal expansion of four types of composites, as well as the detailed description of the methodology used (statement 2) reported in the thesis (see the underlined parts in the thesis extract).

ex. 6.61

(1) To study the expansion behaviour of the various composite products at different temperatures, the linear coefficients of thermal expansion of the investigated brands were calculated at a temperature range of 25° to 160°C. (2) The TMA curves of all the composite materials in this study were subjected to 5 successive heating runs and the results obtained were reproducible.

(ST3.CH5)

ex. 6.62

The linear coefficients of thermal expansion of the investigated brands were calculated over the range 25-160°. The results were reproducible.

(ST3.A2)

In another extract from an integrative thesis (ST1), the writer chose to precede the report of the results by a brief account of the methodology described in an earlier section. In the article, in the Results section the writer deleted the reference to the previous section and the brief report of the method used. The deleted parts are underlined below.

ex. 6.63

In accordance with the methods described in section 2.6.1 an initial experiment assessed the therapeutic efficacy of fluconazole. A dose of 50 mg/kg body weight was used for 14d in 20 rabbits with either C. albicans (10) or C. parapsilosis (10) endocarditis. All 20 animals that received fluconazole therapy survived until the end of the experiment.

(ST1)

c. Reducing/Deleting Detailed Report of Findings

One of the basic methods of reducing the size of the Answer element, specifically the Findings sub-element, identified in the data explored was the reduction/deletion of the detailed report of the findings that may not harm the overall report of the outcome of the study. The following is a representative example of how writers manage to omit parts and keep others from their chapters to represent their findings in a condensed form in the article. It is drawn from a humanities modular thesis: the researcher while presenting one of the linguistic functions of questions in presentations reduces the number of the examples given to show this function, and deletes some of the comments that are related

to these particular examples. She also deletes parts from the specific titles and statistics of this type of function of questions because they are not relevant in the new context of the article. In the example below, I have underlined in the thesis extract the parts that were reduced/deleted in the article to show the amount that was cut out/reduced as a result of condensation.

ex. 6.64

5.4.3.2. Check with audience

The second category of audience-directed question is the use of questions to check something with the audience or a particular member of the audience. Question forms used are the polar interrogative (29 occurrences) and the declarative plus word tag (217 occurrences). Polar interrogatives are typically used to check that the audience can see some visual information or understand what the presenter has been saying, e.g.:

[5.27] can you see (SP.6);

[5.28] is that clear my data (LP.6),

though occasionally a presenter may check that the audience agrees with what he or she has said:

[5.29] is that fair [NTD] (LP.2).

Audience response may of course consist of verbal or non-verbal action, but it is always very brief.

In the presentation corpus, presenters frequently check with the audience by the use of the word tags OK, right, all right and yeah with rising intonation (217 occurrences), sometimes followed by a brief pause:

[5.30] and this is the carbon carbon bond OK (SP.6);

[5.31] note it ends up with a hot spot there all right (SP.7);

[5.32] there's a constant use of flashback yeah (LP.8).

However, we find considerable individual variation in the use of these tags; for example, some presenters use tags very frequently in comparison with others, while other presenters never use them at all, thus indicating a degree of idiosyncrasy in their use or non-use. These tags allow a step-by-step negotiation with the audience on whether or not they understand and accept what has been said before moving on. (HT1.CH5)

ex. 6.65

Check

The first category of audience-oriented question is the use of questions to check something with the audience or a particular member of the audience. Polar interrogatives are typically used to check that the audience can see some visual information or understand what the presenter has been saying, e.g.:

[3] can you see.

Presenters frequently check with the audience by the use of the word tags OK, right, all right and yeah with rising intonation:

[4] and this is the carbon carbon bond OK .
(HT1.A1)

In addition to the types of deletions and reductions mentioned above, it was found that one of the common parts that get deleted/modified in the process of condensing the detailed report of the Findings is the non-linear representation of some of the findings. This meant that writers cut out from their texts some of the tables and graphs which include condensed versions of the results of their studies. This type of condensation was very common with all types of theses. One of the interesting examples found is one where the researcher used the graph showing the dimensional changes of only one of four composites studied as a representative example of the reactions of the other three composites to heating. It seems that this was possible in this case because of the similarities the researcher found among the composites studied in the final results. However, in order to make up for the missing graphs that show the reactions of the other three composites, the researcher added in the article a new table that gives in brief all the calculations that prove the similarity among all the composites in terms of their dimensional changes after heating. Although this is an addition, it still represents a condensation since the table is more compact than the graphs. In another example in a humanities modular thesis the researcher presented the findings in 8 tables that gave detailed figures that show the number of occurrences of a particular feature in the data explored. In the article derived from this thesis chapter, only two tables were presented. On the whole, the deletion/reduction of the number of non-linear representations of the results is the outcome of cutting out/reducing the linear presentation of the findings in detail which we have discussed earlier. This is because in most cases visuals like tables and graphs are representations of a more detailed form of the results referred to in the linear text. Thus, if the results are condensed, this in turn means that the visuals referred to in the text are condensed even further.

6.9.1.2. Condensation of the Discussion Sub-element

The Discussion sub-element which usually includes both the interpretation/evaluation of the results and the comparison and the contrast of the present findings and the findings of previous research were condensed by:

- a. deleting/replacing metadiscourse references,
- b. reducing/deleting background materials/methodology before discussing findings, and
- c. reducing/deleting report of previous studies that support the present findings

a. Deleting/Replacing Metadiscourse References

Since the first of these changes is essentially the same as for other elements such as Findings (see above), it will not be discussed here.

b. Reducing/Deleting Background Materials/Methodology Before Discussing Findings

As with the Findings sub-element, the Discussion sub-element in the theses included other parts that were not directly considered discussion of findings. These included general background information that were presented before discussing the results, or repetition of the methodology used in carrying out the study. Since these parts were usually used as an introduction to the parts they precede, in many cases they were dropped for condensation purposes when the texts including them were transferred into the form of an article. The following extracts, for example, show how the thesis extract is much more extensive than the article extract because of the background materials it includes. In the thesis extract the writer presents as an introduction the main reason behind the interest in the study of the dimensional changes resulting from heating and the previous studies made on a similar topic. In the article corresponding to this particular part of the thesis, this brief introduction is deleted and reference is made only to the main results found and reasons behind these results. The underlined parts are the parts deleted in the article.

ex. 6.66

The main concern of the dimensional change of the respective isothermal runs of the various investigated composite brands lies in that part of the polymerization contraction process. This part of shrinkage has received much attention in dentistry especially by Asmussen (1975),(28) Lee & Orłowski, (1977) (89)' Lambrechts et al, (1982) (106) and Bowen (1963).(23).

All the investigated composite brands exhibited a contraction in volume upon polymerization. Such contraction ranged from 0.07% to 0.17% and was virtually lower than that of an unfilled polymethyl methacrylate resin 5.2% (86). The contraction due to the polymerization of the composite materials may be attributed to the ring-opening polymerization mechanism ...

(ST3.CH6)

ex. 6.67

All the investigated composite brands exhibited a contraction upon polymerization, ranging from 0.07% to 0.17% and lower than that of an unfilled poly(methyl methacrylate) resin 5.2 % (1). The lower curing shrinkage reported for the various composite materials may be attributed to the presence of the inorganic filler as well as the ring-opening polymerization mechanism ...

(ST3.A2)

In the following example which is drawn from the same integrative scientific thesis, the writer, while introducing a conclusion that is considered one of the main findings of the study explains, it by referring to a general phenomenon already known in the field, "hysteresis", and attempts to define it by going back to previous research. In the article, the same phenomenon is mentioned but as something observed and already known to the readers that seems to need no definition from the author. This shows that writers may also condense the size of the discussion of findings by cutting out the general background materials that support their interpretation of findings as shown in the example below.

ex. 6.68

It should be recognised that all the currently investigated composite brands exhibited a similar trend of thermal behaviour in the first run of their respective TMA curves. This behaviour was referred to as "hysteresis"; a phenomena which coincided with that reported in literature (80) and referred to the non-coinciding effects of the respective heating and cooling runs of TMA curves of polymeric materials.

(ST3.CH6)

ex. 6.69

When cooling the samples, a hysteresis effect was noticed; this has been encountered before in the thermal analysis of polymeric materials [7].
(ST3.A2)

c. Reducing/Deleting Report of Previous Studies that Support the Present Findings

Another common means identified for condensing the size of the Discussion sub-element was the reduction/deletion of the account of the previous studies that support the findings reported. This was common in both modular and integrative theses, as well as scientific and non-scientific ones. However, with the integrative theses explored the amount and the type of previous research reporting deleted was much more than that found with modular theses. The following two examples show the parts referring to previous research as deleted first from a humanities modular thesis and then from an integrative scientific thesis before transforming the texts into their article form. It is clear from the underlined parts that the part omitted in the first example could be easily considered non essential to the text as it is a mere presentation of a list of references. In the second example the reference to previous research is supportive of the findings of the presented study because it compares the results found with other similar findings of other researchers. However, in both cases, the need to show the reader that the researcher is aware of the existence of these references and the fact that he/she has already consulted them is probably the reason behind including them in the thesis chapter in the first place. In the case of the article, on the other hand, because the researcher no longer needs to prove him/herself as a competent reader of the previous studies in the field, the researcher is able to condense the text by omitting these references to previous research.

ex. 6.70

...the 10 aspects also included a wider sociopragmatic dimension specific to this highly refined research/discourse activity. The latter is derived from a number of social studies of science [see Latour & Woolgar (1979); Bazerman (1981, 1984, 1988); Knorr-Cetina (1981); Gilbert & Mulkay (1984)] and the work of Myers (1985, 1990) who sees the act of review and revision of an academic paper as 'the negotiation of the status that the scientific community will assign to the text's knowledge claim.' (1985:593). Moreover, Myers suggests that claims and negotiations are the social processes in which science is constructed.
(HT2.CH4)

ex. 6.71

However, another plausible explanation was also given. This was based upon the possible reorientation of the polymer chains into a relaxation mode to allow for the release of the internal stresses that may have been incorporated in the material during polymerization. This finding consisted with the results obtained by Powers et al (1979) (5) who assessed the release of internal stresses during the first heating run of some composite products.
(ST3.CH6)

In addition to the fact that condensation was made as a result of the above general types of modifications found in both the Findings and the Discussion sub-elements, it was found that another major type of condensation resulted from the writers' attempt to combine different sections that are separate in the thesis chapter/p-text, in order to produce only one section in the article. One major example of this is when the writer presents the Findings and the Discussion elements in the thesis under two sections, i.e. the Results and the Discussion sections, and then sets out to produce in the article only one combined section, the Results and Discussion section. This example was found in deriving article from parts from integrative theses (four instances) because it is in these theses that writers usually split the report of Findings from that of the report of Discussion. The writer reduces the size of the combined sections by making all the above mentioned types of modification as well as the deletion of repeated report of results. This is because it is the main type of information that is bound to be repeated in the Discussion section as the writer needs to remind the readers of the results before commenting on them.

In some other cases combination of sections was done even within the same element. An example of this was found in ST1 where the writer reported the results of using two medications for the prophylaxis of *S. Sanguis endocarditis*, amoxycillin and cephradine. In the thesis, the report of the findings of the study was presented under two longish sections, each of which reports the results of using one of the two medications investigated. In the Results section of the article, on the other hand, the writer combined the report of the results of applying the two medications together in the same section. This entailed making various types of modifications and deletions to integrate the report of the

results of the two separate and yet comparable studies together. The following are short extracts from the thesis and the article to show some of these modifications.

ex. 6.72

a) Amoxicillin prophylaxis.

A single dose of amoxicillin (400 mg/kg) successfully prevented *S. sanguis* endocarditis in 8 of the 10 (80%) animals which received the antibiotic. The methodology and doses chosen in this investigation were similar to those described by McGowan et al. (1983). These workers found that amoxicillin protected 61% of the rabbits against IE. It may initially appear that the differences in the efficacy of this antibiotic in the two studies are large; however, this may be explained by the greater number of rabbits (23) that McGowan et al. (1983) used. Biological variation is intrinsic in in vivo models of this kind.

Whilst the efficacy of chemoprophylaxis is important, it is also imperative to examine why prophylaxis fails. In this experiment amoxicillin failed to prevent infection in two (20%) rabbits. ...

b) Cephadrine prophylaxis.

At the time of this investigation, erythromycin was the only recommended, orally administered, alternative to amoxicillin for the prophylaxis of streptococcal endocarditis. A need existed, and still remains, for a suitable non-penicillin alternative that has proven prophylactic efficacy and, can be administered orally. Cephadrine would seem to be a possible candidate.

Cephadrine failed to consistently prevent experimental *S. sanguis* endocarditis. In the three different regimes tested, protection against IE was conferred to only a minority of rabbits. The MIC and NBC of cephadrine for *S. sanguis* NCTC 7864 were high, 5 and 11 mg l⁻¹, respectively, but the mean peak serum cephadrine concentration was well in excess of these values (Table 3.17). The antibiotic was, however, rapidly eliminated from the serum. A large number of animals (11) which received cephadrine died before the planned end of the experiment, 3d after infection. The cause of death was presumed to be cephadrine toxicity as all the other rabbits that received chemoprophylaxis survived the duration of the experiment. The catheter position was assessed in these rabbits and found to be satisfactory but full post-mortem examinations were not done. Post-mortem investigations of these rabbits may have elucidated the reasons for the premature deaths. The findings presented in this experiment do not support the use of cephadrine as a suitable antibiotic for the prevention of streptococcal endocarditis.

(ST1)

ex. 6.73

Discussion

*This study has compared the efficacy of cephadrine and amoxicillin in preventing *S. sanguis* endocarditis. The methodology and doses chosen were similar to those*

described by McGowan et al (1983) so that a direct comparison is possible between the prophylactic value of cephadrine and amoxicillin. A total of four out of five animals treated with a single 400 mg/kg dose of amoxicillin had no streptococcal endocarditis; a success rate of 80%. In contrast, cephadrine at a dose of 500 or 1000 mg/kg did not prevent infective endocarditis in 70% of cases. When a two dose regimen of cephadrine was used successful prophylaxis was achieved in only 40% cases. When cephadrine was given at doses of 400 mg/kg and above, 11 animals died within 36 h of administration. No post-mortem examination was done on these animals and it was presumed that the cause of death was due to cephadrine toxicity. Animals treated with amoxicillin or with no antibiotic administration survived the experimental period. Thus even at high doses cephadrine failed to prevent streptococcal endocarditis.
(ST1.A2)

From the article extract it is clear that the writer wishes to highlight the fact that he is comparing and contrasting the report of the discussion of the results of both medications together. In the rest of the text the writer is combining information from both of the above extracts derived from the thesis. For example, the reference to the methodology used and its source as well as the result of amoxicillin prophylaxis come from the first section on amoxicillin prophylaxis, but the following statements that report of the cephadrine results come from the cephadrine prophylaxis section. The parts underlined in the thesis extract above are the parts that are deleted or modified in the text of the article. These include deletion of reports of previous research on a similar topic and the results of these previous studies. It also includes deletion of background information about other medications used for the prophylaxis at the time of the study and the need for having another non-penicillin alternative medication like cephadrine. It also includes deletion of detailed report of results and some minor comments on these results. In addition, the writer modifies the position of the pieces of information to build up a more organised report of the results and discussion of the two studies together.

Having covered the main types of modifications made as a result of condensation now I move to consider the modifications made as result of reorientation of both the Findings and the Discussion under the Answer element.

6.9.2. Changes Resulting from Reorientation

As with other elements, the writer's reorientation of the overall question of the study is reflected in the

report of the Findings of this study and its Discussion. However, it was found that the changes made as a result of reorientation are more limited than those made due to condensation. This is probably because the reorientation of the overall research Question was found to have more influence on the elements at the beginning and the end of the texts modified, i.e. the Setting and the Outcome elements, rather than on the middle parts of the texts, i.e. Response and Answer, which remain to a great extent similar in direction to the original texts from which they spring. This is probably because they are reports of the basic tools, procedures and outcome of the study which are very difficult to modify once the study have been completed. Nonetheless, some types of modification which could be related to reorientation were identified in the Answer element, as they were in the Response element earlier. These were more prevalent in the Discussion of the Findings rather than the report of the Findings themselves. Since the modification in the Findings sub-element is limited, in the following section I give examples of the modifications identified in the Findings and Discussion sub-elements together. The main types of change that were made due to reorientation were related to:

- a. deleting reports of results irrelevant in the new context
- b. developing the interpretation of the results
- c. changing the level of the certainty of interpretation of results

a. Deleting Reports of Results Irrelevant in the New Context

This particular type of change was identified in Findings sub-elements. As a result of changing the direction of the line of thought behind the study presented, the researcher needed to redirect the report of the results made in the article text. This reorientation entailed deleting all the parts that may be considered irrelevant in the light of the new line of thought that is presented in the article. A good example of this type of modification was found in HT1, a modular humanities thesis, and the article produced from chapter 5. In this particular example the researcher decides to refocus attention on the results that show that there is a difference between scientific and non-scientific presentations in the way they use questions. This focus was not the main focus of the chapter where the writer was more

concerned with the differences in using questions in presentations and other types of monologue like lectures and research articles. Due to this change in the focus of the new article the writer decides to cut down the report of many of the results that support the link between the presentation and lectures and research articles in using questions, and gives more space to commenting on the outcome of the results that show the relation between scientific and non-scientific presentations in using questions of different forms and their functions. In addition, all other subsidiary results that may have looked interesting to include in the thesis chapter, such as a report on the use of “interruptions” in presentations, are omitted in the article. The following are examples of the irrelevant parts that were found in the thesis chapter but were deleted in the article due to the change in the focal point as discussed above. The first extract is drawn from the part on “interruptions”, and the second from the part focusing on the relation between presentations and lectures.

ex. 6.74

5.4.5 Interruptions

The occurrence has already been discussed of dialogic elements initiated by a presenter during the presentation monologue, some of which lead to a longer discussion phase. All 23 presentations examined include a separate question-and-answer phase at the end of the presentation, so that there is theoretically no need for any discussion element during the monologue itself. However, as was discussed in section 5.4.3.1, some language presenters encourage the audience to take part in overtly interactive phases of the presentation.

(HT1.CH5)

ex. 6.75

A comparison of the use of questions in research presentations and lectures reveals some interesting similarities and differences between them, as can be seen from Table 5.5. In terms of the overall use of questions, lectures are approximately fifty per cent more likely to use questions than research presentations, indicating a more overtly interactive style in the lectures. The difference is most noticeable when we consider the audience-directed questions, which are twice as common in the lectures as they are in the presentations. The lecturer is much more likely to enter into a dialogic phase with the audience through the use of evoke audience response questions (over eleven times more common in lectures than presentations).

(HT1.CH5)

b. Developing the Interpretation of the Results

It was also found in the Discussion sub-element that writers tend, when they transfer their discussions

from the thesis/thesis chapter into the article, to develop new interpretations for their findings. This is probably a reflection of the process of “digestion” that the writer may go through in producing the article. The following is an example drawn from an integrative scientific thesis where the researcher adds new explanations of a certain observed phenomena, contraction of volume upon polymerisation. The difference between the thesis chapter and the article text is apparent from the part added in the article.

ex. 6.76

All the investigated composite brands exhibited a contraction in volume upon polymerization. Such contraction ranged from 0.07% to 0.17% and was virtually lower than that of an unfilled polymethyl methacrylate resin 5.2 % (86). The contraction due to the polymerization of the composite materials may be attributed to the ring-opening polymerization mechanism ...
(ST3.CH6)

ex. 6.77

All the investigated composite brands exhibited a contraction upon polymerization, ranging from 0.07% to 0.17% and lower than that of an unfilled poly(methyl methacrylate) resin 5.2 % (1). The lower curing shrinkage reported for the various composite materials may be attributed to the presence of the inorganic filler as well as the ring-opening polymerization mechanism ...
(ST3.A2)

c. Changing the Level of the Certainty of Interpretation of Results

A further type of modification prevalent in the process of transferring the answer element from theses into articles is the change in the level of certainty of the interpretation of results. This finding which was discussed more extensively in a previous work (Mohamed, 1993) was observed again in the analysis of the present data. The example given below shows this particular phenomenon. It is clear in the first sentence of each extract that the writer has modified his stance towards the interpretation offered about the drop identified in the linear expansion coefficient. This modification reflects an awareness of the varying levels of certainty that writers work with when presenting interpretations of results both in the thesis and the article. This difference was explained earlier (Mohamed, 1993) by the fact that writers

tend to work on relatively higher levels of certainty in the thesis as part of expressing a more competent attitude in presenting views to establish their credentials to their examiners. It is also perhaps partly because of inexperience in judging the appropriate level of certainty to display. In the case of the article, however, the need to express opinions in a scientifically polite manner (Myers, 1989), especially because the readers of the article are considered equals that must receive comments as suggestions rather than imposed ideas, is one reason why the writer may be more cautious in stating his interpretation of the finding concerned. The example also shows the writer adding a further 'plausible explanation', which equally serves to soften the certainty with which the thesis advances its interpretation.

ex. 6.78

The drop in the linear expansion coefficient of the second phase was the result of the material entering a transitional phase of further curing when subjected to further heating. This resulted in shrinkage and a negative Linear expansion coefficient took place.
(ST3)

ex. 6.79

The drop in the linear expansion coefficient in the second region could be explained as the result of the material entering a transitional phase of further curing when subjected to further heating. This resulted in shrinkage which reduced the value of the resultant coefficient. Another plausible explanation of this finding is based upon the possible reorientation of the polymer chains into a relaxation mode to allow for the release of the internal stresses that may have been incorporated in the material during its polymerization.
(ST3.A2)

To sum up, analysis of the sub-elements of the Answer in various theses types, integrative and modular as well as scientific and non-scientific, showed that most of the modifications result from attempting to present the same information yet in a more condensed form by deleting all the irrelevant details of minor results found, deleting all irrelevant metadiscourse markers, and previous research findings that no longer seem essential in the new context of the article. Changes also entailed deleting parts that do not link to the new direction of the study reported in the article and the development of further interpretations of results and new ways of presenting facts in the article that reflect the writer's

new stance after reviewing his/her research and the audience to whom the research is presented.

Having discussed all the variations that were identified in the Answer element, especially those related to the sub-elements of Findings and Discussion due to both condensation and reorientation, now I move to report the modifications made to the Outcome sub-element.

6.10. Analysis of the Outcome Element: What is it? Where is it Found and How is it Identified?

According to the model of analysis used in the present study, the final element of the organisational structure of thesis/research articles is the Outcome element. As indicated in the model (chapter 4, section 4.5.1.2.), the outcome of any study by convention usually includes the **Implications** of this study (i.e. the report of the conclusions of the study related to the research context in which it has evolved), its **Limitations** (i.e. the drawbacks of carrying out the research and/or negative outcome of undertaking the methodology used), and **Recommendations** (i.e. the projection of possible applications of this study in the real world and/or suggestions for future research in the same field). While the implications sub-element is naturally linked to the Answer of the study as it is a further discussion of it, the Recommendations sub-element in principle follows naturally from Limitations - the application of the study and the suggestion for further research will often seek ways of overcoming the limitations of the present research.

The most common position of this element is, unsurprisingly, the final chapter/paragraphs in the theses and articles explored. This position is logical because it would be unusual to discuss the outcome of a study before fully describing the study itself (in the Setting and the Response elements) and its main results (in the Answer element). In addition, as with the analysis of the Setting, Response and Answer elements, analysis also showed that the outcome element appears on different levels depending on the type of the thesis. In the case of integrative theses, the outcome element appeared mainly in the final concluding chapter and thus the comparison between this element with the one appearing in the article derived from these theses is done only on one level. On the other hand, in modular theses writers re-

presented the same element in relation to a mini-study or a case study as well as on a second level at the end of the overall study explored in the thesis. Thus, the Outcome element was mainly identified at the end of the chapter that describes this mini-study/case study and hence this was the main part to be compared with the Outcome element as it appears in the article. In some cases, however, when it was noticed that the Outcome of the article was in many ways different from that in the chapter /p-text, it was necessary to compare it with the outcome that appears in the final chapter of the thesis where the author reports the final conclusions of his/her overall study.

However, analysis also showed that, unlike the case with all the previous elements, this element is probably the least fully and systematically represented throughout the various types of theses/articles explored. In general, it was found that a number of the texts explored do not have a distinct Outcome element; and if they do, it does not always include all the three sub-elements that may make it up: Implications, Limitations and Recommendations. Out of these three sub-elements, the Implications were the most commonly represented, followed by the Recommendations element and then Limitations which were the least frequent element found. Due to this, the analysis of the Outcome element was often limited as a result of the sub-element(s) present in the two comparable texts explored. In many cases, the only element that was compared between these two texts was the Implications sub-element as the other two were missing from either or both texts. Nevertheless, the absence of such sub-elements in either of the texts explored was sometimes interesting to investigate and comment on as will be shown later.

Identification of this element was based on locating the main signals that distinguish the sub-elements that make it up, if they are present. The main signals for the identification of this element in general were sub-titles like "Conclusions", "Conclusions and Implications" or "Summary and Implications". Although these headings also helped in identifying the sub-element Conclusions which is part of the Answer element, the same section sometimes included the element of the Outcome as it is an offspring of the conclusion of the study. The Implications sub-element was also signalled by phrases like "the

study has suggested that/shown that/revealed that ...”as well as the use of modality expressions ‘ may, probably , etc.” which are sometimes also used to signal the main results/interpretations of the results/conclusions of the study. This fact reflects the problem that was discussed earlier (chapter 4, section 4.6.) of reporting research conclusions and their implications which is that many research writers do not necessarily make divisions between them while reporting the Answer and the Outcome elements. This problem may be exacerbated by the fact that novice academic writers, not being aware of the difference between reporting Conclusions and Implications, tend to consider Implications as a mere repetition of the main Conclusions of the study and do not treat them as a further step of discussing the summative results of the study, Conclusions. On the other hand, the Limitations and Recommendations sub-elements are more clearly signalled than the Implications as they are different in kind and do not form part of the cline from findings to interpretation. In the case of Limitations, negative references used are like “This study did not focus on ..., was done without ...”. In the case of Recommendations, expressions such as “should be ..., must be done ..., it is therefore necessary to ... etc.” are common. These latter sub-elements are either rare and/or occupy a small space in the texts in which they appear compared with the Implications sub-element. This is expected because these two final sub-elements transcend the study to touch on other areas. One of these areas tackles the negative aspects of the research, a point which many writers either choose not to write about - perhaps so as not to invite attack - or mention very briefly - possibly in order not to give it too much importance, while still forestalling criticism by acknowledging the problems. The other area deals with the expected steps to be taken by other researchers/people in the future to make use of the results of the study concerned, a point which may occupy a space in the text only if the conclusions allow it and the writer has a clear vision of the outcome of the study reported.

6.11. The Results of the Analysis of the Outcome Element

Overall analysis of all the different types of theses showed, as mentioned earlier, that this element is the least systematic in occurrence as it was not represented in many of the articles that were derived from the theses/thesis chapters/p-texts (12 articles out of 33 articles) and, if it was, it did not include

all its various sub-elements. However, all the theses/articles having an Outcome element included an Implications sub-element, which is probably the most important sub-element because it is the one that links between the Answer proper/final Conclusion of the study and its main Question. Hence, it helps in rounding up the report of the study in both text-types. However, as noted above it was not very easy to separate it out in text from the Conclusions sub-element as many writers tended to repeat the conclusions at the end of the text as if reporting the implications of the study. On the other hand, the other sub-elements, Limitations and Recommendations, did not often appear in the articles even in cases where they appeared in the corresponding theses. This is possibly due to the need to condense the size of the text in the article as well as the status of these sub-elements that may be considered less essential in the overall text in comparison to the Implications sub-element. In the case of integrative theses in particular it was found that two of the four theses included in the data, although they had Outcome elements, did not transfer these to the articles derived from them. The other two theses did, but after imposing some variations on this element in the articles. In the case of modular theses, the writers of the chapters of most, if not all, these theses from which articles were derived do not give full outcome elements as they only give the final implications of the mini-studies/case studies reported and do not include any reference to the Limitations, or Recommendations of the particular study reported in the chapter. On the other hand, the final chapter of the modular thesis usually includes a full Outcome element including all the sub-elements of Implications, Limitations and Recommendations, especially in the humanities theses. It is possible that this organisation is due to the fact that usually single studies are studies from which minor conclusions could be drawn, but it would seem simplistic to draw wider recommendations from them or to emphasise their limitations in a way that may harm their representation. Also, it is perhaps the case that major conclusions, limitations and recommendations are more easily and better drawn from all the threads of the study, which in this case are represented by the various mini-studies reported together and in a certain sequence in the thesis, to give a final ending to the overall answer of the thesis which has been instigated by the main question posed at its beginning. On the whole, however, analysis showed that where the three sub-elements of the Outcome of the study were present in the article, they went through a number of changes during

the process of transformation that were mainly due to reorientation rather than condensation in both integrative and modular theses, and in science and humanities theses alike. The following sections discuss the types of changes identified in the data explored, firstly those resulting from condensation and then those resulting from reorientation.

6.11.1. Changes Resulting from Condensation

As mentioned above, it was found that the number of the theses/thesis chapters/p-texts whose Outcome elements were condensed was smaller than those that were reoriented. It was also found that the condensation in all these cases resulted from the simple deletion of the Outcome element in the articles. A very clear case of this was found in the integrative scientific thesis, ST3, where the writer includes in the thesis a very brief outcome element in the final chapters that gets completely deleted in the two articles derived from the thesis. The following are extracts drawn from the final chapter of ST3 and the final part of one of the articles derived from this thesis. The extract of the thesis shows that the writer presents the main conclusion of the study of the effect of ageing and temperature treatments on the mechanical properties of a number of polymers (paragraph 1 in Conclusions), the implication of this conclusion (Paragraph 2) and finally the main recommendation that can be drawn from this conclusion/implication (Recommendation no. 3). On the other hand, the article only reports the main conclusions of this same study without discussing further the implications of these conclusions, their limitations or any recommendations based on them.

ex. 6.80

Conclusions

The study of the effect of temperature and ageing on the mechanical performance of the composite materials was assessed and was found to increase with increasing temperature and with time.

It was concluded that the filler content, type, shape, size and size distribution all play a combined role in the mechanical performance of the materials under investigation. These results were found to match with the thermal findings in some criteria in which the higher the filler content of a material the lower was the linear expansion coefficient and the greater was the dimensional stability, modulus of elasticity and hardness. The method of polymerization may also have an influencing effect on the material's mechanical performance.

Recommendations

...

3. Since there was an evident improvement in the mechanical performance of all the investigated composite materials when left to polymerize for long periods of time, we should put into consideration every effort to allow for a proper silane treatment to avoid as much as possible any interface deponding caused by water uptake.

(ST3)

ex. 6.81

It may be deduced from the present study that the composite materials, when left to polymerize for long periods, may have been transformed into a more rigid, stiff epoxy chain polymer which continues to polymerize with time to give polymers of higher molecular weight; rigid longer chains, a higher degree of polymerization and a higher molecular weight will give the material better mechanical performance and greater resistance to softening.

However, the observed decrease of all the investigated mechanical properties for all the materials under study after a period of 1 wk and until 4 wk later was probably the result of water uptake by the resins upon immersion in distilled water which may diffuse between the polymeric chains and cause deterioration and deponding between them. Some authors attributed the deterioration in mechanical properties to deponding between the resin and filler as a result of water uptake.

This study led to a simple equation to evaluate the strength of a composite material when heated and aged over a limited range.

(ST3.A1)

In the case of one modular thesis (HT5), the analysis showed that the chapters from which articles were produced with few changes did not have any Outcome elements. The articles also did not include any Outcome elements, despite the fact that the final chapter of the thesis had an Outcome element: this was not drawn on to produce Outcome elements in the articles.

An opposite case to the one mentioned above was that of ST5, a modular scientific thesis, which did not include any Outcome element in the final thesis chapter, or even any of the chapters describing the various studies reported, but whose article included an Outcome element that the writer has added, giving by this a more complete organisational structure for the article. This case is discussed again below as part of discussing reoriented Outcome elements.

6.11.2. Changes Resulting from Reorientation

It was found that the reorientation of the research Question of the article/chapter which leads to the reorientation of its Answer also unsurprisingly leads to the reorientation of the Outcome of the same article/chapter. A good example of this is drawn from chapter 5 of HT1 and the article derived from it (HT5.A1). With this modular linguistic thesis the direction of the article derived from the chapter was changed, as result of reorienting the Question in the chapter and the Setting element, (see sections 5.2.3.3. and 6.4.2.1.) to emphasise the valuable Outcome of studying the functions of questions in presentations for pedagogic purposes. Consequently the report of the Implications of the study is also heavily reoriented towards the useful pedagogic implications of this study. This difference between the two texts is apparent below from the two extracts drawn from the final parts of the related chapter and article. While the first extract emphasises the effect of the difference identified between questions due to discipline, which is the most significant conclusion and implication of the findings of the reported study, the second extract emphasises the implications of this finding in relation to teaching listening and speaking to academic presenters and the recommendation that this study implies, that is all that teachers should not assume that science presenters will behave like humanities presenters. It is therefore clear that the Outcome of the article is much more developed than that of the research chapter and is reoriented towards teaching in particular.

ex. 6.82

The present study also provides evidence that quite significant differences in some aspects of interaction can be associated with differences in discipline as much as with differences in genre, for example, the use of modulation to obligate the audience (see Chapter 4), the use of questions, and, as will be seen in Chapter 6, the choice of personal pronouns to refer to the audience.
(HT1.CH5)

ex. 6.83

For those who, like me, are involved in the teaching of academic listening and speaking skills, studies such as the present one are a salutary reminder that our notions of what are appropriate interactive strategies for an academic speaker may well be influenced by our own experiences of academic talk in the humanities. The communicative value of a particular type of language strategy such as questioning must be seen in the context of the predominant mind-set of a particular academic

discipline. The impressionistic judgement of this researcher that academic talks by scientists and linguists are very different types of interactive events is borne out by analysis of key interactive features such as questions, modality, narrative and metaphor (Thompson, 1997). Scientific talk and linguistic talk do clearly work in different ways, and these differences can be linked to what might be termed cultural presuppositions about the roles of academic speakers and their audiences, the degree of the audience's involvement in knowledge claims, and the very status of knowledge in the discipline.

(HT1.A1)

It should be added here that although the above thesis had an Outcome element in the final chapter, as it is a modular thesis, this Outcome did not include exactly the same information presented in the Outcome of the article. However, in the final chapter there was a very long section on the implications of the study for teaching EAP and another on the Limitations and Recommendations for further studies, something which neither of the chapter or the article mentioned.

Another example of reorienting the Outcome element is given here but in relation to an integrative scientific thesis (ST1) to see the kind of differences that usually occur in this other type of thesis. It is clear from the underlined extracts given below that the researcher in the thesis chapter focuses on the positive effect of the antifungal medication fluconazole in preventing Candida endocarditis and the implications of this finding for future research into other antifungal drugs. In the article, on the other hand, although the writer refers to the same positive effect of fluconazol, yet more cautiously, she emphasises the value of the use of rabbit models to try out drugs like fluconazol. Thus, while in the thesis the researcher is more concerned with the implications of the actual results of the experiment on rabbits, in the article the implications of using the method, the rabbit model, for running the experiment is highlighted more.

ex. 6.84

In this thesis prophylaxis was successful in the absence of prolonged bactericidal activity. Amoxycillin was efficacious against antibiotic-resistant streptococci. Erythromycin prophylaxis was successful in 50% of the animals, although serum antibiotic concentrations were very low. Fluconazole is fungistatic but was effective in the prevention of Candida endocarditis. The penetration of antibiotics into the platelet fibrin vegetation may therefore be an important factor in the efficacy of antifungal agents. It has been proposed that the poor response of patients with

Candida endocarditis to amphotericin has been due to inadequate penetration of the drug into the infected vegetations (Rubinstein et al., 1974). The elucidation of the diffusion of drugs into infected clots merits further in vitro and in vivo investigations.

The identification of streptococcal adhesions and appropriate receptors on NBTV would greatly improve the understanding of IE, and may allow for the development of specifically targeted drugs. The importance of ECP production as a major virulence factor of *S. sanguis* is not proven. The acquisition of a glycocalyx in vivo does require further study. The chemical composition and the source of this integument needs clarification as this may have therapeutic implications.

The incidence of FE is increasing; however, it has not been as extensively researched as bacterial endocarditis. The advent of antifungals that are safe and easy to administer, when compared to amphotericin, may encourage further work in this area. Investigation into the therapeutic efficacies of itraconazole and fluconazole are required. These drugs are fungistatic, but successfully sterilise vegetations. The physico-chemical properties of these two azoles are very different. It would be of interest to assess their ability to penetrate into platelet-fibrin matrices.

Further study is required to refine the ELISAs used in this study. The objective should be to develop quick, reliable and specific assays for the diagnosis of FE and for monitoring the response of patients to therapy. These assays may also be of value in reviewing patients after recovery from FE, as many appear to relapse or become re-infected. This thesis has examined the efficacy of antimicrobial and antifungal agents in the rabbit endocarditis model. There is a need to improve our knowledge of virulence factors and the mechanisms of actions of chemotherapeutic and prophylactic agents in order that the efficacy of local and systemic measures may be combined.

(ST1. Concluding Remarks)

ex. 6.85

The rabbit model has previously been used to evaluate antibiotic agents in the treatment of mycotic endocarditis [15, 16, 19-21]. This model is reliable and reproducible and mimics, to a great extent, the human condition. It is recognized that the model has several limitations [2]; consequently, one must be careful not to directly extrapolate the results from this stringent experimental system to clinical practice. Nevertheless, it is the opinion of the authors that fluconazole may be useful in the prevention and treatment of endocarditis due to *Candida* species.

(ST1.A3)

Similar examples of adding Outcome elements that were related to discussing the implications of the use of the method of the research rather than the actual findings of applying this method were found in two articles produced from ST4. It was noticed that in this type of Outcome the researcher ends by discussing the implications of using this method, its limitations and the recommendations suggested by the researcher to improve its use. In these cases, as with the above example, the researcher seems to be orienting the whole article not to the main findings of the experiment, but to the usefulness of using

the method used.

To sum up, analysis of the Outcome element, which was complicated due to the inconsistent occurrence of this element in both text-types, showed that it underwent condensation to a lesser degree than reorientation. In the case of condensation, it was found that condensation was done mainly by deleting this element completely, or one of its sub-elements, in the article. In the case of reorientation, the researcher usually reoriented the Outcome as a result of reorienting the Setting/Question element(s) to fit the new context in the journal, either by linking the study to real-world applications, like teaching situations in applied linguistics, or to the implications of using the method reported in the article, as in the case of reporting scientific experiments.

The analysis of the texts, which is the first dimension investigated in the present study, has thus shown that the process of deriving articles from theses is not just a matter of producing summaries of the thesis concerned or copying parts from it. Academic writers do make a number of changes to their original text in the process of producing another target type of text from it. Since the investigated two types of texts more or less share the same overall organisational pattern, which could be processed in levels, top, middle and bottom, it was found, as expected, that the changes that writers make do not affect the organisation of the elements that make up the different levels of these two text types, but the content represented by the semantic elements of this pattern and their linguistic realisations. The analysis of the top elements, Question proper and Answer proper, as well as the middle level semantic elements, Setting, Response, Answer and Outcome, has shown that there are two major types of changes that writers may make while extracting an article from a thesis/thesis chapter/p-text. These two main two types of changes are Condensation and Reorientation. Whereas condensation refers to the possibility that writers may decide to reduce the scope of their semantic elements or even choose to drop parts from them completely, reorientation refers to the other option available to writers to try to redirect the ideas/arguments presented in the original text. Analysis of the top elements, Question and Answer, has also revealed that writers may follow one of four strategies in their attempt to

reproduce their research Question and subsequently its Answer in other forms that are different in terms of scope (focused or extended) and direction (reshaped or restated). On the other hand, in reproducing the middle level semantic elements in the article, academic writers may choose to condense and/or reorient their information. In fact, each of the semantic elements of the thesis and research articles could be modified by writers in specific ways that show the uniqueness of the type of changes that are likely to be made under the middle level elements and which are still the outcome of the writers' attempt to condense and/or reorient their original text. For a full list of these particular changes made to the middle level semantic elements, see table 8 in chapter 8. Although the text analysis could not decipher the factors or the motives behind the changes made on both the top and the middle levels elements, it was found that the type of the Question and Answer posed, single or multiple, and the overall organisation of the thesis, modular or integrative, seem to have an effect on the choices that writers are likely to make concerning the possible modifications they can make in the process of deriving the article from the thesis. Thus, multiple-question theses are likely to encourage their writers to break the major Question into further minor Questions from which several condensed/reshaped articles could be produced. This is the opposite of the case of single-question theses which are likely to produce only a single article with a single Question. On the other hand, it was found that integrative theses are likely to force writers to make a great deal of condensation and modification changes to the text in contrast to the articles derived from modular theses which are likely to be based on single chapters that need fewer changes in terms of condensation and reorientation.

Now that I have reported the results of the first dimension in the present study, text analysis, I move to consider the results of the second dimension, the writing process.

CHAPTER SEVEN: THE INVESTIGATION OF WRITERS' PERCEPTIONS

7.1. Introduction

This part of the thesis aims to present the investigation of the **writers dimension**, which is the second element focused on in my study. The main objective of this study is to confirm or disconfirm the study of **texts**, which has focused on the analysis of the product, by investigating the process involved in making the transformation from theses into articles and in particular on the kind of changes expert writers believe to be the changes usually made in a similar process. To achieve this aim, the study of the writers explores the perceptions of expert and novice writers, as well as humanities and scientific expert writers, about the process of transforming theses into articles in general with an aim to help infer from these informants what they consider to be the main changes entailed in this process. In addition, the actual experience of the writers of some of texts is reported to help identify what they believe to be the main types of modifications they made while transforming their texts and the factors that they think have influenced them in the process. These two small-scale studies are reported in the present chapter as part of supporting the findings of the analysis of the texts reported in chapters 5 and 6. They give both quantitative and qualitative information about the perceptions held by expert and novice writers concerning the process of publishing from degree works and the modifications made in the process. The chapter is divided into two main sections that report these two studies. The first section (section 7.2.) reports the quantitative study that explores the perceptions of a number of expert writers, from the humanities and science disciplines, about the process of transformation investigated in the present research including the areas of change that they believe to be affected by this process of transformation compared against the perceptions of another group of non-expert writers on the same issue. The second section (section 7.3.) reports a qualitative study that involves a detailed report of interviews held with two of the writers of the theses and articles investigated in this study in order to probe the process they followed in producing their articles from their theses and compare their actual experience with what the first study has shown. The outcome of the two studies is then compared with the outcome of the text analyses to show how far the perceptions of expert/novice writers and case studies correspond to what the text analyses have shown. It should be noted here that the two small-

scale studies also provided valuable information about the process entailed in transforming theses into articles in addition to the information about the particular types/areas of changes that writers are likely to make to their texts while transforming them. Since I felt that this information is not only valuable in itself, but that it can help understand more clearly the overall situation in which this transformation process takes place and the likely factors that may influence it, I decided to report these findings generally in the present chapter. However, the main focus remains the need to infer from the responses of the expert writers evidence which may confirm or disconfirm the outcome of the text analyses, and also to compare and contrast this with the outcome of investigating the perceptions of novice writers about this process in general and the areas of changes involved in it in particular. The ultimate aim of all this is to uncover information that may be useful in helping to raise the awareness of novice writers about many of the aspects that are considered important to carry out this task successfully.

7.2. The Questionnaire

The present section reports a small scale study that aimed to identify the perceptions of both expert and novice writers about the process of deriving articles from theses and the kind of changes that writers make in this process as well as some of the factors that influence this process. Section 3.3.1. above has outlined the types of informants that were approached for this study (i.e. 29 experts and 59 novice writers) and the steps that were followed to explore their perceptions using two near-identical versions of a 9-item questionnaire (see Appendix 6). In the following section, section 7.2.1., the rationale for the inclusion of these nine items is presented, followed by a detailed report of the informants (section 7.2.2.) as well as the outcome of this investigation (section 7.2.3.).

7.2.1. Rationale for the Use of the 9-item Questionnaire

The 9-item questionnaire (Appendix 6) aimed at exploring the writers' perceptions, whether they are expert or novice, of some of the specific aspects of the process of change from theses into articles as well as the process of revising research articles in preparation for their publication. In particular, it aimed to explore the main areas of change that they believe expert writers make as part of undergoing

these two types of processes and the factors that may influence them. This is to be able to match the expert informants' responses with the general types of change the text analyses have revealed and also consider the factors they point to in relation to the interpretations given for the findings of the text analyses.

Item 1 in the questionnaire is a basic question about the writers' status in terms of use of English as a first or a second language. As the case with text analyses, I was hoping to build up matching sets of numbers of responses from both natives and non-natives that could help me in comparing and contrasting the way in which these varying groups view the general process of transformation, the areas of changes involved in it, and the factors affecting it. However, as happened with the text selection, it was difficult to build up these matching sets for a number of reasons that will be discussed below (see section 7.2.3.)

Item 2 is another basic question that considers the subject speciality of the informants. As with item 1, I was hoping to have sets of responses from informants from varied subject specialities that may help to show whether the informants' educational background and area of academic interest may influence their view of the process of transforming theses and articles. I was somewhat more successful in collecting responses from informants depending on their subject speciality, but because of the relatively small numbers involved I had to group them less delicately, simply according to the general discipline to which they belong - humanities or science- rather than their specific subject specialities. However, this still allowed me to match their responses to the results of my text analyses which were also grouped according to these two general fields of study.

Item 3 tackles the concept of "when" researchers usually produce their articles. Three options are provided so writers may state whether they think articles are produced after, during or before writing the thesis. The main aim of this question is to identify the novice writers' level of awareness of the various possibilities available for producing research articles from thesis chapters. It was expected that

novice writers would be less likely than expert writers to be aware of the various possible timings for producing articles from theses.

Items 4 and 5 consider further practical details about the amount of time writers need to produce articles and the number of drafts they need to produce before writing a publishable article. Investigating what novice writers think about these points is meant to help in identifying any misconceptions that they may hold about these important aspects of the process of deriving articles from theses and hence recommending giving guidance about them depending on what expert writers say.

Although items 3, 4, and 5 do not directly relate to issues that could be compared or contrasted with the outcome of the texts analyses, which is the main aim of the present small scale survey, I felt that they are important as a lead in for the informants to think about this process of transformation and that they may yield other valuable information that can enhance knowledge about it in general, particularly from the point of view of practical application in the training of novice writers.

The following item, number 6, is probably the most important to consider as it asks about the different areas where modifications are likely to occur while deriving an article from a thesis. In the case of expert writers, contemplating these areas is necessary to check the text analyses and also to gather information to help prepare novice writers for this step in their future academic career, while in the case of novice writers it helps to check any misconceptions that they may hold about this particular process. It should be noted that the options given for the informants do not name exactly the kind of changes identified from the analysis of texts as reported in chapters 5 and 6, but just refer to the areas where possible changes may be made. This is because it was felt that asking about the specific changes made might unduly influence the informants' responses. Instead, therefore, the informants were provided with the general areas where changes may be made. The informants, however, were encouraged to provide other areas of change that they may contemplate or think writers make.

Eventually, the responses of novice and expert writers were matched as much as possible to the outcome of the varied types of changes identified in both the top and middle level analyses to confirm those changes that were identified by experts and to consider the ones that were not identified by novices.

In many cases when expert writers were questioned about the changes they make while producing their articles they said that these were not decided by them but were suggested by the journal editors where the articles appeared. Therefore, items 7 and 8 enquire about the writers' perceptions of the revision process as influenced by editors of journals to allow for the article's publication. They investigate the idea of rewriting drafts of the article until it is finally accepted for publication and the expected areas of revision and editing. The aim of exploring these issues is to identify what experts have experienced as the likely changes made based on editors' comments and match these to the perceptions of novice writers. The options available for answering question number 8 are similar to those provided under item 6 to allow for the comparison and contrast of the results of both items and in turn their comparison and contrast with the outcome of the text analyses.

The final question (item 9) aims to explore the writers' perceptions of the motives behind all the various changes that are likely to be made, either by writers or editors. It is hoped that knowledge of these motives as expressed by experts will provide a solid ground for describing and understanding the various factors that affect the changes identified in the text analysis and to confirm (or cast doubt on) some of the interpretations of the findings presented in the earlier chapter. In turn it will be interesting to compare these factors with what novice writers think to be the factors affecting any modifications made while producing the article and to highlight possible different mistaken perceptions held by them concerning these factors.

7.2.2. Informants

As this study mainly aimed to investigate the views of expert writers and novices to help firstly in

confirming and disconfirming the results of the texts analyses by matching these to experts responses, and secondly in identifying any misconceptions that novices may hold that conflict with these results, I needed to select informants that are representatives of these two varied groups of informants. Following the criterion used for selecting experts and novices (see section 3.3.1.), I approached about 50 experts and 90 novices, but only 29 experts and 59 novices helped in answering my questionnaire. Ideally it would have been better to have equal numbers of experts and novices. However, this was difficult as expert writers, mostly lecturers and professors in their fields, were hard to reach and too busy to respond to questionnaires. I only managed to build up a set of experts that represent almost half of the number of novices. In order to compare and contrast the responses of experts and novices, I grouped informants' responses to whether they are comments by experts or novices (see table 4 below) and calculated them in percentages for each group in order to be able to easily show how far their responses matched or not, and at the same time to be able to compare the responses of the experts to the results of the text analyses.

Concerning item 1, as mentioned earlier, it was ideally hoped to have equal numbers of native and non-native informants to be able to investigate whether the mother tongue has any influence on the process of transformation explored and the changes involved in it. However, it was extremely difficult to get hold of many native writers who were willing to respond to my questionnaire, whether they are experts or novices, especially because my study visits to England, where most natives reside, were too short to allow me to seek more informants as I would have hoped. In addition, the fact that in my home town it was very rare to find native academic writers of the sort I am seeking meant that it was impossible for me to build the matching sets of native and non-native responses as I hoped. Thus, as the case with the analysis of texts, I was not able to follow up the effect of this particular variable which may have an influence on the results of my study. I had responses from only 5 native informants against 73 non-natives. However, I was satisfied that I have a reasonable number of native experts' comments (5 native experts) and comments from reliable non-native experts (24 experts) that could help in confirming and disconfirming the results of my text analyses. Since all the expert writers

have had papers published in international journals, they all have experience of producing finished articles according to very similar constraints and requirements, even if the process of arriving at those products may vary. The fact that all the novice writers (59) responding to my questionnaire were non-natives was also less of a drawback than it might have been as my main concern in this study was to help this particular group whose views about the process of transformation and what is entailed in it may be one of the factors behind the difficulties they may face in producing articles from theses in the future.

Concerning the informants' speciality (item 2), I hoped to be able to build up sets of matching numbers of responses from informants belonging to the various disciplines approached so that it could be possible to trace the influence of this particular variable. Unfortunately, it was again extremely difficult to build up matching sets in the time available for this research undertaking. In some cases it was possible to get many responses from particular groups (e.g. medical students, nursing students) because I was involved in teaching them and hence had a regular face-to-face contact that helped me to gather information more easily and efficiently. In other types of groups (e.g. economics students and agricultural students) since I was not normally involved in teaching these groups, it was always difficult to get hold of many candidates from these disciplines. See table 1 for the number of expert and novice candidates according to their specific subject speciality.

Table 1. The Number of the Informants (Experts and Novices) Responding to the 9-Item Questionnaire Categorised According to their Specific Subject Specialities

Student Status	Nur	A	Med	PE	Ph	Sc	Den	Ec	Tt	Agri	Total
Expert	7	5	---	4	---	9	1	1	1	1	29
Novice	30	9	7	9	2	1	1	---	---	---	59

Nur = Nursing
 PE = Physical Education
 Den = Dentistry
 Agri = Agriculture

A = Applied Linguistics
 Ph = Pharmacy
 Ec = Economy

Med = medicine
 Sc = Science
 Tt = Translation Theory

However, knowing that this particular variable is important and that it was necessary to match the responses of these informants with the results of the text analyses, I grouped my informants, as I have already grouped my texts for the texts analyses, into the more general fields of humanities and science. See table 2 for the total number of experts and novices according to whether they belong to humanities or science.

Table 2. The Number of the Informants (Experts and Novices) Responding to the 9-Item Questionnaire Categorised According to their General Subject Specialities (Humanities and Science)

Student Status	Experts	Novices
Humanities	7	8
Science	22	51
Total	29	59

For my study, it seemed most relevant to discuss the responses of the informants that belong to the soft sciences and the hard sciences, rather than their particular fields, as this corresponds to the way in which the text analysis has already been carried out (see chapters 5 and 6). Even with this broader grouping, it is evident from Table 2 that the proportion of novice informants from the soft sciences is much lower than it would ideally have been. This inevitably restricts the scope of some of the claims that I can make on the basis of the results. However, since my main aim in that part of the questionnaire study was to identify possible areas of mismatch with the experts' responses, rather than to compare the novices' responses with the text analyses, I felt that - as with the question of native versus non-native writers - this disparity did not invalidate the study.

7.2.3. The Outcome of the Survey

Below I give the overall results of the survey made to investigate the responses of experts and novices.

Since it would clearly not be useful to rely mainly on the comments given by novices, whether they belong to the humanities or the science fields, in order to confirm or disconfirm the outcome of the text analyses (chapters 5 and 6), I begin by considering the comments of expert writers for that purpose and then compare and contrast the responses of humanities and science experts to discuss the effect of the factor of subject speciality on these expert's perceptions concerning the process of transforming theses into articles, and specifically the kind of changes that are usually made in the process and the factors that may affect them (see table 3 below for a detailed report of the responses of experts) Finally, I discuss the overall responses of expert and novice writers in a comparative manner to show any differences between them concerning all the questions posed in the present survey. This is meant to check whether novices hold any misconceptions about the process of transformation in general and secondly, and most importantly, whether they have different ideas about the types of changes they need to make while transforming theses from articles, or the reasons that may influence them while making them. (For the full details of the results of this survey see the numbers and percentages given in table 4 below). This report is linked, wherever appropriate, to what the analyses of actual texts have suggested (see chapters 5 and 6). The aim of this is to see how each type of investigation confirms/disconfirms the other and at the same time how both investigations add to our overall understanding of what actually happens during this process of change.

Item 1 in the questionnaire (see Appendix 6) aimed at identifying whether informants are natives or non-natives. As mentioned earlier, it was difficult to have matching sets of natives and non-natives as expert and non-expert writers and therefore this particular line of enquiry was not followed up as it was hoped.

Concerning item 2, it was also difficult to have matching sets of responses according to the various specific subject specialities of the informants. However, it was possible to group the responses of experts and novices according to their overall fields of studies: humanities or science. As I have already pointed out above, it was considered more beneficial to consider the perceptions of expert

writers, those that belong to the humanities and the science disciplines, to be able to compare/contrast their comments with the outcome of the text analyses in general and to discuss more specifically the views of these writers in the light of their subject speciality (see table 3 overleaf for the overall responses of expert writers to the 9-item questionnaire starting from item no. 3, and the responses of the same informants categorised according to their subject speciality). I start my report of the responses of experts by reporting their overall views in relation to some of the most important issues raised by the text analyses before I move to discuss their specific responses as humanities and science experts.

Items 3, 4, 5, and 7 can be grouped together, since they discuss some of the general technicalities of producing articles from theses. Concerning item 3, most of the expert writers (62%) stated that articles are often produced after the writing of the thesis. This supports one of the criteria set in the present study concerning the selection of texts as it was expected that it is common to produce articles after the thesis has been published. Under item 4, many experts (41%) reported that it takes weeks to produce the first draft of an article; and under item 5 many more (48%) believed that one needs to write at least 3 drafts before the final version of the article is produced. This corresponds to what the great majority of them said under item 7 about the fact that editors often ask writers to rewrite their articles twice (34%) or 3 times (38%) before they are finally accepted and published. These points may not directly relate to any of the results of the text analyses, but nonetheless they provide valuable evidence about the likely extent of the changes that need to be made.

Under item 6, which is concerned with the variations that writers are expected to make while transforming theses/chapters/p-texts into articles, most expert writers (66%) stated that modifying the purpose of the study is one of the changes made in this process. This corresponds with the main type of change discussed in the text analysis which shows that the Question element, which could be equated with what the informants call 'purpose statements', is often modified. In fact, text analysis as

Table 3. The Responses of Expert Writers to the 9-Item Questionnaire, Categorised According to their Fields (Humanities = H , and Science = S)

Question No. & Answer Code	H. Experts No. (7)	H. Experts %	S. Experts No. (22)	S. Experts %	Total No. (29)	Total %
3a Before	1	14	8	36	9	31
3b During	2	29	5	23	7	24
3c After	5	71	13	59	18	62
3d Other	1	14	3	14	4	14
4a Days	1	14	3	14	4	14
4b Weeks	6	86	6	27	12	41
4c Months	1	14	10	45	11	38
4d Other	---	---	4	18	4	14
5a One	---	---	---	---	---	---
5b Two	1	14	3	14	4	14
5c Three	4	57	10	45	14	48
5d More	2	29	7	32	9	31
5e Other	---	---	2	9	2	7
6a Purpose	5	71	14	64	19	66
6b Literature	5	71	6	27	11	38
6c Methodology	4	57	9	41	13	45
6d Findings	4	57	5	23	9	31
6e Conclusions	4	57	9	41	13	45
6f Implications	5	71	7	32	12	41
6g Positioning	4	57	11	50	15	52
6h Visuals	3	43	6	27	9	31
6i Organisation	4	57	9	41	13	45
6j Linking	5	71	9	41	14	48
6k Style	5	71	10	45	15	52
6l Language	2	29	6	27	8	28
6m Other	2	29	4	18	6	21
7a None	---	---	1	5	1	3
7b Once	1	14	1	5	2	7
7c Twice	3	43	7	32	10	34
7d Three	3	43	8	36	11	38
7 Other	1	14	5	23	6	21
	---	---	---	---	---	---

Table 3. Continued ...

Question No. & Answer Code	H. Experts No. (7)	H. Experts %	S. Experts No. (22)	S. Experts %	Total No. (29)	Total %
8a Purpose	2	29	11	50	13	45
8b Literature	2	29	4	18	6	21
8c Methodology	3	43	8	36	11	38
8d Findings	2	29	5	23	7	24
8e Conclusions	5	71	6	27	11	38
8f Implications	4	57	8	36	12	41
8g Positioning	3	43	10	45	13	45
8h Visuals	1	14	7	32	8	28
8i Organisation	2	29	9	41	11	38
8j Linking	2	29	7	32	9	31
8k Style	3	43	10	45	13	45
8l Language	1	14	8	36	9	31
8m Other	1	14	3	14	4	14
9a Readership	6	86	4	18	10	34
9b Conventions	6	86	14	64	20	69
9c Scope of article	5	71	9	41	14	48
9d Guidelines	4	57	9	41	13	45
9e Shape of article	4	57	10	45	14	48
9f Journal Policy	5	71	13	59	18	62
9g No. of words	4	57	9	41	13	45
9h Other	1	14	2	9	3	10

well as the comments of experts on this particular item in the questionnaire further support the fact that the Question element could be the most drastic type of change to be made to the texts, especially because it has an effect on all the elements directly or indirectly related to it, that is other top and middle levels elements. On the other hand, a fairly high percentage of the informants (45%) confirmed that Conclusions also get modified in the process, which also supports the outcome of the text analysis. If we consider Conclusions as representatives of the Answer Proper element - according to my model the Answer Proper is defined as the final conclusion of the study - then it becomes clear that this element, which is the counterpart of the Question Proper element is also expected to be modified by many experts. Further consideration of the sub-items of question 6 also confirm to a greater or lesser extent the results of the text analyses of the middle level elements. For example, the responses of experts to the sub-item 6c concerning the changes made to the Methodology section show that a fairly high percentage (45%) agree that this section gets modified in the process. This response supports the text analysis which has shown that writers may decide to limit the amount of data, cut out parts where they display their knowledge about the procedures followed or reorient the way their report about their data and procedures to make them look more related to the local situation of the study. Although it may be unexpected that writers may make changes to their report of the Methodology, which in my model I call the Response element, both the text analysis and the comments of expert writers have shown that this element is also modified while transforming texts. The same could be said about the other section, or sub-element, of Implications. Again, a fairly high percentage of respondents (41%) stated that this section could be changed in the process of transformation. However, a smaller number of experts (31%) believe that the Literature review, which corresponds to what I call the Research Context sub-element in my model, is less likely to get changed or that it may be changed in a minimal way. Text analysis of my data also confirms this fact, as it has shown that, unlike the case with the other types of elements and sub-elements, this particular sub-element may undergo only two particular types of change; some references may be deleted or added. The final most important issue that the comments of experts on this item reveal is that Language is not one of the important aspects of the texts that gets modified. Although 24 of the 29 informants are non-

native writers, who might be expected to think in terms of possible language errors, only 28% of the informants thought that some language changes are to be made to the texts. Text analysis did not show that the process of transformation investigated is simply a change in wording, but rather it showed that most changes are due to the need to either condense the facts or reorient them to cater for different purposes.

The responses of expert writers to item 8 more or less replicate many of their responses of item 7 which may be a further confirmation that they believe that editors would agree with them on similar items. However, slightly more of them perceived Language as likely to be revised by editors (31%) than they themselves would (28%). This is understandable as editors are not only concerned with the information presented in texts, but also the way this content is presented linguistically in acceptable manner and hence might be expected to be particularly concerned about the language.

Considering the final question about the reasons that might prompt writers to make the above suggested changes, results show that expert writers recognise that many or all of the factors given as options (e.g. adhering to conventions, the need to change the scope and shape of the work, the effect of readership) are possible motives for making the suggested modifications. In particular, the top reason given for making such variations is the need to conform to the conventions of writing an article (69%). These conventions, which are still the point for study for much research in the academic field of writing, and which many guidebooks for researchers attempt to establish (e.g. Turabian and Spink, 1982; Dees, 1993), may not be completely clear to many writers, but they are usually identified through the simpler means of comparing and contrasting the original text, the thesis, with the articles already produced and accepted internationally in relevant journals at the time of publishing the article concerned. This again is supported by the text analyses which have shown that experienced writers are typically at pains to represent the information reported in the thesis/chapter/p-text in an acceptable form, content, and style that respect the conventions of the research article on the whole (e.g. by keeping to the general elements contained in an article and how they are organised), and the article as

presented in their fields of study in particular (e.g. by adhering to the system used to quote references to previous studies in a particular journal and/or to report the results.). An example of this is the attempt of all researchers of the humanities and scientific theses investigated to reorient the report of the Response element in a way that makes it look more focused in terms of organisation and localised in terms of style of presentation than it is the case in the thesis. To do so, the writers tended to change the organisation and language of presenting the report of the materials and the procedures used.

Another, related, factor that many of the expert writers consider a motive for the changes that are made is the need to conform to the policy of the journal in which the article is published (62%). All journals have their own particular policies in introducing specific topics of interest, presenting them in a certain style and form, using a specified amount of space and a certain layout. To have an idea about this particular policy, writers wanting to publish in any journal must be well aware of the traditions of the particular journal they are dealing with and which have developed throughout the years as a result of a focus on subject areas and ways of presenting them by the successive editors of the journal. This means that expert writers always try to infer the general policy of the journals in their field by examining their general trends in terms of the subject matter of articles they accept/reject, the ways they handle the studies published in them and how these studies are finally presented in the form of an accepted article. As a result of this, writers may need to reorient the report of their research to suit the policy of a particular journal. For example, analysis of ST2 suggested that the writer, in order to be able to publish an article (ST2.A1) in a journal concerned with the studies made on the *Thermal Analysis* of dental materials, selected a specific part of his extensive PhD study that focuses on this aspect. In addition, he reoriented the purpose of this mini-study, the presentation of the materials used and the procedures followed, as well as the findings and their discussion to suit the general trends acceptable to this particular journal.

A further factor that expert writers felt is behind the changes they make while deriving an article from a thesis is the need to change the scope and the shape of the new text to make it suitable for

publication (48% for each item). These are clearly closely related to the two major factors that emerged from the text analyses, condensation and reorientation. The relatively high number of expert writers who chose these options therefore lends support to the claims made in chapters 5 and 6 concerning the reasons behind the changes that were identified.

The following two factors in terms of rank order that expert writers thought have an effect on the changes they make again indicate the importance of the journal chosen as the hoped-for means of achieving publication. They are the need to adhere to the contributors' guidelines of specific journals (45%) and the need to limit the size of the article as suggested by the journal (45%). These two factors are mainly related to the low-level elements of presentation that help authors to finally get their articles published in the journals approached. As can be seen from the guidelines usually presented in journals for authors wanting to publish, the authors are directed to the technicalities of presenting their manuscripts, the general format of the article on the page, presenting graphics, etc. The factor of the size is also a low level technicality that expert writers believe is essential to consider. Both of these factors were invoked in the text analyses. Although the issue of size was more generally related to the expected conventions limiting the length of articles, rather than specifically to the requirements of particular journals, it reflected one of the two general types of changes made to the middle level elements, condensation.

My previous study (Mohamed, 1993) attempted to show that changes are mainly made to suit the new readership, but concluded that this factor seemed less important than expected. This conclusion is to some extent corroborated by the responses to the questionnaire, which show that this is not considered by many experts to be a motive for the changes made. More expert writers tend to consider other factors that relate to the influence of the type of text being produced and the effect of the editing board as influential as compared to the effect of the readership of the text. It could be argued that one reason

for this is that, during the writing of the article, writers will be more involved in transforming the science they are presenting in a format that is acceptable to the journal editors who are the first readers of the article. In this case, the writers are not really concerned with the general readership, but rather a representative of these, in this case the editors of the journal, who could more or less be equated with the examiners who are the main readers of the theses. Thus, in many ways the readership might be perceived as essentially the same. However, further research into writers' perceptions on this specific issue would be necessary to check how far this hypothesis is confirmed (see also the discussion below of the discrepancy between humanities and science experts on this point).

If we consider now the responses of experts to the same items but as influenced by their subject speciality, it must be admitted that the overall figures of humanities experts and science experts are too small (7 humanities experts and 22 science experts) to be able to draw very general conclusions from them. However, the investigation of these representative groups may have valuable information about the effect of this particular variable, subject speciality, on this process of transformation that may be beneficial for teachers dealing with varying groups of novices. The responses of these groups (see table 3 above) show that on the whole many of the views of humanities and science experts are similar concerning the process of transformation investigated, the changes made to accomplish it and the factors that influence these changes. However, there are some significant differences between the two groups in relation to some of the aspects of this process. In relation to items 3, 5 and 7 most of the experts agree that articles are often produced after writing the thesis, that 3 or 4 drafts will be needed to produce a first decent copy of the article and that it needs 2 to 3 revisions of the article until it gets accepted by editors for final publication. However, they differed in the amount of time that they saw as needed to produce the first draft of the article. While most humanities experts (89%) believed it took them weeks to do it, the highest number of science experts (45%) selected months as the length of time needed. This is a rather unexpected finding - my intuitive impression was that scientists tend to produce more, shorter papers; but it is beyond the scope of the present study to investigate this.

Concerning the variations which writers are likely to make as a result of the process of transforming theses into articles (item 6), a fairly similar percentage of the humanities and science experts (71% and 64% respectively) agree that the purpose will be changed in this process, while a similarly small percentage of humanities and science experts (27% and 29% respectively) agree that language is an aspect that is usually modified in the process. However, the two groups disagreed on a number of the areas that are likely to get changed. For example, whereas many humanities experts (71%) believed that the Literature Review is one of the areas to get changed, only a small number of science experts believed that it is necessary (27%). The same was true of their reactions to changes in the sub-elements of Implications and Findings (71% vs. 32%, and 57% vs. 32% respectively). On the whole, these variations suggest that science experts may view the possibility of changing the report of previous researchers, the findings of their studies and their implications differently from humanities experts. Text analysis, however, has shown that science writers do make many changes to the Literature Review, Findings and Implications sections. This suggests that this issue needs to be further investigated to understand why science experts gave such responses.

Concerning the factors that may affect these two varied groups of writers in making the transformation from theses into articles (item 9), it was found that on the whole the humanities and science experts agree on the factors. However, there is one particularly significant difference between the two groups: many humanities experts (85%) consider the readership to be an influential factor in this process, while a very small minority of science experts (18%) believed that this is true. It is not very clear why science experts held this different view from humanities experts, but generally this discrepancy suggests that the issue of the influence of the readership may not be as easy to play down as I have suggested above.

In spite of these examples of variations between the responses of humanity and science experts on the above items, on the whole it was found that they more or less agree on most of the aspects that will be changed while transforming theses into articles and the factors affecting them. This corroborates the

broad similarities found across the texts analysed in chapters 5 and 6, and suggests that - with some intriguing exceptions - the similarities in the experience of deriving articles from theses outweigh the differences due to content area.

Moving now to consider the responses of the same group of informants, expert writers, to the same items of the questionnaire, but in relation to the responses of novices, it was found that the views of expert writers on these issues are rather different from the views of novice writers, not only concerning the bigger issue of the variations that need to be made while transforming theses into articles and the factors influencing this process, but even concerning the technicality of producing articles from theses (see table 4 overleaf for the responses of expert and novice writers to the questionnaire starting from item 3).

If we consider now the responses given to the third question, which is concerned with knowing the informants' expectations of the time needed to produce an article from a thesis/chapter/p-text, it becomes clear that the responses show an agreement between both groups of writers on the fact that writers tend to produce their articles after writing up their theses (61% novices, 62% experts). However, looking at the other possible options, it is worth noting that while a fairly large number of expert writers also believe that articles could be produced before and during writing the thesis (31% and 24% respectively), fewer non-experts are aware of these two options (17% and 15% respectively). This relatively limited view of novice writers presumably reflects their lack of experience of what actually happens during the process of writing a thesis and related articles. This misconception about the timing for producing articles from theses suggests that many of these future researchers will be reluctant to produce articles before or during writing up their thesis unless they are otherwise advised by their supervisors and more experienced fellow researchers. Another explanation of this view is perhaps that they see the writing of a thesis as a separate activity from writing an article.

The responses to questions 4 showed a broad agreement between the two groups as both groups of

Table 4. The Responses of Expert and Novice Writers to a 9-item Questionnaire Concerning their Perceptions about the Process of Publishing Articles from Theses

Question No. & Answer code	Expert Writers		Novice Writers	
	No.	% of total	No.	% of total
1a Native	5	17	---	---
1b Non-native	24	83	59	100
2 Specialism	varied		varied	
3a Before	9	31	10	17
3b During	7	24	9	15
3c After	18	62	36	61
3d Other	4	14	6	10
4a Days	4	14	6	10
4b Weeks	12	41	21	36
4c Months	11	38	26	44
4d Other	4	14	6	10
5a One	---	---	1	2
5b Two	4	14	8	14
5c Three	14	48	23	39
5d More than three	9	31	24	41
5e Other	2	7	2	3
6a Purpose	19	66	15	25
6b Literature	11	38	15	25
6c Methods	13	45	17	29
6d Findings	9	31	18	31
6e Conclusions	13	45	16	27
6f Implications	12	41	11	19
6g Positioning	15	52	19	32
6h Visuals	9	31	22	37
6i Organisation	13	45	20	34
6j Linking	14	48	19	32
6k Style	15	52	19	32
6l Language	8	28	10	17
6m Other	6	21	9	15
7a None	1	3	---	---
7b Once	2	7	4	7
7c Twice	10	34	12	20
7d Three	11	38	21	36
7e More than three	6	21	19	32
7f Other	---	---	5	8

Table 1. Continued...

Question No. & Answer		Expert Writers		Novice Writers	
		No.	% of total	No.	% of total
8a	Purpose	13	45	20	34
8b	Literature	6	21	17	29
8c	Methods	11	38	16	27
8d	Findings	7	24	16	27
8e	Conclusions	11	38	19	32
8f	Implications	12	41	15	25
8g	Positioning	13	45	22	37
8h	Visuals	8	28	22	37
8i	Organisation	11	38	22	37
8j	Linking	9	31	15	25
8k	Style	13	45	19	32
8l	Language	9	31	31	53
8m	Other	4	14	9	15
9a	Readership	10	34	21	36
9b	Conventions	20	69	26	44
9c	Scope of article	14	48	20	34
9d	Journal guidelines	13	45	13	22
9e	Shape of Article	1	4	22	37
9f	Policy of Journal	18	62	23	39
9g	Number of Words	13	45	19	32
9h	Other	3	10	6	10

- To understand the abbreviated answers given above, refer to appendix four for the full form of the questionnaire.

writers singled out weeks and months as the likely periods of time needed to produce an article from a thesis.

For question number 5, on the other hand, there is a slightly greater discrepancy. While the most frequent response amongst expert writers (48%) was that it needs three drafts before producing the final publishable version of a derived article, the most frequent response amongst novice writers (41%) is that it will need more than three drafts. Although the differences in the overall pattern of responses do not reach statistical significance, they do suggest that to some extent novices have an exaggerated concern about the difficulty of the process. It is possible, therefore, that they might be discouraged from venturing into the process of producing articles from theses if not informed of the real activities involved in taking this important research step.

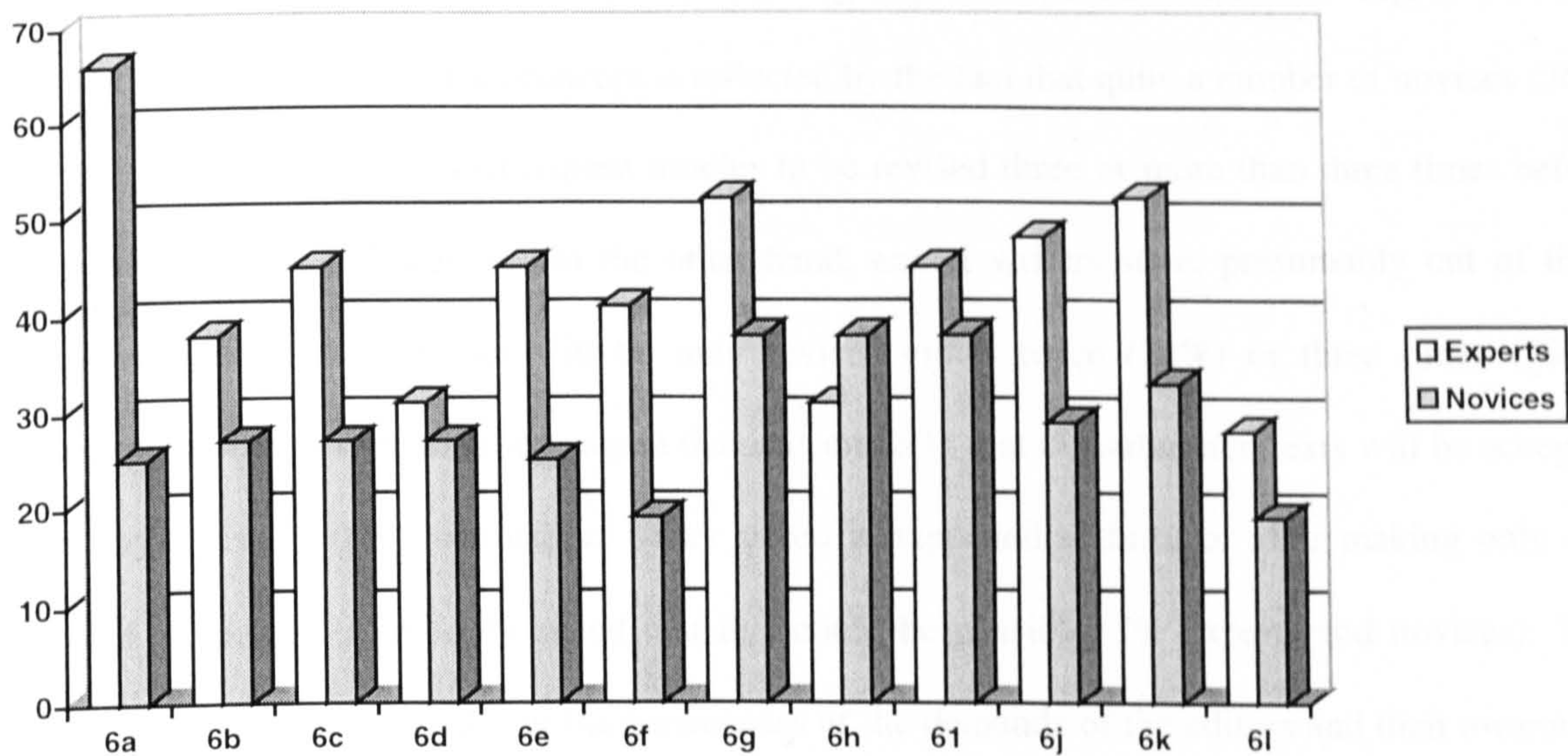
If we consider now the responses to question number 6 about the type of changes writers make, this important aspect raises a great number of points of difference between the perceptions of novice writers and the experience-based perceptions of expert writers. These differences can be better understood by looking at figure 11 and the lists of prioritised aspects to be changed given in table 5.

The figure shows that experts are much more aware of the fact that many of the aspects provided could be changed and hence they tick a greater number of options than novices (the highest percentage marked by experts is 66% while that of novices is 38%). This suggests that, although novice writers tend to exaggerate the demands of deriving articles from theses, they have a relatively simplified view of the changes that are likely to be needed. If we consider the table which represents the same options, but set in a ranked order according to the percentages assigned to them by writers, it can be seen that experts' priorities differ from those of novice writers. For example, whereas most expert writers (66%) state that changing the purpose of a thesis is likely to be a change to be made, a minority of novice writers choose this option (25%). Instead, the change selected by the greatest number of novice writers (37%) is making changes to your visuals. Believing that changing a thesis into an article is mainly a

Expert Writers			Novice Writers		
Item No.	Answer	%	Item No.	Answer	%
6a.	Purpose	66	6h.	Visuals	37
6g.	Positioning	52	6i.	Organisation	34
6k.	Style	52	6g.	Positioning	32
6j.	Linking	48	6j.	Linking	32
6e.	Conclusions	45	6k.	Style	32
6i.	Organisation	45	6d.	Findings	31
6c.	Methodology	45	6c.	Methodology	29
6f.	Implications	41	6e.	Conclusions	27
6b.	Literature	38	6b.	Literature	25
6d.	Findings	31	6a.	Purpose	25
6h.	Visuals	31	6f.	Implications	19
6l.	Language	28	6l.	Language	17

- To understand the abbreviated answers given above, refer to appendix 6 for the full form of the questionnaire.

Table 5. Expert and Novice Writers' Responses to the Items of Question 6 Ranked According to Percentages



6a = Purpose 6b = Literature 6c = Methodology 6d = Findings
6e = Conclusions 6f = Implications 6g = Positioning 6h = Visuals
6i = Organisation 6j = Linking 6k = Style 6l = Language

Figure 11. Expert and Novice Writers' Responses to the Items of Question 6

matter of changing the visual representations in the thesis is a naive misconception that needs to be attended to in training novices for this task. However, it is less the presence of any particular difference that is significant than the difference in the overall patterns of responses from both groups.

These indicate that the novices have a fairly inaccurate and perhaps confused idea of what happens. This is reinforced by the relatively even spread of responses from the novice writers: whereas a clear picture of priorities emerges from the experts' responses, the lack of differentiation in the novices' responses suggests that they may well be selecting points at random, from a position of ignorance. The greater knowledge that should come through training is likely to bring greater confidence in tackling the task.

The results of question 7 indicate that the concern of novice writers, compared to that of expert writers, about editors' demands on researchers wishing to publish articles from their degree works is again somewhat exaggerated. This concern is reflected by the fact that quite a number of novices (36% and 32%) believe that editors will request articles to be revised three or more than three times before they are accepted for publication. On the other hand, expert writers state, presumably out of their personal experience, that articles will be only revised either twice (34%) or three times (38%). However, most writers in both groups agree that it is unlikely that the submitted texts will be accepted without any revisions (only one expert writer stated it happened to him) or after making only one revision of the article (a minority stated that this could be possible, 7% experts and novices). This shows an awareness on both sides of the seriousness of the demands of the editors and their awareness of the editors' role in requesting high quality products for publication. These responses again suggest that novice writers may be reluctant to submit articles for publication, this time not due to the difficulty of the task of producing articles from theses, as suggested by the response to question 5, but also due to their perception of the demands of revising publications following the guidelines and comments of the editors. Perhaps they are justified in their concern, but again they need to be

encouraged to get their papers published and to realise that many of their worries are not strongly based.

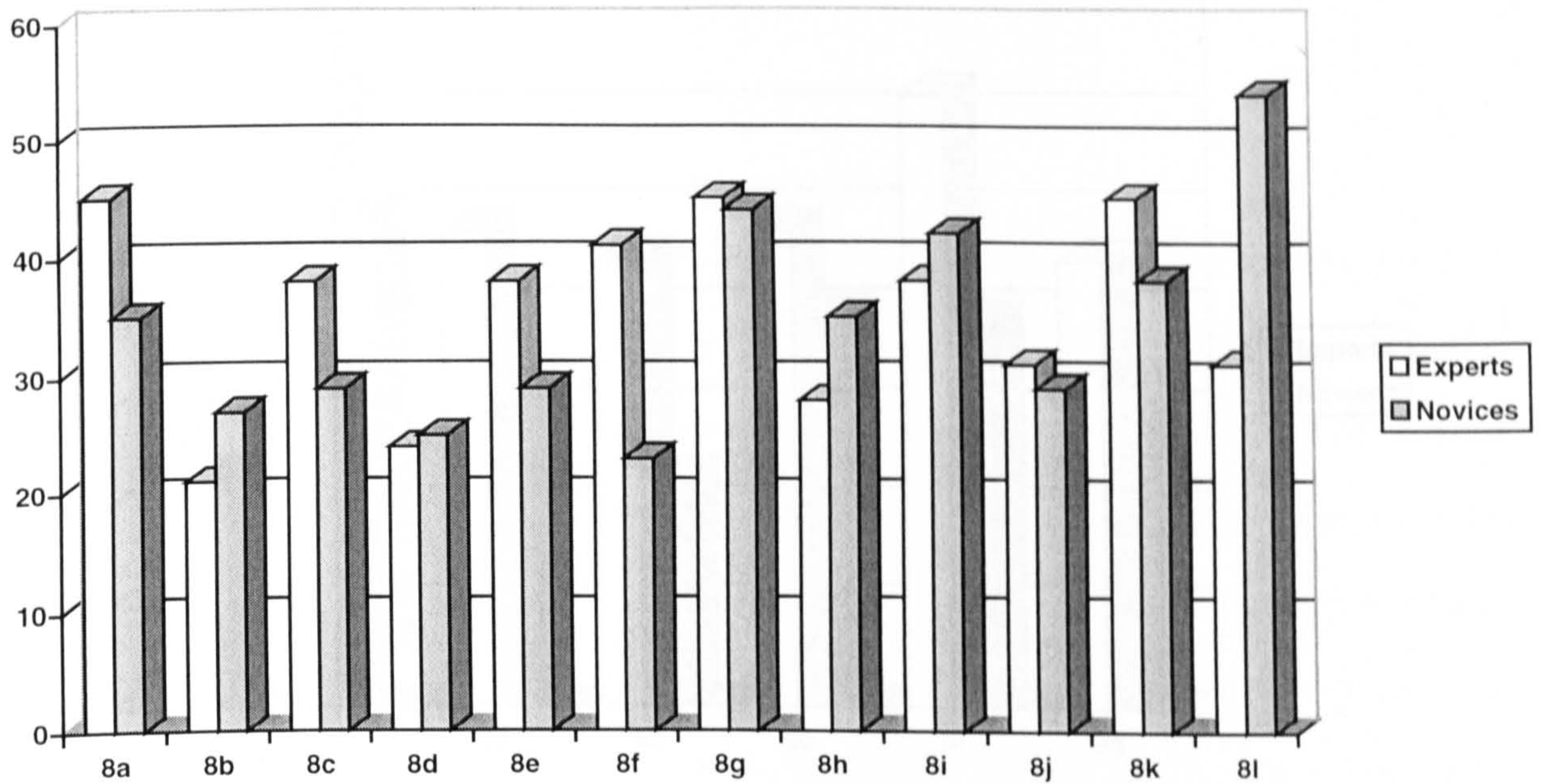
Question 8 more or less replicates question 6 in discussing the changes to be made, but from the point of view of journal editors (see figure 12 and table 6 overleaf for the full report of the results of the responses given by both groups to item 8). There is a difference between experts' and novices' perceptions of the elements that editors are likely to request to be revised. For example, many expert writers (45%) believe that the study's purpose, repositioning of parts selected for inclusion and the style of writing the article will be aspects to be revised by editors. On the other hand, a large number of novice writers (53%) believe that language is a priority of editors. This is a misconception which may be triggered by an exaggerated awareness of their own language weaknesses, especially because most of them were attending a language course that emphasised accuracy in academic writing at the time of completing this questionnaire. This is also probably due to their limited experience concerning what editors usually look for when considering an article for publication. From what expert writers say it seems that language is an important aspect (31% believe so), but it is not the main element that editors will consider. Another example of the difference between both groups in terms of what they see as significant aspects to consider is the changes made to visuals. Fewer expert writers (28%) expect this aspect to be revised due to editors' comments than novice writers (37%). However, in general, many other items of change are recognised by both groups to be quite important aspects that editors will require to be revised. Such items include correct positioning of parts in the article, organisation and style.

Concerning item 9 which deals with the factors that expert and novice writers believe to be influential in making the decision of changing the texts concerned, it is true that there are some relatively minor differences between novices and experts about these factors but as a whole the responses are broadly similar (see table 7 and figure 13 on page 299 for the full report of the results of the responses given by both groups to item 9). A good example of this is the fact that most novices and experts equally

Expert Writers			Novice Writers		
Item No.	Answer	%	Item no.	Answer	%
8a.	Purpose	45	8l.	Language	53
8g.	Positioning	45	8h.	Visuals	37
8k.	Style	45	8i.	Organisation	37
8f.	Implications	41	8g.	Positioning	37
8i.	Organisation	38	8a.	Purpose	34
8e.	Conclusions	38	8k.	Style	32
8c.	Methodology	38	8e.	Conclusions	32
8j.	Linking	31	8b.	Literature	29
8l.	Language	31	8c.	Methodology	27
8h.	Visuals	28	8d.	Findings	27
8d.	Findings	24	8f.	Implications	25
8b.	Literature	21	8j.	Linking	25

- To understand the abbreviated answers given above, refer to appendix 6 for the full form of the questionnaire.

Table 6. Expert and Novice Writers' Responses to the Items of Question 8 Ranked According to Percentages



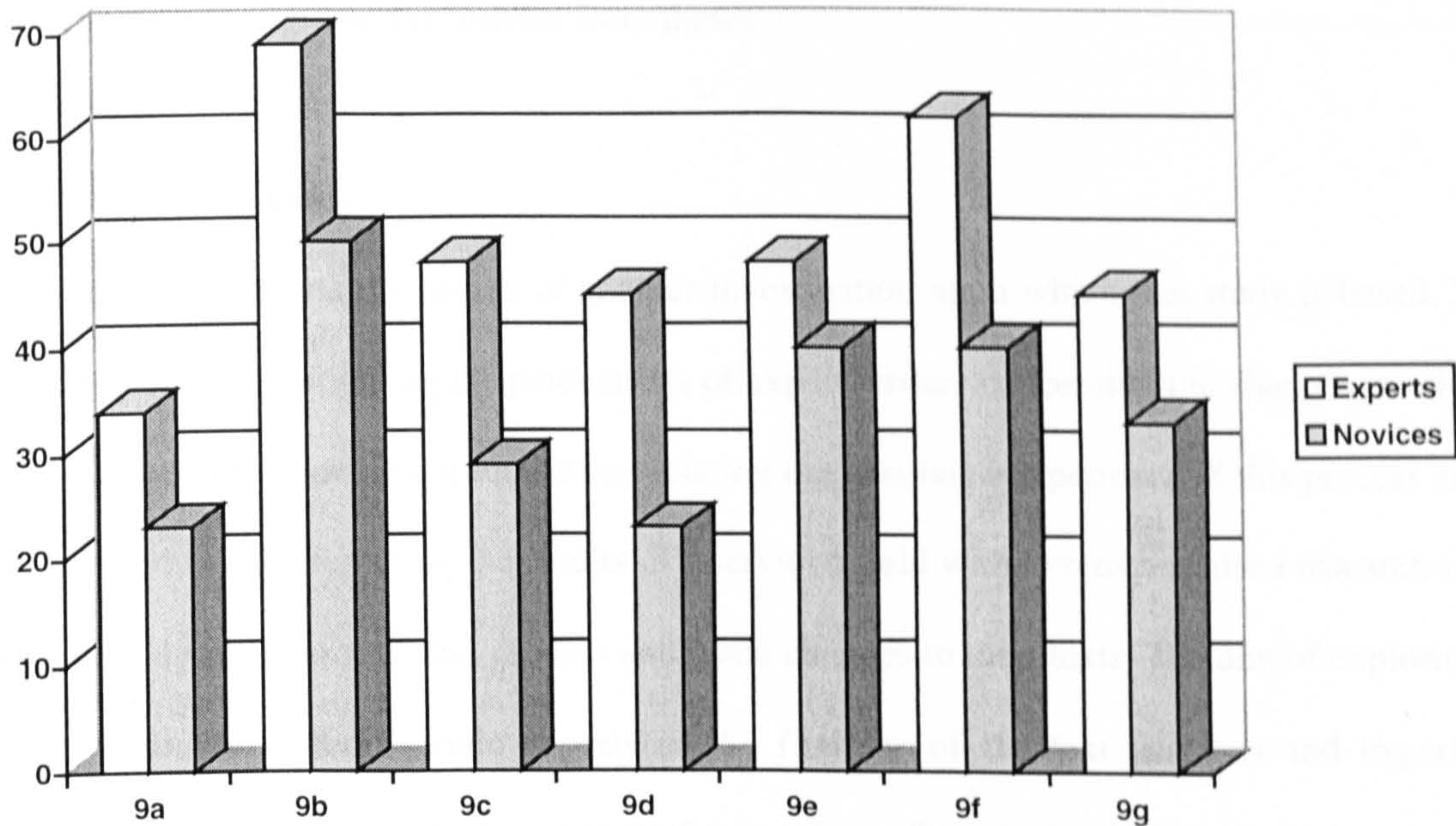
8a = Purpose 8b = Literature 8c = Methodology 8d = Findings
8e = Conclusions 8f = Implications 8g = Positioning 8h = Visuals
8i = Organisation 8j = Linking 8k = Style 8l = Language

Figure 12. Expert and Novice Writers' Responses to the Items of Question 8

Expert Writers			Novice Writers		
Item No.	Answer	%	Item No.	Answer	%
9b.	Conventions	69	9b.	Conventions	44
9f.	Journal policy	62	9f.	Journal policy	39
9c.	Scope of article	48	9e.	Shape of article	37
9e.	Shape of article	48	9a.	Readership	36
9d.	Journal guidelines	45	9c.	Scope of article	34
9g.	Number of words	45	9g.	Number of words	32
9a.	Readership	34	9d.	Journal guidelines	22

- To understand the abbreviated answers given above, refer to appendix 6 for the full form of the questionnaire.

Table 7. Expert and Novice Writers' Responses to the Items of Question 9 Ranked According to Percentages



9a = Readership 9b = Conventions 9c = Scope of article 9d = Journal guidelines
 9e = Shape of article 9f = Journal policy 9g = Number of words

Figure 13. Expert and Novice Writers' Responses to the Items of Question 9

consider the need to change texts to fit the general conventions of producing them. The more important finding is that the fact that novices ticked fewer options than that of the experts and that their options are less differentiated which indicates that they are confused about these options, perhaps out of their ignorance of the real factors that influence this writing task.

In conclusion, the comparison between experts and novice responses suggest that novices have a number of misconceptions about the process of deriving theses from articles or, it might be truer to say, a fair degree of ignorance. There does appear to be a heightened concern about the difficulty of the task of publishing and revising accepted publications and not surprisingly a lack of experience of the type of changes to be made either by the writers themselves or editors. In addition, these writers tend to misunderstand or be unsure about some of the reasons behind making these changes. It seems clear that such novice writers will benefit from a suitable awareness raising course to allow them perceive any misconceptions and clarify their uncertainties before they become fully prepared for undertaking the task of producing articles from theses.

7.3. The Two Case Studies

The present section reports the results of another investigation upon which this study is based. It is a further extension of investigating the perceptions of expert writers concerning the changes involved in transforming theses into articles. It focuses on relating the first-hand experience of this process and the changes entailed in it by reporting the results of interviews held with two experienced research writers who have already gone through this process and made changes to their texts. The aim of exploring this dimension is to cross-check certain aspects of the findings of the text analyses and experienced writers' perceptions. In particular, it aims to confirm or disconfirm the kind of strategies expert writers usually follow in changing their top and middle level elements by inferring them from what the two case studies followed state they do or have done while changing their own texts. In addition it aims to identify in more depth the various factors that may be involved in making these particular changes which text analyses on their own may not immediately bring to light. In fact, though the aim of this

small-scale study was to support the study of text analyses and that of investigating the responses of expert writers, it has also yielded valuable information about the process in general which the two case studies were eager to report to me. Therefore, I have decided to include this information in my present report – although it may look not immediately related to the main focus of this study - because I feel that it comprises important aspects of the process that in the end may help further understand how this process is carried out and in turn shed more light on the changes entailed in undergoing this process and the factors that influence them.

The section begins by giving a brief description of the two informants for this study and the works they have produced, both theses and articles (section 7.3.1.). A rationale for the selection of these two specific case studies is then given (section 7.3.2.), followed by a detailed report of the main issues that arise from the interviews which help understand more about the process in general (7.3.3.), focusing in particular on the changes writers say they make while deriving articles from theses and the factors influencing them (point d, under section 7.3.3.). Finally, a brief discussion shows how such issues relate to the findings of the text analyses reported in chapters 5 and 6.

7.3.1. Description of the Informants

The two writers selected for this part of the study are two members of staff who work at the University of Liverpool but belong to two different departments. The first is working as a lecturer in the Faculty of Arts, in the Applied English Language Studies Unit, while the second works as a lecturer and a practising dentist in the School of Dentistry. Both writers have gone through the experience of writing a PhD thesis and have actually produced and published articles out of their thesis. The linguist specialist was granted her PhD degree in 1997 on her thesis which was entitled *Presenting Research: A Study of Interaction in Academic Monologue*. She has produced two articles that are related to this thesis; one that was published earlier than the writing of the thesis, by almost 4 years, and one after the thesis was completed. In fact, the writer stated that she is currently, three years after being granted her PhD degree, working on another article which could be considered an extension of the work carried

out in the thesis. On the other hand, the dentistry specialist was granted his degree in 1989 and managed to publish a great number of papers related to the same topic of his PhD thesis, *Permeability, Degradation and Wear of Dental Composites*. A number of these articles, four articles, appeared before the thesis was in its final form, while the rest, 7 articles, came later. The writer also stated that he hopes to publish more articles in the future related to the same topic. For a full list of the titles of the theses and the articles see Appendix 1 for the texts HT1 and ST3 and their articles.

7.3.2. Rationale for Selecting the Informants

The main factor that affected the choice of the informants described above was practical as, being based in Liverpool, they were easy to contact and to arrange interviews with, and could be returned to for further investigation if needed. In fact, two interviews were held with the same informants, one before completing the full text analyses and another one after completing them. In the first interview I discussed with the informants in general the overall process they usually follow in doing their changes and in particular the general areas of change that they consider to be likely to change in the process and the factors that may influence them in carrying such a process of transformation. In many ways the questions for the first interview echoed the questions posed in the 9-item questionnaire made for the investigation of the perceptions of expert writers. In addition, I managed to discuss with them what they considered to be the main research Question/Answer for their theses and one or two of their articles which I hoped to analyse more thoroughly in preparation for the discussion to be held with them in the second interview. In the second interview, having done the analyses of the texts, I focused more on discussing the specific changes they have made to their texts and the factors that have influenced them to make these changes. The aim of this was to further confirm the conclusions reached on the basis of the text analysis. However, I was careful not to expose to them in advance the outcome of my text analyses of their texts in order to not to influence their answers in any way. Other important factors that motivated the selection of these two specific informants are as follows:

a. Experience

It was necessary to choose writers who can be considered to be competent as they had an earlier history of writing academic texts and are involved in academic work. This is to ensure that they are well aware of most, if not all, the problems met and requirements needed to produce well-written academic texts. This was the case with these two writers who have gone through the writing of an MA thesis and other papers before writing their PhD thesis and the published articles coming out of them. They are also considered experienced as a result of the fact that they work as lecturers in the university and hence are aware of the requirements of writing academic texts in their fields. Furthermore, the fact that they have already supervised students to write their own MAs and PhDs and also published articles from them is a further confirmation that they are competent to retrospect on the stages they have gone through to carry out the task of drafting, producing and publishing papers from theses as well as discuss the various types of changes made in the process and the factors affecting the writers while making these changes.

b. Representation of Different Fields of Study

The two informants also represent two different disciplines, science and language. It was thought that it is important to have two differing case studies each of which represents one specific discipline to be able to explore the issue of the possible effect of discipline on the process of transforming theses/chapters/p-texts into articles as it was the case with the analysis of texts and the study of the perceptions of expert writers which also considered the variable of discipline. It must be noted, however, that both informants produced theses and articles on applied aspects in their own distinct fields and hence there may also be similarities rather than differences between the informants' comments on the process investigated and the changes made in it. Having done the text analysis, ideally, I also tried to select informants, not only who belong to the two different disciplines of science and humanities, but who also have produced different types of theses, integrative and modular, so that I can explore the influence of the type of thesis on their writers on how differently they may view the kind of changes made in the process investigated and the factors that influence them. But,

unfortunately, for practical reasons I could not follow up this particular factor as both of the informants that I was able to interview produced integrative theses.

c. Representation of Successful Productions

The informants chosen have managed to produce a good number of articles from their PhD theses and are still producing further works from them. This is further evidence of two important facts, firstly that they are competent as researchers producing international publications and secondly that their works are good enough to produce many papers from them. This is why they are considered to be ideal for the present investigation to identify from them how such a process is successfully carried out, what kind of successful changes they make to their texts and what are the main factors that they consider to be the cause of their success.

7.3.3. Issues Raised by the Investigation of the Two Case Studies

Now I would like to discuss the main issues that were raised by the retrospection studies carried out with these two informants and link them to the findings of my two earlier studies on the text analyses and the writers' perceptions of the process concerned. As I stated earlier many of these issues, (especially numbers a, b, and c below) are not directly related to the results of the study of texts and writers perceptions, but they in many ways help pave the way to understanding the overall process involved in making the changes concerned and the factors that govern these changes. The main issues to be considered are as follows:

- a. The need to produce articles, and theses as viable sources.
- b. The factors that motivate the selection of specific parts of the thesis for publication.
- c. The stages followed in transforming theses into articles.
- d. The changes made in the process of deriving articles from theses and the factors that influence these changes.

a. The Need to Produce Articles and Theses as Viable Sources

According to both informants, academics working as lecturers at the university are pressurised by a need to produce articles regularly. This is because promotion and assessment of the performance of such academics relies mainly on the quantity and quality of the publications they produce. Since many of these academics are at the same time attempting to acquire research degrees, it is not unusual for those working to gain their PhDs to produce articles drawn from their PhD work. In the case of the linguist, she stated that she was aware of the need to have “a steady output of publications” in her field and that what she was doing for her PhD work would ultimately go to a publisher. In fact, she was consciously careful to handle, organise and present her data and analyses in the thesis chapters in such a way that when she came to publish articles from the thesis producing articles would be an easier task. The dentist was also aware of the need to produce articles. In fact, his comments about this issue showed a greater sense of this pressure to produce papers perhaps as a result of the fast-moving information culture of science and the highly competitive atmosphere between academics in scientific disciplines like dentistry. Concerning his evaluation of the task of producing theses in relation to producing papers, he pointed out that the process of research involves carrying out a study in the real world, then reporting it in the form of a paper. In this way, the PhD thesis is actually “a complication within that process” because the academic will be attempting to get a degree on top of publishing his research work. This view reflects the paramount status of the research paper in a science discipline like dentistry, in contrast to the thesis which is considered only a vehicle to obtaining a research degree rather than being primarily a means of reporting original research to a wider audience. Although this attitude may well be felt equally by other researchers in different fields of science, this was not sensed from the comments of the linguist, who regarded the thesis as an important basis for reporting research on language and producing other text types in addition to papers.

In fact, as a result of the comments of the dentist and linguist, it appears that one important difference in the way theses are seen in relation to articles in arts and science subjects is that scientists consider the thesis/thesis work as a basis for producing articles, the most essential type of academic product in

their field, while linguists see the thesis as the basis of a book (as well as being “mined” for papers). According to the linguist, the most preferable type of publication in her field is the book, rather than articles, because it is considered a much more impressive piece of work than articles. These views are supported by the fact that one of the humanities theses was published as a book (HT5), while science theses produced a larger number of articles in comparison to humanities theses (20 to 13) and none of them were published as a book. In fact, according to the dentist, the idea of publishing a book in the scientific arena is usually related to publishing textbooks that review the state of the art (or rather science). Therefore, according to him, it is unlikely that theses, which are meant to publish new investigations, will be turned into books as is the case in the field of human and social sciences.

In spite of this difference between the two fields of study as pointed out by the two informants, both of them confirmed that theses, especially PhD theses, are viable sources for producing respectable articles. They also raised the issue that in many cases, both native and non-native postgraduate students waste their chance of publishing by not producing any articles from their theses or even thinking about the possibility of doing so. According to the linguist this may possibly be a reflection of a certain attitude of some postgraduate students who are craving degrees, without hunting for international or even national recognition. Most of the time these students are not employed as staff members and therefore the pressure for producing articles is much less. The dentist as well referred to the same fact that some of his PhD students never publish articles, especially if they are not staff members or do not seem to be pressurised by their supervisors who need them to publish to boost the status of the department on the whole. This, in fact, bears on one of the factors that instigated the present study: the fact that many researchers do not benefit from their PhD research work by getting international recognition of it through publication.

Another issue raised by both informants is relevant to the idea of the quantity and the quality of the articles produced from the thesis. The general trend in the comments of both informants was that successful thesis work may help the writer produce at least three to four articles that are to be

published in respectable journals. The issue of the quality of the papers was emphasised against the quantity factor. As the dentist pointed out, there is a general understanding that researchers must try to publish their articles in what he calls “high impact factor” journals (i.e. journals that are evaluated in their fields to be of a high standard as they are commonly quoted by other researchers for the quality of the information reporting) The linguist also referred to the need to publish articles, produced from the thesis or otherwise, in internationally respectable and recognised journals rather than, say, internally as only working papers produced by the department in which the academic is working. Thus, although both informants agree that there is a need to produce a reasonable number of publications over a certain period of time, over five years which is the usual time for the National Research Assessment Exercise, there is a greater concern about the quality of the produced papers as they should meet higher standards of publications to add to the researcher’s academic profile.

Both informants agreed that some theses may be more successful than others in deriving papers out of them. In the case of the linguist, she stated that her thesis was designed in a way that would help her pull out chapters and turn them into papers more easily. She also stated that the motive for organising her thesis in this manner was mainly influenced by this conscious awareness of the need to be both sensible and practical about what she intended to do with the thesis afterwards and how it could help to boost further her academic status. She also added that she was working at the same time as carrying out her PhD study, therefore it was also sensible to build her work in the form of a “series of small scale studies” each of which could tackle one aspect of the topic she was interested in investigating, the features of interaction in academic monologues, and thus she could complete each mini-study in a set period of time before going to another study and finally link all these together to help produce the final text of the thesis. This broadly resembles the “innovative” form of thesis that was discussed in an earlier study made on the same research topic (Mohamed, 1993) where the researcher produced thesis chapters that looked exactly like articles and combined them all by just adding a brief introduction and a conclusion to them, and where the chapters looked more or less the same as the articles published from them. To the linguistics researcher, as well as the researcher producing the innovative thesis

mentioned above, this organisation of the text helped a great deal in facilitating the process of publication of papers. The text analyses carried out in the present study have identified this form as the modular form of thesis, which seemed on the whole to be more common and indeed more productive in producing articles as confirmed by this informant. In the case of the second informant, he also used the same form of thesis, which resulted in the production of a larger number of articles.

When the two informants were questioned about the likely time for producing an article and the difference between articles that are written at different points in time, they gave interestingly similar comments about these two issues. In the case of the linguist, she thought that there is a chance of producing articles before, during and after writing the thesis in her own field. However, personally, she thought that articles are usually produced after the completion of the thesis as in her case. Yet when she was reminded that she has produced one article well before the completion of the thesis, she commented that this earlier article was in many ways different from the chapters of the thesis as it was based on “a completely different set of data” and was more like a report on a pilot study attempting to identify an appropriate method for the analysis of intonation in monologue. This coincides with the situation of the dentist who also confirmed that articles may be produced before, during or after the completion of the thesis in his field, especially because he himself had produced articles in the three periods specified. Similarly, like the linguist, one of the early articles he produced before completing his thesis reported an attempt to explore a specific technique already used for investigating dental materials. It is interesting to notice that both informants quoted these articles in their theses and that the reported attempts at identifying methods in them turned out not to be fully appropriate for their own research and hence were discarded. This appears to be a common trend in many PhD theses (mine is a case in point) where early attempts to identify methodology for research topics are published as articles reporting small scale studies which ultimately do not appear in the final version of the thesis because such methodologies in many cases do not appear to work for the researchers. However, the researchers’ efforts are not wasted and thus the case study is also published despite its negative results. This supports my early decision to include data based on the production of articles that were produced

either after, or slightly before, the completion of the thesis rather than those produced earlier as these, although linked to the general topic of the thesis, are often not comparable to any of the chapters/parts of the thesis. It also supports the common perceptions of expert and novice writers in both the scientific and humanitarian fields who, though they stated that articles may be produced at any time, tended to believe that they are most often produced after the completion of the thesis.

To conclude this part, academics, especially those working as staff members and those working in the scientific field, and to some extent in the language field as well, are put under great pressure by their institutions to publish the findings of their research quickly and in respectable journals. It is possible that the productions of these researchers will come out before, during or after the final completion of their theses. The common trend in the scientific field is to publish before and after writing the thesis, while in the language field it was more common to produce articles after completing the thesis.

b. The Factors that Motivate the Selection of Specific Parts of the Thesis for Publication

Concerning the issue of the factors that influence writers while selecting the parts to be published from their research work, both informants pointed to a number of factors that make writers select certain parts of the thesis for publication. These factors include interest in the part to be published, awareness of the practical constraints involved in producing the article in question, the influence of the policy of the journal editors and their research tendencies, and finally the effect of the general trends in the field.

Both informants stated that parts selected for publication are usually those that are expected by the researcher and the supervisor to be “newsworthy”, “interesting” and “fascinating” for being new and original. For example, the dentist believed that the discovery he made concerning the effect of the technique of staining with silver nitrate made him keen on reporting this discovery internationally. Many of the articles produced from his thesis are therefore reporting this interesting and original discovery.

Surprisingly, they also pointed out that in other cases more practical factors motivate them to choose the parts to publish. In the case of the linguist, retrospectively on the article she produced during the writing of the thesis, she stated that this part was picked as it was easier to turn into an article. At the time, she was pressurised to produce quickly a conference paper for BAAL (The British Association of Applied Linguists) and to transform this conference paper to a written one to be published afterwards in the conference proceedings. Since she was limited by time and the fifth chapter on "Asking Questions" in monologues provided her with a "straightforward" report of an interesting study which had a clear pattern that was turnable into an article, she decided to work on this chapter by fitting it to the main topic of the conference "language at work". Thus, it seemed that the fact that the content and the organisation of the article could be easily turned into the form of a paper helped the researcher decide on selecting it for publication.

Another important factor that both informants thought has a great bearing on the changes they have made while deriving articles from theses is the influence of the policy of the editors of the journals approached. For example, the dentist stated that the main factor that usually helps him decide on the parts to be selected for publication is his awareness of the parts that are likely to be accepted by editors in different types of journals. Editors of journals have specific "tendencies" that seem to govern what they accept for publication. Thus, it is always sensible for him to think of which parts would be suitable to present for these editors and journals. When he decided to publish a more theoretical aspect of his study, in this case about his discovery of the effect of silver staining, he had to present this to the *Dental Materials Journal* or the *Journal of Dental Research*; this is because both of these journals are interested in reporting new research. However, it is also known that the *Journal of Dental Research* is highly sophisticated and therefore it is not easy to publish in it; thus the author sent his draft to the *Dental Materials Journal* and his work was eventually accepted and published in it. Later he published another article in the *Journal of Dental Research*, but this paper, he stated, took him a long time to revise and rewrite until it was finally accepted and published. But for publishing work that is more related to the clinical situation, that is more applied, the informant always went to the *British Dental*

Journal which is meant for the public readers in dentistry and hence it has, according to him, “a more chatty style of writing” that could be appealing for all the dentists who would be picking it up to read about the latest applications in the field of dentistry. The same factor of the influence of the type of journal and editors was also pointed out by the linguist. When she decided to publish another article after finishing her thesis, she was interested in publishing a chapter that was thought to be original by her examiners and interesting enough to be published in a respectable journal. Since this part was theoretical in nature, unlike the case with the article written for the conference and which was more applied in nature, the researcher decided to send it to the journal *Text* as it is well known to be a journal that publishes descriptive studies which do not necessarily refer to the possible applied aspects of the research. If she wanted to send the same article to *Applied Linguistics*, she would have to change it a great deal to make it suitable for this particular journal that is more interested in the applied side of research. The informant thus recognised the importance of the awareness of the tendencies of the editorial board which set the policy of the journal.

It is also interesting to know that both researchers thought that articles published must be selected from parts that reflect the “fashionable” trends in their fields. It is common knowledge among academics that certain topics and areas of study become popular to write about from time to time. To them, it is significant to gear one’s work to the main issues that are the interest of the majority of researchers in the field at the time of publication and which are often created by the more prominent researchers who may well themselves be the editors of, or reviewers for, respectable journals in the field.

To conclude, it seems that it is not only the factor of “interest” that decides the parts to be selected for publication; in fact other more practical factors could intervene in making this decision: these include the neatness of the parts selected for publication, the time needed to produce a paper from these parts, awareness of the policy of the journal to which the writer will send his/her publication, the type of the studies to be published in it and the tendencies of the editorial board as well as the general trends in

the field of the researcher. This supports in many ways the outcome of the investigation of the perceptions of expert writers who singled out factors like the effect of the policy of the journal, the influence of practical constraints like size and scope as well as the influence of the readership as important aspects that cause many of the changes that were found in the text analyses.

c. The Stages Followed in Transforming Theses into Articles

Concerning the issue of what kind of stages writers usually follow in the process of turning thesis chapters/p-texts into articles, both informants identified main five steps that they usually take when carrying out this task. These are described below. It must be noted, however, that these stages are the common stages that both informants agreed upon in deriving articles from theses after they were completed, not those written before or during the writing of the thesis, and that the stages in this process may look more distinct from one another than they actually are as informants showed that these stages may overlap at different points. The following description is thus an idealised report, rather than a realistic description, of the stages of the process concerned.

Step One: Selecting Topic

The first step is to make a decision about the specific topic the writer wants to publish. This may be an interesting topic he/she wants to publish about, or a part in the thesis that has not been published before, or a part that seems to link with the next conference the researcher needs to present at, or a topic that is fashionable in the field at the present moment, etc.

Step Two: Linking the Topic to its New Context

Having decided on the topic, as a result the writer selects a certain part of the thesis that report this particular topic and which will eventually be turned into a paper. During this stage, the writer is always anxious to make these parts selected from the thesis into a new text that is suitable for its new context, by considering the main changes that will need to be made to it to make it acceptable to a specific journal.

Step Three: Lifting Parts and Chapters

The next step is to literally lift the chapters or parts of the chapters to be made into an article by separating them from the rest of the thesis and putting them in a single file of their own. This is to make them ready for the following two major steps of changing their content to suit their new context.

Step Four: Making Major Changes

In the case of the present informants they usually started by making major changes to the title, the beginning and ending of their texts to make them more relevant to their new context. Other major changes to the text in the form of deletions or additions are also made at that stage to gear the content of the paper to an acceptable form for the journal in which it is hoped to be published.

Step Five: Making Minor Changes

This stage includes making lower level changes like changing the script or the format of the final draft, the citation format, grammatical and spelling checks, etc.

The last two steps are bound to be repeated in a cyclical way until the final draft is made and even after that until the final version of the article is finally accepted and published by the journal.

d. The Changes Made in the Process of Deriving Articles from Theses and the Factors that Influence these Changes

According to the informants, a number of changes will necessarily be made while transforming thesis chapters into articles. These are done to the various parts and sections of the chapter. Thus they pointed out changes that are made to the title, beginning and ending of the chapter, the literature review section, the methods, the discussion and conclusion sections as well as implications. In the following section I report these changes as described by the two informants as well as the factors affecting them. The description of the changes is related to one specific example in the case of each informant. In the case of the linguist, she referred to chapter 5 of her thesis (HT1.CH5) and the article

produced from it (HT1.A1), while the dentist referred to chapter 9 (ST3.CH9) and the article published from it (ST3.A5). In each case, the report relates the changes specified by the informants and those identified in the text analysis.

Case Study 1: The Case of the Linguist

The linguist felt the need to reformulate the title to make it more suitable for the conference in which she was presenting. This is why she had to add a “catchy” title that might be interesting enough for the audience to come and attend her session (and read about it later in the conference proceedings) as well as relate it to the general topic of the conference “language at work”. So the following changes to the title were made.

ex. 7.1

Asking questions
(HT1)

Why ask questions in monologue? Language choice at work in scientific and linguistic talk
(HT1.A1)

The analysis of the above titles shows that the writer elaborated the title of the chapter and made it clearer in the article by providing more context for it. The writer also tried to make it more humorous and of a distinctive nature by using the question format to reflect the topic being presented in action, asking questions. In general, then it seems that the main factor affecting the changes made here is the writer’s awareness of the audience and the need to orient the title to these people and the new context in which the article is to be delivered. This awareness of interaction with the audience by the humanities writer relates interestingly to the earlier discussion of the results of question 9 on the questionnaire (especially since the dentist did not explicitly invoke audience awareness in this way), and, it could be argued, raises doubts about my decision not to include this as a potential major factor in my text analyses. However, the title is not part of the main body of the text, which is what the analyses focus on.

A clear example of the difference between the beginning of the chapter and the article is the reorientation of the main aim of the study (see chapter 5, section 5.2.3.3. for this particular strategy of transformation). According to the informant, this was a necessary change to produce a more specific aim for the article that suits its new point of departure and social context.

ex. 7.2

The present chapter, however, considers the role of questions in academic written and spoken monologue genres, in particular, how questions in monologue may be used to mimic the question and answer exchange in dialogue.

The study investigates the possible rhetorical functions of questions in research presentations, and attempts to answer the following basic questions:-

(1) Who asks the questions in the text, i.e. who is the "demander": the presenter or the audience?

(2) To whom are the questions addressed, i.e. who is the "receiver"?

(3) What kinds of questions are asked?

(4) What appear to be their functions?

In addition, the analysis compares questions in the presentation, article and lecture corpora in order to answer the following question:

(5) Can we identify differences between the presentations, research articles and lectures in their use of questions?

Finally, the analysis compares the use of questions in the two presentations sub-corpora in order to answer the following question:

(6) Can we identify differences between the applied linguistics and science presentations in their use of questions?

(HT1.CH5)

..., the use of questions in monologues has been relatively neglected in comparison with the range of studies of questions in written texts, though the potential attraction for speakers of using questions in monologues in order to exploit their interactive and interpersonal functions is, I think, clear. The present study aims to fill this gap through the analysis of a corpus of questions in lectures and research presentations from two discipline areas: applied linguistics and applied science.

(HT1.A1)

While the aim of the chapter is general, as it refers to a general concept - the resemblance or difference between questions in dialogues and monologues - the aim of the article is more problem oriented as it is stated that this study aims to solve a research problem which is the lack of studies on the role of questions in monologue. Another difference is the fact that the aims in both texts vary in scope and the amount of details covered by the study. For example, it states that the chapter is about the study of the

role of questions in both written and spoken texts; in the article, the focus is on the study of lectures and academic presentations in particular. Also, the first text is posing six research questions to answer, while in the article, the aims statement, though it hints at the same features to be considered under these six questions, is only limited to the need to analyse monologues in the two disciplines of linguistics and science. The above variations which were identified by the text analysis were either pointed out or confirmed by the informant and were motivated by a need to reorient the aim of the new text, the article, to suit the change in the context of the text. On the whole, this particular example of changing the purpose of the study, which in my text analysis could be inferred as a change made to the Question top element, supports the result that writers are likely to modify the Question element while transforming their thesis/chapter/p-text into an article. In addition, the above example reflects one of the strategies used in transforming Questions, Focus and Reshape, and which the informant's comments did express in many ways as she talked about the need she felt for condensing the size of her text, focusing on a specific aspect of the study, the problem of trying to show the difference of using questions in different disciplines.

As a result of the above changes, the end of the two texts also varied. This can be shown by looking closely at the final statements of the two texts.

ex. 7.3

The present study also provides evidence that quite significant differences in some aspects of interaction can be associated with differences in discipline as much as with differences in genre, for example, the use of modulation to obligate the audience (see Chapter 4), the use of questions , and , as will be seen in Chapter 6, the choice of personal pronouns to refer to the audience.
(HT1.CH5)

Scientific talk and linguistic talk do clearly work in different ways, and these differences can be linked to what might be termed cultural presuppositions about the roles of academic speakers and their audience, the degree of their audience's involvement in knowledge claims, and the very status of knowledge in the discipline.
(HT1.A1)

The above two extracts clearly differ in terms of their focus, as pointed out by the linguist herself.

Whereas the first gives a final remark on the main findings of the chapter about the effect of disciplines, which adds to the more important finding related earlier on the differences between the written and spoken genres studied and how this chapter links to the rest of the thesis, the second extract focuses only on the effect of discipline on the use of different types of questions and the specific factors that probably motivate these differences. It is clear that these modifications are the result of streamlining the beginning of the text, mainly what I call the Research Question Proper, to focus on these points, so that the conclusion, which in my model for analysing texts I call the Answer Proper, has been changed to correspond to these new points of departure. This change, which was confirmed by the linguist's comments, further confirmed my text analysis that has shown that the Answer element is usually changed and in the same way that Questions get changed. Thus, as the case of the Question, the Answer element in this particular case was also reduced in size and reshaped as the Question following the Focus-Reshape strategy (see discussion of the change of the Question element above).

A further variation that was described by the informant and which relates to the beginning of the chapter is the deletion of parts that seemed to be unnecessary details, in order to limit the size of the text as suggested by journals (see section 6.4.1. on the changes made due to condensation). This condensation includes the deletion of general statements, too detailed references to previous studies as well as conditions for setting up research. Text analysis has shown that these are some of the types of deletions often identified in the Setting element. The informant also confirmed that sometimes certain parts are added to the review of literature section to give a new Setting element to set up the context of the new text and link it to its modified aim. An example of this was found in the article where the researcher adds a totally new paragraph that makes up a large part of the section on review of literature in the article and which deals with studies carried out on the effect of discipline on discourse choice. The fact that the writer has decided in the new Question to discuss this particular aspect made it necessary for her to reorient the Introduction of her article, which may be equated with the Setting element in my model including what I call the Research Background and Research Context sub-

elements, by adding a relevant report of the studies on the difference between disciplines in discourse choice.

According to the informant, in the Findings section, which is a sub-element in what I call the Answer element, the main change was a reduction of the presentation of findings by cutting out numerous examples, which were interesting to discuss in the thesis but too detailed to include in the article. The following is an instance of the examples that were cut down in the article to reduce the size of the text. They are all underlined.

ex. 7.4

Polar interrogatives are typically used to check that the audience can see some visual information or understand what the presenter has been saying, e.g.:

[5.27] can you see (SP.6)

[5.28] is that clear my data (LP.6)

though occasionally a presenter may check that the audience agrees with what he or she has said:

[5.29] is that fair {NTD} (LP.2)

Audience response may of course consist of verbal or non-verbal action, but it is always very brief.

(HT1)

Polar interrogatives are typically used to check that the audience can see some visual information or understand what the presenter has been saying, e.g.:

[5.27] can you see (SP.6)

Presenters frequently check with the audience by the use of the word tags OK, right, ..
(HT1.A1)

Another major change in this element is the modification of the visual representation of results. In the case of this thesis chapter and its article the writer reorganised the data to represent the results in a way that emphasised more clearly the effect of the discipline on the use of specific question functions. This entailed cutting out many tables that represent results which are irrelevant to this specific point and the reanalysis of the same data to represent the results in a way to support the above line of argument.

The informant added that she even decided to cut out a whole section on the findings of the various grammatical forms of the questions identified in the data as it was thought that this material is probably not interesting to the readers of the article and does not add any further interesting information to what has already been highlighted in the article. Again, these types of change reported by the linguist and exemplified in her texts above, support the overall findings of the text analyses which have shown that Findings may be both reduced in size or reoriented as the case may be. An example of condensation is the deletion of unnecessary examples, while an example of reorientation is the fact that the writer reorganises the data presented and the findings to further support the reshaped Questions and Answer which focus in the article on showing the effect of the discipline on the use of Questions in academic monologues.

According to the linguist, probably the part that is usually changed most drastically is that of the Discussion of the findings, Conclusions and Implications. The main reason for this is because it is the part where the writer's main message is delivered. Thus, if there is a new or a reshaped line of argument in the article, this is the place where it would be most obvious. This was clear in the change of the last statements of the two texts as shown earlier. It is even more clear in the concluding sections. It was noticed that the conclusion of the chapter is only one page while that of the article is about two pages long. The additional information in the article is all a discussion of the significant finding that the two discipline areas of linguistics and science are different in the way of using questions, the factors that may have motivated this difference and the various studies that support this finding. The section also refers to the teaching implications of this significant finding. In the thesis chapter the discussion is shortish and is kept to a mere reference to the basic findings of the analysis, the possible factors affecting these findings and the link between them and the results of previous and subsequent chapters. This variation in the ending parts is explained by the informant herself who pointed out that she thinks a different ending was added to the article to give an interesting "finish" for her text. She thought it is important that readers come out of the text with interesting conclusions at the end. She

even referred to a case of a writer of an article that she had refereed for publication who, although he wrote a very interesting article, ended with a “flat” conclusion, and therefore she recommended the rewriting of the end of the article before allowing it for publication. This is probably why she herself was anxious to give an interesting ending to her text. In the thesis, the ending of the chapter is not the ending of the text. The real ending is present in the conclusion chapter where in her case the more elaborate Discussion, Conclusions and Implications of various mini-studies, including this one, are presented. In addition, in the article she needed to add the teaching Implications which are not present in the thesis chapter. In general, the factors that motivated the changes made to this final part of the chapter/article are the informant’s awareness of the need to give the audience the ending they expect and to gear the ending to the same line of thought that was adopted in its beginning. All this further confirms what I have already found in the analyses of texts as various categories of changes were identified as part of reorientation. Having changed the Question and subsequently the answer to the research, the linguist needed to reshape her report of the Findings and hence her Discussion of these findings and their Implications. These types of reorientation modifications were already discussed in chapter 6, including the development of new interpretations of the Findings and reframing Implications.

Now I move to the discussion of the second case study and the changes he states that he made and the factors affecting these changes. The discussion is related to the outcome of the analysis of the texts, when appropriate.

Case Study Two: The Case of the Dentist

It is interesting to note that many of the kinds of changes made by the linguist were also made by the dentist and that both of them referred in many cases to the same factors that caused them to make these changes.

In the case of the title, the dentist also gave a somewhat shorter title for the thesis chapter in

comparison to that of the article.

ex. 7.5

The Clinical Investigation
(ST3.CH9)

The Clinical Wear of Three Posterior Composites
(ST3.A5)

The fact that he elaborates on the title in the article is probably due to a need to spell out more details about the context of the study. This was true as the dentist was very aware of the importance of using titles as indicators to the readers as to what may or may not be included in the text. To him, the title of the thesis chapter was part of a series of titles for all the chapters in the thesis and therefore it did not need to be very specific as it could be understood by referring to the introductory chapters that pointed out the different types of investigations to be reported in the thesis, including “the clinical investigation”. In the article, however, due to the lack of the previous text as in the case of the thesis, the writer was compelled to fill this in by adding more specific information about the specific clinical study reported.

The informant, as with the linguist, was aware that he makes changes to the beginning and ending of his text - in other words to the Question and the Answer elements. He even stated that he usually starts by writing the Conclusion section of the article, which could be considered the summarised version of the Answer element, before venturing into making other changes to it. To him, this is essential to focus his mind on the end point and thus he can more easily streamline the beginning to direct it to this specific ending. He states that it is possible to do this in the article, because, unlike the thesis where the researcher is still struggling to reach a conclusion while writing the text, the researcher is already aware of the final conclusion of the study and has “digested” it well enough to be able to write about the conclusion before writing the “new” introduction. To some extent, this goes against the argument put forward in the text analyses, which presented the Question as the key element, with changes in the

Answer being largely determined by changes in the Question. However, it does support the hierarchical model presented, in which the top level elements - Question and Answer - are likely to “control” the way that the middle-level elements are handled.

He also stated that although he works on the word processor he does not try to lift the parts of the chapters to work on except after he has rewritten the new ending and beginning of the article to be published so that he would have set up the new “skeleton” of the new text after which it is “fleshed out” by the information derived from the chapter. In this case it seems clear that the dentist is referring to the importance of focusing on what I call the top level elements and the changes made to them before moving to consider the changes made to the middle level element that help ‘flesh out’ the top level elements by adding more details about them.

Although the dentist did not specify the kind of detailed changes made to the beginning, looking at the changes imposed on the chapter at the beginning of this text, it could be identified what type of changes are made. The major ones are related to the elements of Setting and Research Context including those made to the Question of the research. It was found that the thesis chapter does not include any specific Setting or Research Context as these were already discussed in chapter 3 where the writer gives an extensive overview of the background and literature to clinical studies on wear and degradation. In the article, however, there is a brief reference to previous attempts to study wear, in the form of abrasion and attrition, and the final results of these studies.

Concerning the difference between the two texts in the way their aims are related, it was clear that the aim as presented in the chapter is linked to the overall study commissioned by the Department of Health as part of a national scheme and which covers the study of many aspects of the performance of posterior composites. In the case of the article, the aim did not include any reference to the Department of Health scheme and seemed to focus attention on only one of the aspects that showed some interesting results, that is wear. Hence, the Question of the article is a more focused Question in

relation to that of the thesis/thesis chapter. The informant's comments on how he changed his research Question indicated that he followed what I call the Focus-Restate strategy in representing the Question of this study in the article.

Concerning the Response element, the informant believed that the methodology of the research would not be modified in any way because it is the work that a researcher has actually done and if there are any changes this would be a reflection of a major problem in the research. The methods section is therefore a mere repetition of that in the thesis/thesis chapter. This seems to run counter to what the text analyses have suggested. However, the dentist refers to another aspect that it is necessary to cut out while rewriting the specific parts of the methodology to be included in the article. This is the deletion of all the references to previous research that support the adoption of the methods reported. This does support the findings of my text analyses which have shown that particular type of change as part of cutting out elements that show the researcher's 'display of knowledge' which is often not needed in the context of the article. It is interesting that in the case of his own article, and other articles of his own analysed in the present study, the only references included in the response element were to previous articles he himself had published on a similar topic. These seemed to provide a basis for the study reported in the article as they reported the clinical procedures adopted for it and which presented a modified approach to those used earlier in his field. This in a way exemplifies what he called the "slicing problem" that scientific researchers need to handle. This problem is related to a need to be careful not to present the results of the mini-studies undertaken in ways that confuse readers, mainly editors, by bringing in extensive reports of the information found. But at the same time, the researcher must also be cautious not to "slice his cake" like "salami" (i.e. into too many small cuts) in order that what is reported does not become too thin. In the present case, the researcher had to present the technique in an article separate from the one that relates the results of applying this technique clinically. This is to avoid the problem of collating them and thus producing an overlong article that could be easily rejected by editors.

Concerning the changes made to the end of this study, especially the elements and sub-elements that fall under the Answer Domain, in particular the report of the Findings, in general the informant stated that the results do not usually vary, but the statistical analysis of these results may. Thus, as part of streamlining his report to the new aim, Question, and conclusion, Answer, stated in the article, he may be required to manipulate his data differently by reanalysing them in a way that leads to the final conclusion. He also pointed out the necessity to simplify the presentation of results in the article as most editors require uncomplicated representation of statistics or the article may not be accepted for publication. Related to this change of the analysis of data is the change in presenting the results visually. The informant commented that generally the production of the article will involve some changing of the visuals that represent results. In the case of this article, for example, the writer had to be careful in reproducing his visuals for two main reasons. First, in the article he attempted to present results on two amalgams which were not presented in the thesis as the whole thesis focused on reporting results for composites only. Thus the visuals had to be expanded to show further results on amalgams. Second, the visual in the thesis was produced in colours; in the article this had to be turned to a black and white visual as the journal in which the article was published does not have the facility of presenting coloured figures. Also, as with the linguist, many of the tables and diagrams in the chapter were cut out and only a few of these appear in the article. This is due to the need to focus attention on the most important results and also as a result of the condensation element that is very pressing in the case of producing articles. This effect of the narrowing down of the size of the text is reflected in the more limited size of the results section in the article in relation to that of the thesis chapter. It even extends to the Discussion section. This confirms the outcome of the analyses of texts which have shown that the condensation is an overall type of change that Answer sub-elements may undergo, and in particular that making changes to the visual representation of findings and how they are discussed are some of the changes which may affect Findings.

On the whole, it seems that the changes that both the linguist and the dentist state they make are similar and the motives for making them are in many ways the same. In turn, they all confirm the

results of my text analyses, especially concerning the type of strategies that may be followed in changing the top level elements, Question and Answer, and some of the particular changes that are often made to the lower level elements like the Response element and the Findings, and Discussion sub-elements. In addition, it seems that both case studies agree that the new context in which the article will be represented as well as the need to change the shape and size of the article are very influential factors that help in deciding what type of changes need to be made.

In general, the two studies reported in the present chapter have given valuable information about the process that writers go through in order to extract articles from their theses and in particular it confirmed the types of changes that text analyses have shown, by matching these to the general areas of change stated by expert writers, both from the humanities and science disciplines, and the two case studies who are experts whose texts were included in the text analyses. In addition they helped to confirm many of the possible explanations given for making such changes by matching them to what experts have stated. In addition, the two studies have provided further types of information that helped in furthering my understanding of this process in general by identifying some of the misconceptions and uncertainties that novice writers may have about this process, the steps taken to carry out the process of transforming theses into articles, and the factors that motivate the selection and production of articles from theses. All of this is valuable information that helps in understanding this process as a whole and the changes entailed in it. Hence, they help in further understanding the results of the investigation of the texts which is the main concern of this study.

CHAPTER EIGHT: CONCLUSIONS, IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS

8.1. Introduction

The present study aimed to investigate the main changes academic writers make in the process of deriving research articles from their PhD theses. This was meant to shed light on a process that may be daunting to many novice academic writers, native or non-native, who are seeking international recognition in their fields by writing research articles based on their degree work. The investigation aimed to study the differences between the two interrelated texts in terms of the way writers organise and represent their semantic elements. Undertaking the analysis of the semantic organisation of theses and their related articles was motivated by the anticipation that this is one of the main aspects that gets modified in the process and that novice writers may not be well aware of the changes entailed in changing this aspect. This study was done by comparing and contrasting the various semantic elements that make up theses and research articles and which conform to the organisational structure that reflects the ideal macrostructure of these interrelated text-types as expected by academic readers of similar research reports. To confirm or disconfirm the findings of this product-oriented research, other two process-oriented studies were undertaken to validate it. The first focused on the investigation of the perceptions of both expert and novice academic writers of what they think to be the changes made in the process and the factors that affect them. In addition, the views of two expert academic writers who produced some of the texts explored were compared to the text analyses and the perceptions of novice and expert writers with the aim of verifying wherever possible the findings of the analyses of the texts as well as exploring in greater detail what is involved in the process of deriving articles from theses.

The present chapter reports briefly the final conclusions reached after the consideration of the above mentioned two main lines of study. Section 8.2. summarises the major differences between the two text-

types investigated in terms of their semantic organisation and perceptions of expert and novice writers of these variations. Section 8.3. explores the wider implications of the earlier two studies in the light of the main issues that they raise in relation to the general trends in the field of academic writing. Section 8.4. suggests some guidelines for teaching novice academic writers about the changes involved in producing articles from theses. Finally, section 8.5. discusses the limitations of the present study and gives recommendations for future research in order to better understand the process of producing articles from theses and the modifications that writer make in this process.

8.2. Summary of Conclusions

This section summarises the main conclusions of the product and the process-oriented studies. It begins by reporting the final conclusions of the study of text analyses (section 8.2.1.) and then the main conclusions of the study of the writers and their perceptions (section 8.2.2.)

8.2.1. Analysis of the Semantic Organisation of the Interrelated Texts

In order to be able to investigate the way in which writers present the same or different topics in both the thesis and the article derived from it, it was necessary to have a working model of the conventionalised template of the semantic elements of the thesis and subsequently the article. To do so, a model based on the work done by van Dijk (1980; van Dijk and Kintsch, 1983), Hoey (1983) and Swales (1990) was set up. The model was applied in two stages to identify and then compare the semantic elements of the hypothesized hierarchical semantic macrostructure of the texts explored. It was argued that the macrostructure could usefully be visualised in terms of three main semantic levels - top, middle and bottom - that were expected to be found in all texts similar to the ones studied. Two of these levels were focused on in the present study. The first stage of the analysis involved the identification and the comparison between the top level elements of the interrelated texts, the main Research Question and the Answer Proper to it. The second stage involved the investigation of the middle level elements - the

Setting, the Response, the Answer and the Outcome. In both cases, the analysis involved comparing/contrasting the information presented, semantically and linguistically, on the top and middle levels in the two interrelated texts. The outcome of the study showed certain consistencies in the changes writers make in transforming theses into articles on the two higher levels. These consistencies were shared by writers in the fields of science and humanities, but were very much influenced by the type of the Research Question employed and the process followed in transforming theses into articles. The factors that have motivated these variations were also discussed to be further confirmed or disconfirmed by the results of the process-oriented studies. The following is a summative report of the changes identified on the top and middle levels and the factors that caused them.

8.2.1.1. The Outcome of the Analysis of the Top Level Elements

Investigation of the way writers manipulate the Question and the Answer top elements in the two related text-types showed that there are two types of categories of variations that writers may make in the overall semantic organisation of theses and articles. These are product-oriented variations and process-oriented variations.

The product-oriented variations are variations that are influenced by the original position of the research Question in the thesis/thesis chapter and are also affected by the type of Question given in the original text. It was found that some theses have only one major research Question presented in the Introduction/Aims Chapter, a Single-Question Thesis, while other theses have a major research Question that investigate further minor research Questions related to it, a Multiple-Question Thesis. If the thesis has a single Question that revolves around only one main research problem it is likely to produce a single article with a great many variations. If it has a multiple Question that covers various problems that are related, it could lead into the production of a number of articles that may need fewer variations. It was found that theses varied in terms of their type of Question, single or multiple, as they fell on a cline

between these two opposing options. On the other hand, it was found that writers may organise the representation of their research Questions, whether they are single or multiple, in two different ways. They may decide to set the Question at the beginning of the thesis in the Introduction section and make all the chapters in the thesis represent a further semantic element that develops this Question further. In this way, all the chapters will be very much related to each other as they represent parts of a “chain” of chapters. Writers may also decide to organise their chapters by setting the major research Question in the Introduction again, but they will afterwards reintroduce in each of the following chapters one of the aspects that this major research Question tackles or one of the mini-Questions that spring from attempting to Answer it. In addition, each chapter will represent by itself a separate semantic unit that can stand on its own, but which in the end may help to add information that can help in answering the major research Question and subsequently to composing the whole thesis. Whereas the first type of organising the top level element was called the integrative organisation, the second was considered a modular organisation. Analysis also showed that between these two major types of organisation lies a cline of other possible organisations that could be more integrative than modular or vice versa. The decision to produce integrative or modular theses has a direct influence on the number and type of variations that are likely to take place when writers produce articles from their theses. At the same time, the number of publications and variations was also found to be influenced by the type of Question presented.

These findings indicated that there was a need to devise a system for describing theses according to their distinctive type of organisation and their type of Question that will have an influence on the variations made to the articles produced from them. This system must take into account that it is sometimes very difficult to place those texts as representatives of fixed kinds that are set at two mutually exclusive poles on the basis of their distinctive features. Rather it must be flexible enough to cater for describing theses that fall in-between these two opposing choices or mix two distinctive trends together. Keeping that in mind, it seemed that the best model for categorising relatable but distinctive texts like theses which all

belong to the same genre is that discussed by Martin (1999) and which is termed a topological approach. This approach, which is a natural development from typological approaches that categorise texts as separate fixed types manifesting two opposing choices, establishes a "set of criteria for establishing proximity among categories" (Martin, 1999, p.44). Thus, it allows for the description of all texts, in this case theses, by placing them on two different continuums/clines "using parameters derived from the systemic oppositions" (Martin, 1999, p.47) which in turn specify semantic regions to which texts could be assigned. This model is better represented visually by using two crossing axes that represent the two parameters of description that help to categorise texts and place the concerned texts as dots in the four semantic regions created by the crossing axes (see figures 14, 15, 16 and 17 below).

In the present study it was found that theses can be categorised according to a topology that represents them in relation to their overall organisation and the type of Question they include. It can be seen in figure 14 (below) that theses can be classified according to whether they are multi Question theses or single Question theses. At the same time they can be classified according to whether they are integrative or modular theses. These two distinctive features are represented by the two axes in the figure which create four semantic regions in which different theses may fall.

Semantic region number 1, which falls between the multiple Question and modular axes, includes all theses that tend to explore multiple Questions which are represented as matching lines of thought that can be easily detached from one another because of their modular organisation.

This type of thesis is likely to lend itself better to publishing a large number of articles as it allows writers to report each single Question in a separate chapter which in turn can be easily turned into an article later. Examples of such theses include ST4, HT2 and HT5. However, it should be noted that these examples are placed differently in this semantic region which reflects the fact that theses falling in the same region can

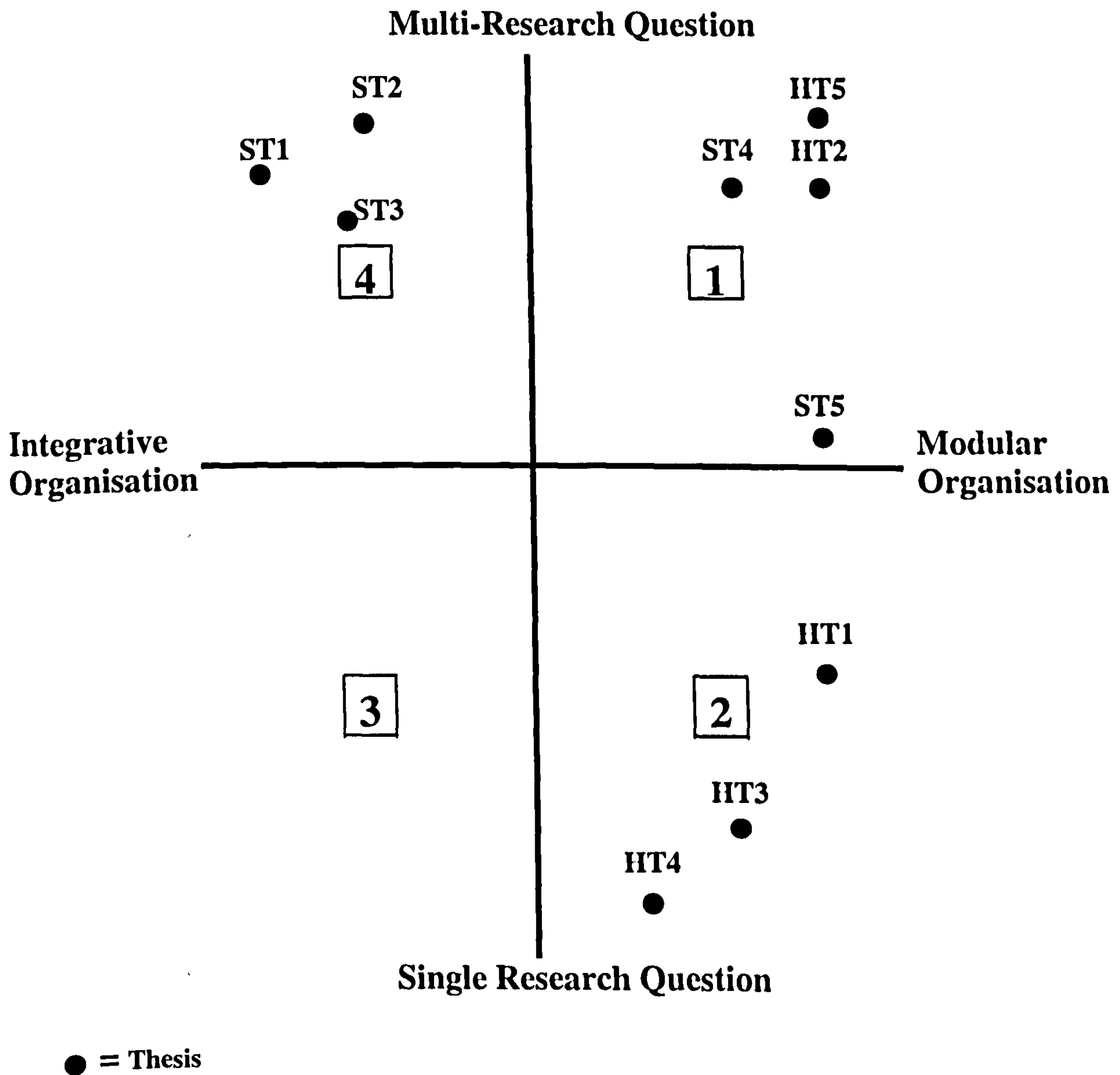


Figure 14. Topology One: Classification of Theses According to their Type of Overall Organisation and Research Question

also vary slightly from one another in terms of how far the two criteria of description are represented in them and how close or far they are from the neighbouring semantic regions. The figure shows for example that HT5 is further along the modular axis which suggests that it is a type of thesis that is highly modular (i.e. Questions in it are very much separated out from one another so that they could almost be considered

different single Questions joined together in one piece of work). On the other hand, ST4 is close to the mid-point on the modular organisation Question axis, but fairly far along the multiple Question axis. This suggests that although ST4 represents a thesis that has a large number of Questions, these various research Questions in this thesis tend to be more related to one another than those in HT5.

The same kind of description can be applied to the other three semantic regions. In the second region, theses revolve around a single Question but tackle it from different angles and hence they can be represented in a modular form. HT1, HT3 and HT4 fall into this group. Each of them varies a little in terms of the level of linkage between these aspects and therefore they are placed slightly differently as shown in figure 14. Again, this type of thesis was found to be easier to handle while deriving articles from it as writers of such theses may not need to make many changes to the original text to produce articles. However, the more they are integratively organised, the more difficult it becomes to publish articles from them. The third semantic region in this study is not exemplified by any text from my data. This region encompasses theses that represent a study based on a single Question and whose chapters are tightly linked. Such theses seem to be limited in number. This may not only be because it is very difficult to build an extensive piece of work like a PhD on a single Question, but also because tightly linked theses like these will be less accessible for publication since only one article may be produced from them and this article must be a mere condensation of everything that the thesis is about. Thus if they exist it is likely that, because of the difficulty of the task of producing an article of a manageable size out of them, this specific type of thesis rarely has corresponding articles to compare them with and therefore would not be chosen in my data collection. The final semantic region consists of theses that investigate multiple Questions but which are organised as an integrative piece of work (i.e. all chapters seem to be logically sequenced in a manner that makes all the chapters/mini-Questions appear unified under only one single topic). Although this type of thesis may produce a number of articles that represent the various research Questions/aspects discussed, it seems likely that it will require more time and energy to do so as the

various studies need to be separated out from one another to be established as single pieces of study. This entails making a great number of alterations. Examples of such theses are ST1, ST2 and ST3. Even these theses varied a little among themselves in the amount of integration of their Questions, as is reflected by their relative positions on the figure.

In general, the above findings imply that the more multi-faceted the research Question of a thesis the more likely that it would result in the publication of a greater number of articles. On the other hand, the more modular the organisation of the thesis, the easier it becomes to separate out articles from it to prepare them for publication. Thus, perhaps the most productive type of theses in terms of publication are the modular, multi Question theses, while the least productive are the integrative, single Question theses. This is clear from figure 15 (below) which shows the number of articles that were produced by each of the theses explored in the different semantic regions presented in figure 14. It could be therefore argued that research writers aiming for international publication should consciously aim to select Questions and organise the report of their research in the particular ways which facilitate the production of articles. It is worth noting that this is something that expert academic writers are aware of, as was confirmed by the two case studies reported in chapter 7.

It is interesting at this point, as part of applying these findings to further data, to try and place the present thesis on the topology described above to anticipate the number of publications that may be produced from it as well as the number of variations that are likely to be made in the process. The present thesis revolves around one major Question which aims to identify the main types of changes writers make while transforming theses into articles. However, this major Question is researched by following two major lines of study, the investigation of the semantic organisation of the interrelated texts themselves, and the study of the perceptions of writers involved in producing these related texts. Hence it is a single Question thesis that researches the Question by looking at it from different perspectives. On the other hand, in terms of the

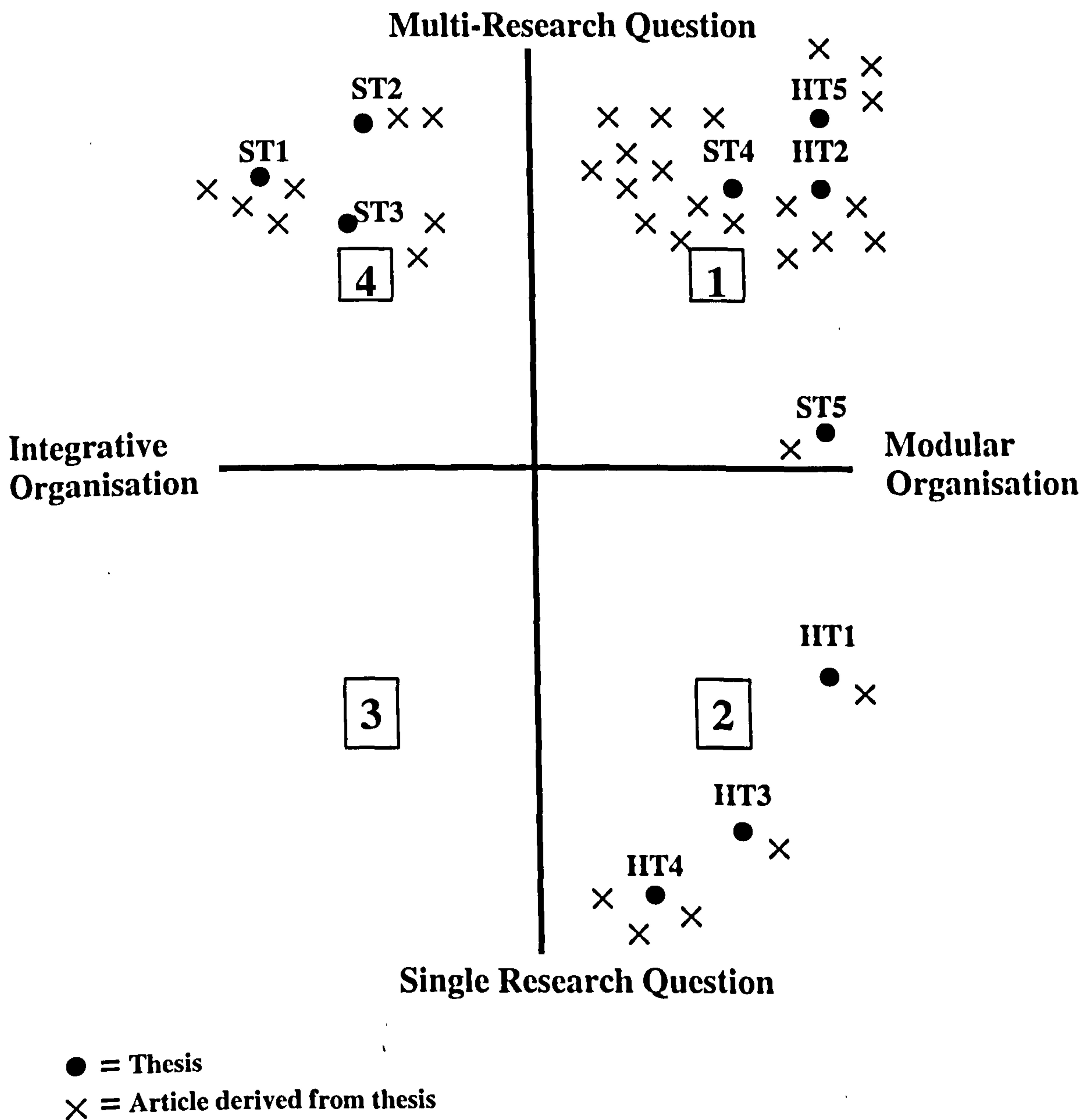


Figure 15. Topology One: Number of Articles Produced from the Theses in the Semantic Regions 1, 2, 3, and 4

overall organisation of the thesis it tends to be more integrative than modular because the various aspects researched are brought together rather than separated out distinctively: the study of writing processes is primarily presented in relation to the study of the textual characteristics identified; and, at a more detailed level, the different parts of the textual analyses are closely interdependent. It is true that some features of

modularity are introduced by the division into text analysis and writers' perceptions; but the discussion of many of the issues in chapter 7 is closely based on the findings presented in the preceding chapters, and it would be difficult to use chapter 7 as the p-text for an article without explaining those findings in some detail. This means that this thesis may result in the production of a number of articles that may represent the various aspects, but that it will need an effort to separate out these aspects from one another to allow each one of them to be published as a separate piece of work. Given the interdependence of the various steps in the text analysis, it will also need an effort to condense the textual analysis to appropriate dimensions for an article. In retrospect, my study suggests that I should perhaps have chosen a slightly different research design to facilitate the process of producing articles from this thesis!

If we now turn to the process-oriented variations, these variations relate to the strategies writers adopt while transforming their main research Question from the thesis/thesis chapters/p-texts into articles. Analysis of the texts revealed that most variations made to the top element of these texts were influenced by the changes made to the Scope and the Direction of the research Question. Another topological diagram is presented in figure 16 (below) to show the various strategies writers may follow in the process of transforming their Questions and the subsequent information dependent on them. It shows clearly the kind of changes made to the research Question in all the investigated articles in terms of the two axes of Scope and Direction.

As argued earlier, concerning the change in the Scope of the Question the writer may choose to extend it by adding more Questions, or developing further minor Questions under the main Question, or discussing other aspects related to the main Question. On the other hand, he/she may decide to focus the Question. This happens when the writer limits the Scope of the Question of the thesis by selecting only one specific aspect of the Question to consider, or by isolating a single Question to talk about out of the multiple Questions already explored in the thesis. In between these two opposing options the writer may have other

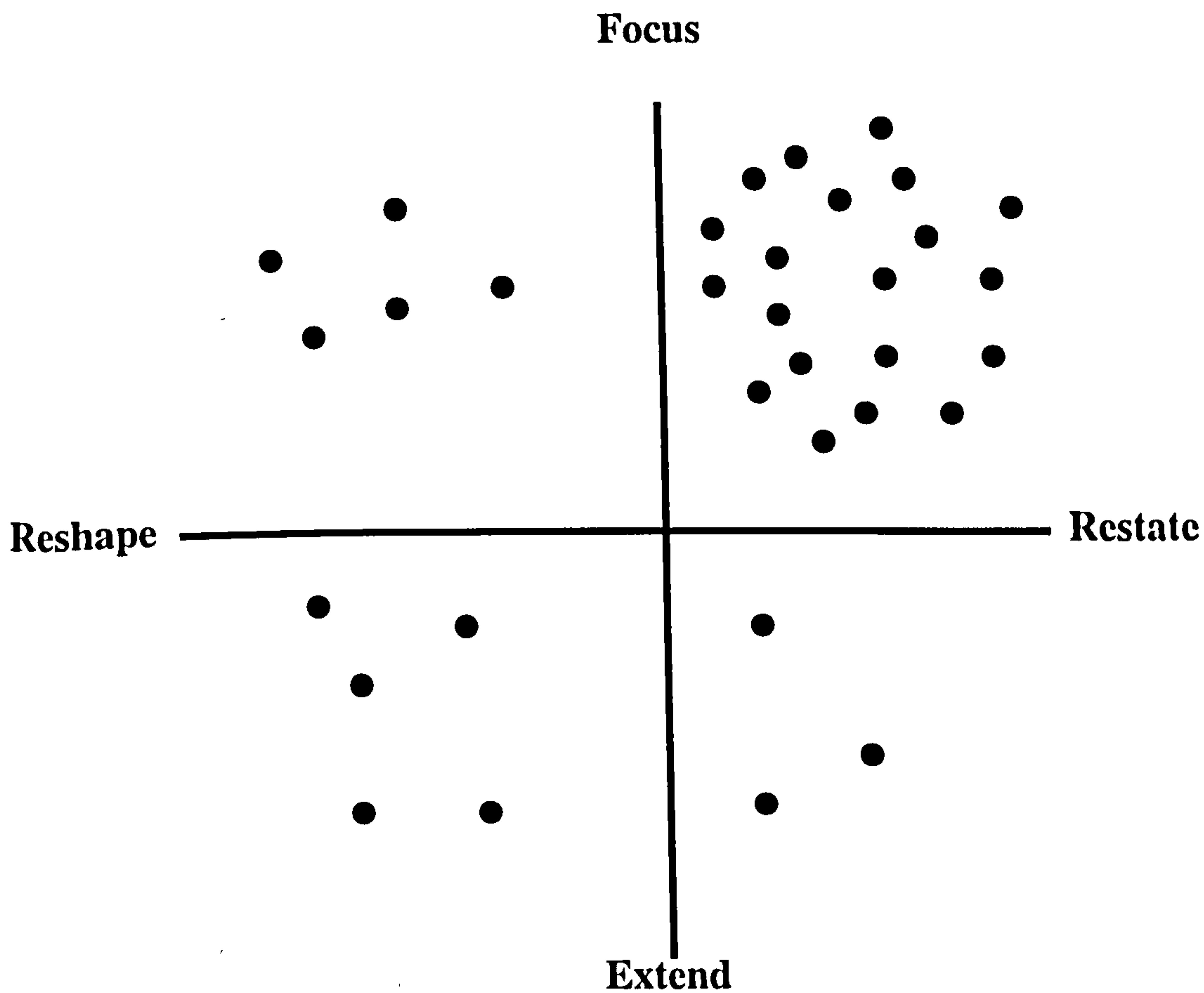


Figure 16. Topology Two: Strategies of Transformation and the Number of Articles Produced by the Four Identified Strategies

available options where he/she may tend to extend or focus his/her Question. The figure shows how far along these axes the derived articles fall. On the other hand, considering the changes that could take place while changing the Direction of the thesis Question, the same Question could be restated as it appeared in the original text or it could be reshaped as it is taken to cover new lines of thought. The writer may also steer a middle course by restating parts of the Question and reshaping others. The dots in the figure represent all the investigated articles as they fall on the various scales of description of their research Question.

Another way of looking at these strategies is to see the link between these articles and the theses from which they originally developed as given in figure 17 (overleaf). In this figure, which shows at the top and at the bottom the codes for the 10 theses investigated, arrows are used to relate each thesis explored to the articles produced from it indicating both the type of theses concerned (i.e. integrative or modular with single or multiple questions) and the processes employed in changing the research Question in the original text.

From the figure, it is evident that the main process of change encountered was that of focusing and restating of the research question: 20 articles out of 33 articles were produced by undertaking this particular strategy in changing their research Question. This is the type of strategy that seems to be the easiest to use as it simply means that the writer lifts out parts from the thesis/thesis chapter without making many changes. This strategy was undertaken by most of the articles derived from the modular theses as they are more accessible in terms of lifting out parts from their separable chapters without affecting the rest of the texts around them. This type of free-standing chapter that revolves around a single Question and develops as a unity on its own was sometimes consciously produced by the writers to facilitate the process of publication later as one of the case studies stated (see chapter 7).

On the other hand, the second semantic region includes all the articles that were produced as a result of focusing the Question and reshaping it (5 articles). The number of sample articles here is much smaller than that of the previous type. The reason for this is probably that this type involves greater changes in its production because of the requirement of reshaping its Question which in turn necessitates the reshaping of all the following elements in the article, especially the Answer element. The motives behind this may arise from the development of the ideas of the author him/herself who may, as time passes, believe that this research Question may be approached differently, or it may lie in the known policy of the journal for

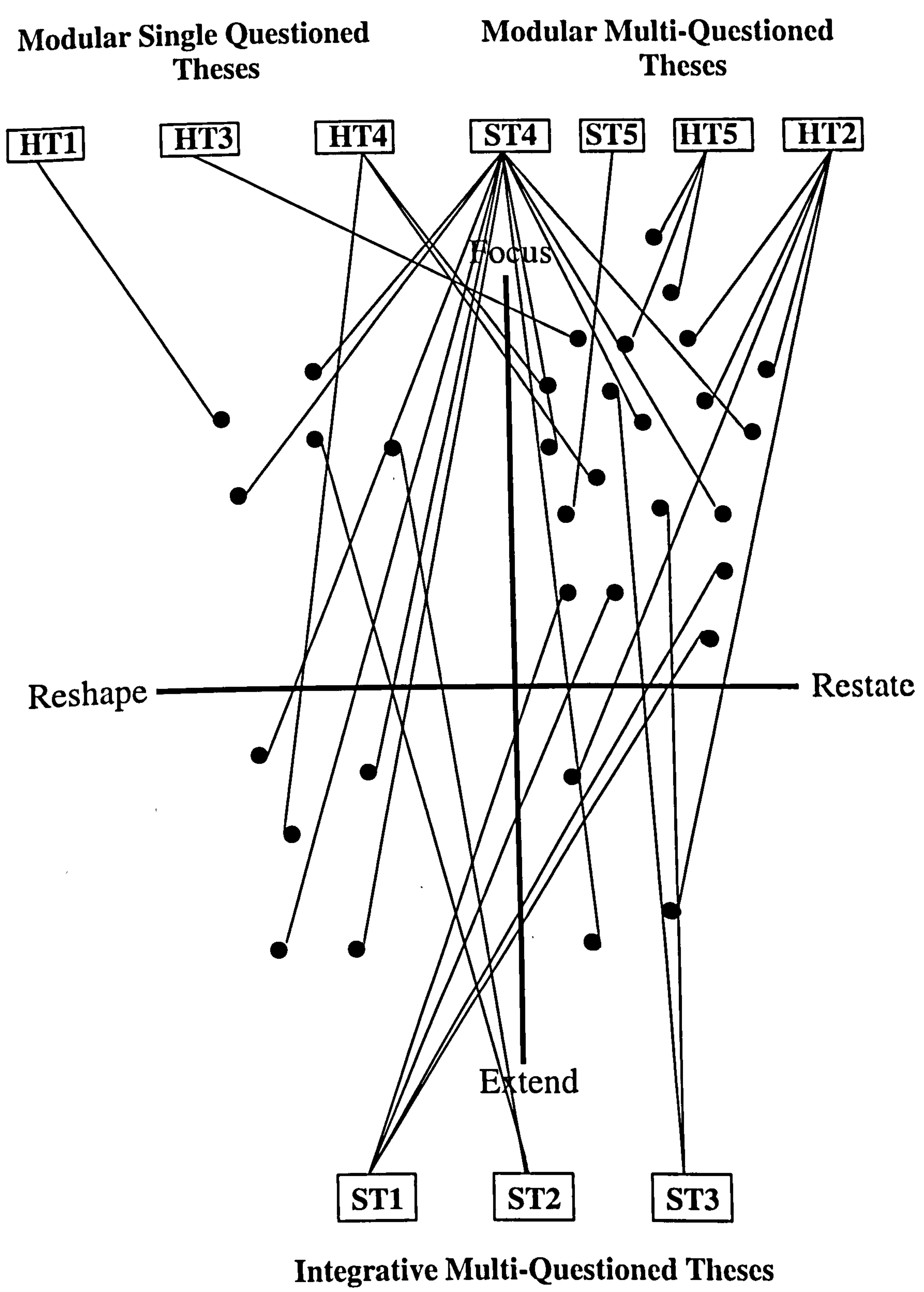


Figure 17. Topology Two: Strategies of Transformation and the Articles Produced Related to their Theses

which the article is intended and which may to a greater or lesser extent oblige the author to make changes (e.g. ST2.A2), or it could be simply a modification that was set by the editors as a condition for accepting publication. The same kinds of comments could be made about the articles placed in the third region (5 articles). These articles, which were produced as a result of both reshaping and extending their original Question, are again few in number which suggests that they may be harder to produce. The changes in the Scope and the Direction of their Question would indicate that these would be very different from the original source. Again, the motives could be personal, writers developing new studies based on the same research Question, or external, dictated by the new environment in which the text is likely to be accepted for publication. The fourth and final semantic region includes the articles that are produced as a result of extending the Scope of the Question, but without having to change the Direction of the main Question. This means that the Question of the article, in terms of wording, will look more or less similar to the original Question of the thesis, but there will be further parts that will indicate some new aspects that the original Question do not mention. The number of the articles produced under this type is limited (3 articles). This is probably because it is practically difficult to produce such a Question because extending the Question most of the time entails making so many changes to the Question itself that it becomes difficult to keep it to its same wording and direction.

As seen in figure 17, it is clear that some theses produced more articles than others (e.g. ST4, ST1 and HT2). According to the previously discussed multiple vs. singular + integrative vs. modular topology, the changes taking place could be at least partly explained by the type of Question and the thesis organisation. If we try to apply these criteria to the present topology to examine whether the type of thesis and its Question may have an effect on the selection of specific types of strategies of transformation that are used for developing the article Questions, it becomes clear that the choice of the strategy is not determined by the type of thesis/Question researched. For example, although ST2 and ST3 are integrative and multi Questioned theses they both produced articles using varying types of strategies. ST4, which is more

modular in form, is another good example that shows that a single thesis may produce a variety of articles using different strategies. This indicates that the type of thesis/Question does not determine the choice of the strategy to be followed, although it is influential in many cases, as in the relative ease of the production of focused and restated Questions from a modular, multi-Questioned thesis, or the need to produce reshaped and focused articles from integrative, multi-Questioned theses.

In addition to the above factors, the subject matter factor does not appear to be a decisive factor in determining the type of strategy used in changing the research Question or the amount of the articles produced from a certain thesis in general. Comparing theses from Applied Linguistics and Dentistry (HT2 and ST1), it is clear that they use again a variety of strategies of transforming the Question of the thesis and produce varying numbers of articles. It was noticed, however, from this topological summary that scientific theses produced a larger number of articles than humanities theses in general (20 articles from 5 scientific theses vs. 13 articles from 5 humanities theses). This suggests that, for whatever reason, there is a greater tendency for scientific theses to be built around a large number of mini-Questions/researches that are explored through a series of scientific experiments, each of which in turn could be turned into an article, while Questions in humanities theses tend to tackle major Questions that are divisible only for research purposes. However, in one of the scientific theses (ST5) it was found that the writer did not produce more than one article from the whole thesis. This shows that again this factor could influence but not determine the strategies used or the amount of articles produced from the thesis. There may well be other factors in addition to the subject matter factor which play a part in deciding the type of changes made by the writers: greater confidence in the likelihood of having their work accepted, more encouragement from supervisors, and so on. However, these issues are beyond the scope of this study.

On the whole, it was found that the organisation of the thesis and its subject matter influence, but do not determine, the strategies used in producing articles from it or the number of the articles produced. This

implies that, whatever the type of thesis organisation and subject matter, these factors should not be regarded as limiting factors in producing publications but rather as probably influential factors whose effect writers need to understand so they can improve their chances of publishing internationally. It also implies that the reasons for the kind of changes made to the top elements of the thesis while publishing from it cannot be solely explained by the examination of the text variations, but by considering the other factors that the texts cannot show, and by which expert academic writers who have actually gone through this process of transformation have been affected.

Although in the above section I focused on summarising and discussing the outcome of the analysis of the Question element in theses and the various factors that seem to influence this top element, the same factors discussed above are applicable to the Answer Proper element. This is because this element is the other side of the same coin. Thus, if the Question derived from a thesis is influenced by the type of thesis, modular or integrative, or the original type of Question in the thesis, single or multiple, the Answer Proper in the produced article is bound to be influenced by these same factors. Also, the Answer Proper undergoes the same strategies as the Question in transforming its information.

8.2.1.2. The Outcome of the Analysis of the Middle Level Elements

Analysis of the middle level elements - the Setting, the Response, the Answer and the Outcome - and their sub-elements revealed that each of these elements and their sub-elements may undergo specific types of modifications due to their condensation and/or reorientation. For summarising purposes, table 8 (overleaf) outlines the different types of modifications that were identified under each of the middle level elements and their sub-elements, pointing out whether these modifications are made as a result of condensation and/or reorientation.

Element	Condensation	Reorientation
<i>Setting</i>		Background to the Study
	<ul style="list-style-type: none"> - Cutting out metadiscourse - Reducing/cutting out basic information - Dropping parts irrelevant to the published study 	-Reframing by adding and rewording
		Research Context
	- Cutting out references	-Reframing by adding further studies
<i>Response</i>		Data
	<ul style="list-style-type: none"> - Limiting amount of data - Cutting out "unnecessary" parts of data - Representing data in condensed forms visually 	<ul style="list-style-type: none"> - Localising description of data - Reorganising materials
		Procedures
	<ul style="list-style-type: none"> - Omitting/reducing "display" of knowledge - Deleting/reducing "due care and caution" information 	- Localising description of procedures
<i>Answer</i>	Findings	Findings and Discussion
	<ul style="list-style-type: none"> - Deleting metadiscourse - Reducing/deleting background materials/ methodology before report of results - Reducing/deleting detailed report of findings 	<ul style="list-style-type: none"> - Deleting report of results irrelevant to the new context - Developing the interpretation of the results - Changing the level of certainty of interpretations of result
		Discussion
	<ul style="list-style-type: none"> - Deleting metadiscourse - Reducing/deleting background materials/ methodology before discussing results - Reducing/deleting report of previous studies that support findings 	
<i>Outcome</i>	- Deleting the element completely or one of its sub-elements	-Reframing the implications

Table 8. Summary of the Main Types of Changes Made to the Middle Level Elements

From the table, it becomes clear that very few modifications that result from condensation are shared by two or more elements: most of them are distinct as they appear only in relation to particular types of elements/sub-elements. The two main types of modifications that appear in relation to more than one element/sub-element are the deletion of metadiscourse references and the reduction/deletion of "displays" of knowledge.

As can be seen from the table, it was found that most writers use many metadiscourse references throughout the thesis, especially in the Setting and the Answer elements. These references, which may help readers recognise the overall organisation of the thesis, connect the present sections to previous ones or anticipate the following sections in the texts, are usually deleted in the articles because they are no longer needed in the new context of the articles. Even if it is sometimes possible to include these references for purposes of clarity, they are more likely to get deleted because they are not carriers of "research-based information" - they are rather "form/organisation-based information" - that could be easily lifted out from their original texts without having much influence on the content of the published studies. Swales (1990) in his investigation of a number of theses has identified this same linguistic feature, metadiscoursal language, as being one of the distinguishing features. The other type of change that was common in more than one element was the reduction/deletion of "displays of knowledge". As can be seen in the table, it was a common type of modification under the Setting, Response and Answer elements. In the Setting element, it was found that most writers include rather longish background information that shows their awareness of the standard amount of knowledge that can be regarded as required from graduate students. This basic information gets reduced or completely deleted in the articles because the different status of the writer does not require this display of knowledge, and the expected readers of these texts do not need to be reminded of it. This seems to link with Bhatia's comments on the differences between the Introduction sections in theses and articles (Bhatia, 1993) which is mainly related to the issue of introducing the field in the thesis against establishing the field in research articles. The same type of

condensation happens with the background information that appears as part of describing the Procedures of the study in the Response element, and in the Answer element as a lead into the report of the results of the study. Writers tend to include this to show their examiners that they are aware of the common Procedures used in their field of study.

On the other hand, the other types of changes that writers make due to condensation are more tied down to the particular elements/sub-elements they appear under (see table 8). For example, in the Setting element, the reduction/deletion of references to previous research or citations is a common modification under the Research Context sub-element. As part of proving to the examiners that the graduate student has done the work necessary from him/her, he/she must include in the thesis a report of as wide a range as possible of the literature relevant to the topic of the study. In the article, on the other hand, the reference to specific previous research is either reduced or completely deleted for lack of space and the need is to focus readers' attention on the most directly relevant previous studies and citations. Another example of such modifications is the deletion of "due care and caution" information that writers include while describing the Procedures of the study in the Response element. In this particular type of information, the writer provides ample information that shows that he/she has taken every possible precaution to make a sound experiment/study so that its results would be accepted in turn. In the article, space limits as well as the need to present the procedures as a "recipe" of the steps of the study made without having to describe in detail, comment on or justify the use of particular procedures - as one of the case studies has described it - necessitate that the writer deletes or reduces this type of information.

The changes made due to reorientation are more difficult to pin down than those resulting from condensation. This is perhaps because they are very much related to the change in the direction of the study, which can be very open-ended. Therefore, it seems that the types of changes identified due to reorientation are looser than modifications due to condensation. For example, reframing the Research

Context under the Setting element may include referring to the same research references as in the original text but rewriting them from a different perspective, or rewriting part of the original references and adding other references, or even including totally new references that may seem more suitable for the new context of the article. In addition, under the sub-element of Discussion within the Answer element, the writer as part of reorienting the article may develop new interpretations of the Findings of the study. These interpretations, which reflect the fact that the writer has "digested" the study in a better way and can therefore produce other reasons for the identified results, are a further indication that reorientation modifications in this case have a very open nature. Perhaps the only variation identified in the present data that might seem to be easier to handle is related to the change in the level of certainty in discussing results, because it might be assumed that it can be done automatically by replacing certain words while advancing essentially the same proposition. However, this would be far from reality because, as seen in many of the articles analysed, reorientation is done through more complex means than just changing the level of certainty.

8.2.2. The Outcome of the Study of the Writers

The second line of study focused on the investigation of the general perceptions expert writers hold about the process of transforming theses into articles, in particular the changes writers make and the factors that influence these types of changes. In addition it focused on the study of the perceptions of a group of novice writers. Another study focused on exploring the views of two particular case studies who have actually gone through this process and made changes to their texts. The aim of these two studies was to back up the results of the analyses of the texts, by collecting information from the expert writers about the modifications involved in the process. In addition, the study aimed to reveal possible misconceptions of novice writers about this process that would need to be considered while training them to overcome their writing problems in the future.

The information collected from exploring the perceptions of expert writers supported many of the results of the analyses of texts. The most relevant of these is their ranking of the types of changes that they usually need to make while deriving articles from theses, and the factors that may influence the process in general and the changes made in particular.

Concerning the first point, it was found that expert writers are well aware of the fact that the top level elements, the research Question and its relevant Answer, are the first elements to be modified in this process. This finding was further confirmed by the comments of the two case studies who reported that they often begin the process by rewriting their titles, aims and conclusions in the new texts as part of reformulating the original top elements in the thesis to suit the new context of the "to-be published" study. In addition, all expert writers showed awareness of the need to make further changes to the middle level elements like the Setting and Response elements, and the Findings and the Implications sub-elements. The interviews with the two case studies gave further clues to the particular changes that expert writers make while transforming these middle level elements. Examples of these particular changes made to the Setting elements are the reduction/deletion of some parts of the general background to the study, and the deletion of some parts of the reference to previous research. In some cases, the two expert writers reported that they may also add new parts to their Setting element like a new general background or a new Research Context to gear the study to a new research Question. These types of variations coincided with the changes identified in the Setting element in the text analyses and which were due to condensation and reorientation. In addition, the two case studies confirmed some of the types of modification identified in changing the Response element like condensing the report of the Procedures by stripping all the details that support using them and the conditions for carrying them out. Other examples of the changes they reported they make and which the study of the texts has also revealed are the omission of the detailed report of the Findings in the Answer element, the reanalysis of the data to produce other Findings and the changes made to the visual representation of these findings.

Not only did the comments of the two case studies confirm the type of changes that the analyses of texts have revealed, but they also pointed more clearly to the factors that influence the process in general as well as the types of variations made. The two expert writers pointed to the influence of the type of thesis on the ease of deriving articles. They showed awareness that theses which are organised in what I call the "modular" way can help in producing articles in a more limited amount of time and effort. Their comments on the process of transformation also revealed their awareness of the influence on the modifications made of the shape of the genre of the article, the interests of the editorial board, the journal policy, the general trends in the field, the expected readers of the article, and the researcher's digestion of the science. Most of these factors have been already suggested by many of the changes identified in the texts explored and hence they back up many of these suggested factors.

In addition, the comments of the two case studies have shed light on other aspects of this process which text analyses could not reveal. These aspects include the general description of the stages writers follow in deriving articles from theses, the factors that influence the selection of the parts that get published, as well as the main motives behind the need to publish articles from degree work in the first place (see section 7.3.3.). All this information, although not directly related to the main aim of the present study, generally provides valuable insights into the process of deriving articles from theses.

On the other hand, the study of the perceptions of novice writers revealed that they have a number of misconceptions about the process of drawing articles from theses and which may help to explain why many of them seem to be reluctant to undertake a similar process. These misconceptions include their exaggerated anticipation of the amount of work involved in the process. It was also found that novice writers have misconceptions about their priorities concerning the type of changes that they need to make to publish from their PhD theses which do not match with expert writers' priorities. Novice writers also

held other misconceptions regarding the areas that editors of journals are likely to consider important in the revision of drafts of articles. For example, they mistakenly believed, against the comments of expert writers, that language errors are the top aspect that editors are concerned with. In addition, the investigation showed that not all novice writers have a clear idea about the factors that influence the process of deriving articles from theses. As a result of this study, it seems necessary to consider the teaching implications based on acknowledging these fears and mistaken perceptions of this process which may help similar candidates in the future to overcome them. For a detailed discussion of the teaching implications based on the results summarised in the present section see section 8.4. below.

Having considered the outcome of the study of the texts and writers, I now move to discuss the wider implications of the outcome of all these studies on the general theoretical trends that have both motivated and influenced them.

8.3. Wider Implications of the Study

The present study has a number of important implications. Some of these implications are drawn from the general undertaking of the study, others are based on the results of the analysis of the texts and the identification of the various types of changes made to the top and middle level elements. Other implications are drawn from the two studies on writers' perceptions on the writing process and the changes made to transformed texts. In the present section I will attempt to discuss these implications in detail reporting on these different types of implications in the same order mentioned above.

Although the present study has been motivated by a personal concern about a problem that I have observed as an EAP teacher, the inability of many Egyptian academic writers to publish internationally from their degree work, the outcome of study itself has shown further the significance of this area of study. Looking at all the data collected and reviewing the comments of expert writers, it becomes clear

that there is always a need to produce articles, especially for those working as staff members at universities, and that most of the time PhD theses are very productive “mines” from which researchers can develop these articles. The fact that the data explored are representative samples in both the scientific and humanities fields of theses producing international articles shows that it is a common process that academic writers follow in the different fields. However, what was even more revealing is not that I have found examples of writers making the transformations that I anticipated would occur, but that in certain fields of study I could not find many examples of these. This indeed is evidence of the problem that I have been personally concerned with. For example, I have not found examples of Egyptian PhD theses published from the University of Alexandria producing international articles in the field of Applied Linguistics. In the same university, I also could not find examples of national PhDs in the fields of Nursing and Physical Education that have produced international articles. This situation may be due to cultural imperialism that may not allow many writers international publication. But, this situation was not only prevalent in my own environment, but I also found it in other environments. It was for example echoed by the British lecturers whom I have interviewed in my present study. They confirmed that in many cases PhD students waste the chance of publishing from their degree work and in turn their department does not get the maximum benefit from their degree work. They agreed that probably one of the reasons why they do not publish is due to the form of the original text and their ignorance of what is involved in the process of transformation. Hence, the present study implies that the process of changing theses into articles is a worthwhile aspect to study.

Earlier studies on research articles (e.g. Swales, 1990) and theses (e.g. Dudley-Evans, 1989) have shown that the thesis and the research article are two very important text-types to all academic writers. However, the present study lays more emphasis on the intertextual relationship between these two text-types rather than focussing on each one of them on its own as many previous studies have done. It is worth exploring not only the relation between text-types that seem to be obviously different in style and language from one

another (e.g. as the case of the studies of popular science versions of research articles), but between texts that could be in many ways similar in style, organisation and language, as is the case with the two text types studied in the present research. This involves focussing on a new type of intertextuality (Fairclough, 1995) that has not been much discussed, which is the study of derivative intertextuality. It is anticipated that this particular area of study could be of interest to researchers who wish to compare and contrast the various linguistic aspects of such related texts as well as study, as I have attempted in the present study, the process of deriving one text from another. Other interesting examples of written texts that are derived from other written texts would include the scenario scripts of films that are based on written novels or these lecture handouts which are at least partly derived from general textbooks or vice versa. The study of the derivative intertextuality of such related texts may be of linguistic interest to researchers, but they may be also of great value to people pursuing careers in writing scenarios or lecturing.

The study has also revealed the value of marrying top-down and bottom-up approaches of analysis, and the use of both product and process approaches as well as qualitative and quantitative studies. The present study attempted to study the overall semantic and organisational structure of the interrelated texts as part of approaching the text from top to bottom. It showed that the umbrella rhetorical pattern developed by Hoey (1983), the Problem-Solution pattern, and the notion of macrostructures and superstructures (van Dijk, 1980, 1983) could be used with some flexibility to represent the overall organisational structure of theses and articles. At the same time, the detailed analysis of some of the linguistic aspects of the various elements/sub-elements of the same texts under an overall organisational pattern is a way of approaching the texts from bottom up. It is felt that using both approaches has helped produce a more comprehensive description of the changes writers make while transforming theses/chapters into articles. This emerges more clearly when the study is compared to the outcome of a previous study on the same topic (Mohamed, 1993) and the results of a previous pilot study (Mohamed, 1998) which were mainly concerned with the analysis of a number of comparable linguistic items and applying quantitative methods without

considering the value of studying the meanings expressed in the texts as a whole. Although the study of the semantic aspects of any texts is usually problematic as it is hard to undertake and verify, it is clear from the present research that the study of meaning is essential to fully understand the changes that writers make to transform their texts. This top-down attitude in undertaking research was verified by running a bottom-up analysis that used the linguistic evidence to support the analysis of the overall meaning of specific parts of the texts explored.

In addition, the study showed the value of carrying out the analysis of product-based data, the texts investigated, in addition to the study of the process-based data, the perceptions of the writers who underwent writing the same or similar texts. Whereas the first supplied qualitative results, the second, which was meant to support the study of the products investigated, provided both quantitative and further qualitative results that helped to confirm some of the aspects raised by the text analyses and add new results as well. The general implication for future research then is that the combination of these various approaches is necessary to produce a more balanced view of the phenomenon investigated.

One of the main results of the text analyses is the realisation that the overall organisation of the thesis, how far it is modular or integrative, may influence the number of the publications produced from it. As mentioned earlier, this finding does support the idea that writers need to consider their overall design of the thesis if they are interested in producing more articles from their theses in the future. It also implies that the type of the original text from which the article is produced and the amount and types of changes that writers are likely to make depend on the organisational pattern of their thesis. Thus, if the thesis is more modular the source text will probably be a chapter that could be easily detached and reproduced with minimal/some changes as an article. On the other hand, if the thesis is more integrative the source text is likely to be a p-text that could be produced by referring to a number of detached texts throughout the thesis and which may need a greater amount of changes to produce the target text, the article. It is

important to raise this issue here because, as the study has also shown, in the humanities field writers tended to produce integrative theses rather than modular ones as the case in the scientific field, and that probably was the reason why theses in this field usually produced fewer articles than their counterparts in science. This tendency in the humanities field may be explained by the fact that the humanities trends of thought/writing have always encouraged, probably since Socrates, the idea of the unity of thought and this in turn has pressurised researchers in this field to produce writings that are very tightly linked together. This unity even holds the piece of work so tightly that it could be published as a book, which humanities writers regard more highly than the research article. Another possible interpretation of this tendency in the humanities field is that the nature of research in the humanities is more theoretical and this often leads to producing works that are more or less the result of developing mainly one thought in a gradual manner or looking at the same thought from various aspects to reach a final theoretical conclusion. In scientific fields, on the other hand, progress is typically seen in terms of a linear, incremental advance in knowledge founded on often small but objectively verifiable facts established through experiments (see Hyland, 1999, for a similar argument based on a study of differences in citation practices between science and arts subjects). Written works based on the studies that represent the steps in the advance are often produced in the form of modular theses that report these smallish attempts to establish scientific facts. This is no doubt related to the fact that, as pointed out by one of my case studies, greater value is placed on papers than on books in scientific areas: theses are seen primarily as quarries for papers rather than as first drafts of monographs. Another possible interpretation of this tendency of using modular theses by scientists is the fact that PhD students frequently develop their theses by means of the production of a number of articles and not vice versa. This is often the result of the high pressure that is exerted on them by their supervisors/departments to publish their work in the form of a research article, the most respectable form of written product in the field of science, often before or during their writing of the thesis. It is likely that because of this the thesis text tends to be formed by collating these various articles together which may be

all referring to different aspects of experimenting on the same phenomenon or the exploration of different phenomena that have some aspects in common.

Text analyses have also revealed that of the different processes that writers follow in transforming the top elements of the thesis into the article the most common process is the focus-restate process. This process which involves only republishing one of the many aspects of the PhD study without making major changes in its main Question and final Answer implies that writers often revert to the simplest processes to be able to produce articles from theses with the minimum type of effort possible. This tendency is logical given the pressure that such academics may be under to produce articles quickly and at times when they may be very busy carrying out other tasks. This confirms further the fact that writers need to help themselves by producing theses that could be easily published using this particular process, which in this case must be modular in shape. It also magnifies the problem that motivated the present study. It is the problem that many researchers, especially novice ones, are usually reluctant to produce articles due to the difficulties they anticipate they are likely to face in producing and publishing them. This exaggerated fear was definitely expressed by such writers while discussing their perceptions about the process of producing articles from theses. The results implies that if such writers are aware of the most suitable ways of organising texts, the less problematic means of transforming texts and the types of changes involved in the process in general, it may change the negative attitude of such writers.

The investigation of the perceptions of expert and novice writers about the changes involved in transforming theses into articles and the factors that influence them showed many misconceptions that novice writers hold concerning these aspects. This implies that a great deal of teaching is needed to make them aware of the various variations made in this process. It also showed that expert writers are much more aware of the various modifications and the factors that govern these modifications. All of these modifications they singled out confirmed the outcome of the text analyses and helped to shed more light

on the factors that govern them. In the previous study on the same topic (Mohamed, 1993) it was anticipated that the effect of the audience has the most influential effect on the process of changing interrelated texts like theses and articles. However, the outcome showed that this is not the single most influential factor. Other factors that expert writers singled out were the need to adhere to the general conventions of writing an article as well as considering the overall policy of the journal approached for publication. Although the factor of audience is important, when writers are undertaking the process of changing these texts they seem more concerned with the actual product in their hand, therefore they are firstly worried about shaping up the new text as most research articles in their fields, and those published in the same journal they are approaching for publication. Other factors that they are concerned with next are the immediate readers of the texts, i.e. the editors and their referees and their comments. It is these comments and reports which mainly influence the final article, rather than the image of the colleague who is likely to read this text once it is published. This outcome is logical and understandable and helps to understand why the outcome of the previous study was negative. Having considered the topic more thoroughly it has become clear that the change in the certainty level is not solely affected by the awareness of the external factors affecting the writer which include the writer's evaluation of his/her own status as an academic writer who needs to be present in the text as a recognised scholar or the use of politeness strategies (Myers, 1989) as a result of the influence of the type of immediate readers who are likely to read the text, but also the internal factor that links to the effect of introducing facts along the scale of interpretation (Hunston, 1990). In this way, it could be claimed that the effect of the audience which may be considered important in affecting the process of changing the thesis into an article must be viewed in relation to all the other factors that also affect the same process. Thus it seems essential to undertake more extensive research to pinpoint in more detail these factors and how they may link to one another and their effect on this process in particular.

Having considered the wider implications of the results of the present study, both on previous related methods and general topics of research, it is necessary to discuss the teaching implications of the present study.

8.4. Teaching implications

The teaching implications of the present study are related to both the results of the text analyses and the studies of the writing process.

The first investigation is related to the identification of the changes that writers make to both top and middle level elements. A short course could be devised for novice writers who are interested in developing articles from their theses to be trained in identifying such changes and in turn applying them in their writing of their own articles. This course must therefore include analytical tasks that may help the learners identify the types of changes made to the top elements, on the one hand, and those made to the middle level elements, on the other hand. It may focus mainly on training students on the various processes of transformation writers usually follow in changing their research Questions and Answers. In addition, it may focus on the two main types of changes made in transforming the middle level elements/sub-elements, condensation and reorientation. The exercises could begin by training learners on how to identify parts in the thesis that are usually condensed, i.e. metadiscoursal language and the various aspects of displaying knowledge by thesis writers. The fact that these two particular types of modification are common in more than one element, though they may take a slightly different shape in each of these elements, has a significant implication for teaching academic writers who are undergoing the process of publishing articles from theses. They can be considered the first important types of modification resulting from condensation that academic writers need to be aware of and to be taught how to make successfully if they want to save time and effort in undergoing this process. Afterwards, other more particular variations that are very much related to their particular elements/sub-elements can be taught to novice academic

writers. It is expected that training learners how to identify and produce texts that are reoriented in their meaning and function in comparison to their original texts will be much more complex because of their open-ended nature. Therefore, it would seem that teaching academic writers to be aware of such types of variations will be much more difficult than teaching condensation variations because of the need to make them aware that reorientation modifications in many cases require the rewriting of the original text or even adding completely new parts. Nonetheless, it is certainly important to raise the writers' awareness of such types of variations at least to be ready to make their own individual variations in their own situations. Throughout this training students need to analyse authentic transformed texts and to discuss the linguistic variations that writers make while making these transformations and the likely factors that may cause them to make such changes.

The outcome of the investigation of the perceptions of expert writers, and the reports of the two case studies, when compared to novice writers' perceptions, supported the fact that novice writers hold many misconceptions about the studied process. These misconceptions are mainly related to the amount of difficulty involved in turning theses/chapters/p-texts into articles, the type of changes made to the various elements of the texts involved, the areas of revision required by editors of journals, and the factors that influence the changes made while transforming theses into articles. Thus it would seem necessary for trainers of academic writers who aim at raising the awareness of their students of the various aspects of the process involved in publishing from degree work to discuss with them the actual amount of work expected to undergo this task. Novice writers need to be encouraged to try out this task and to be given the necessary skills to do it in a more confident manner. They also need to become aware of the most important elements/sub-elements that usually get changed in the process of transformation concerned and to know in detail the specific types of modifications that are likely to be made both to the top and the middle level elements. The outcome of the analyses of the texts (see figures 14, 15, 16, 17 and table 8 above) as well as the comments of the two case studies (see chapter 7) that support these changes could be

very helpful in this case. Furthermore, they need to be guided in relation to the areas that editors usually worry about besides language, which is mistakenly the only concern of many novice writers, especially if they are non-native speakers. According to the two case studies it is essential that novice writers be trained to recognise the aspects that are likely to be of most interest to the editorial board of the journals they are likely to publish in. This includes training them how to become familiar with the policies of each journal by reading carefully their guidelines for submitting articles, keeping an eye on the type of research these journals and their editors encourage, etc. They must also become aware that editors and referees, though they may be concerned about the level of the language of the products accepted for publication, are also very much interested in other aspects that are much more related to the general shape of the article and the science presented in it as the present study and other previous studies have shown (e.g. Gosden, 1992). To have an idea about these aspects, it may be necessary to show students samples of the actual comments that editors and referees give and the different forms in which these comments are usually given. The results of the study of the perceptions of writers also showed that novice writers are not aware of all the factors that influence this process. Many of them only consider the element of the audience or the need to follow the conventions of writing an article. This implies that novice writers need to become aware of the multiplicity of the factors involved and the need to evaluate the amount of influence they exert on this process in particular to ensure their success in carrying it out. To do so, a course based on a variety of awareness raising techniques (Scott, 1986) that can help learners discuss all these misconceptions can be devised.

8.5. Limitations and Recommendations

Though the investigation of texts in the present study attempted to cover a wide number of theses and the articles produced from them, it can be argued that the amount of data was limited and that it would be useful to explore a larger number of theses that have produced a larger number of articles. It would also be useful to include theses representing a wider background and a variety of disciplines in addition to the

ones represented by the present data. This is to verify the fact that the conclusions of the analyses of the texts explored are general enough to be applicable to different disciplines and backgrounds as this study has shown. These texts should also include data produced by native speakers and non-native speakers to verify the effect of this variable which was not possible to follow in the present study. Another way in which the study could be extended would be to include theses from which no articles have been published. This could help to confirm the hypotheses about the relationship between the type of thesis and the likelihood that articles will be drawn from it; and it might also allow investigation of the broader factors which hinder the achievement of publication.

Concerning the type of analyses applied to the texts, it is clear that the study focused on mainly one aspect which is the analysis of the changes made to the overall information macrostructure of the two interrelated texts types, theses and articles. It focused on only two levels of the texts investigated, the top and the middle levels. Further studies need to consider further aspects of difference like modality and modulation aspects as well as the bottom level variations which will give further understanding of the detailed modifications made in the two interrelated text-types concerned.

On the other hand, the investigations of the writers were limited to the study of perceptions of a representative number of expert and non-expert writers and only two case studies of the writers involved in producing some of the related texts explored. Future research should include a much more extensive number of informants and case studies. More emphasis should be laid on the difference between the perceptions of informants belonging to different specific disciplines and native and non-native informants - two variables which were not considered in the present study for limitation of time and space.

The two case studies were retrospective studies that allowed writers to report on their previous experiences of writing by going back in time. This study of the process of transformation can also benefit

from having observational and introspective studies of writers who are in the process of deriving articles from theses as this may yield rich comments on the mental processes involved in the process of transformation, the changes made and the discussion of the internal and external factors that influence this process and these changes. Further studies can be carried out to compare and contrast the process as made by expert and non-expert writers to identify in more detail the problems novice writers face. It can be also made on distinguishable samples of natives and non-natives to identify the problems of natives and non-natives undergoing the same process.

The possibilities for future research of the study of texts and writers are immense and are indeed needed to substantiate the findings of the present study. Future research is also needed to help further guide all educators interested in solving the problems academic writers face in their early attempts to become recognised internationally by their fellow colleagues. For me, as one member of this group, having come to the present conclusions of this study, I am beginning to feel more confident about what should be done in the classroom to improve the chances of novice writers who are craving to publish articles from their own theses. I hope in turn that future academic writers will be able to see this process as it is and not just as a mere copying process as many of my earlier students used to claim.

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Appendices

Appendix 1

Codes and Titles of the Analysed Theses and their Articles

<p>*ST = Scientific thesis</p> <p>*HT = Humanities thesis</p>	<p>*ST.A = Article derived from a scientific thesis</p> <p>*HT.A = Article derived from a humanities thesis</p>
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Scientific Theses and their Articles

Codes	Titles of theses and the articles derived from them
ST1	<i>An investigation of experimental bacterial and fungal endocarditis in the rabbit</i>
ST1.A1	“A comparison of the efficacy of itraconazole, amphotericin B and 5-fluorocytosine in the treatment of <i>Aspergillus fumigatus</i> endocarditis in the rabbit”
ST1.A2	“One and two doses of cephadrine in the prophylaxis of experimental streptococcal endocarditis”
ST1.A3	“Efficacy of fluconazole in prophylaxis and treatment of experimental candida endocarditis”
ST1.A4	“Antibiotic-resistant oral streptococci in dental patients susceptible to infective endocarditis”
ST2	<i>Physical, mechanical and clinical evaluation of conventional versus non gamma -2 amalgam alloys</i>
ST2.A1	“Isothermal dimensional changes of some dental materials”
ST2.A2	“Dynamic thermal expansion and scanning calorimetry of mercury phases in dental amalgams”
ST3	<i>Comparative physico-chemical and structural study of some polymeric composite filling materials</i>
ST3.A1	“Effect of temperature and ageing on the mechanical properties of dental polymeric composite materials”
ST3.A2	“Dimensional change in dental polymeric composite materials”
ST4	<i>Permeability, degradation and wear of dental composites</i>
ST4.A1	“An investigation into the permeability of composite materials using silver nitrate”
ST4.A2	“Surface permeability and degradation of dental composites resulting from oral temperature changes”
ST4.A3	“The measurement and analysis of clinical abrasion- a modified approach”
ST4.A4	“Clinical evaluation of three posterior composite and two amalgam restorative materials:3-year results”
ST4.A5	“The clinical wear of three posterior composites”
ST4.A6	“Staining of <i>in vivo</i> subsurface degradation in dental composites with silver nitrate”
ST4.A7	“Effect of surface conditioning on the abrasion rate of dental composites”
ST4.A8	“The colors of silver with silver nitrate staining in dental materials”
ST4.A9	“Subsurface compression fatigue in seven dental composites”

ST4.A10	“Wear patterns in two amalgams and three posterior composites after 5 years’ clinical service”
ST4.A11	“Ten-year clinical assessment of three posterior resin composites and two amalgams”

ST5	<i>An investigation into the behaviour of humic compounds in estuaries</i>
ST5.A1	“The interactions of humic compounds with electrolytes and three clay minerals under simulated estuarine conditions”

Humanities Theses and their Articles

Codes	Titles of theses and the articles derived from them
HT1	<i>Presenting research: a study of interaction in academic monologue</i>
HT1.A1	“Why ask questions in monologue? Language choice at work in scientific and linguistic talk”
HT2	<i>A genre-based investigation of theme: product and process in scientific research articles written by NNS novice researches</i>
HT2.A1	“Research writing in English: a survey of Japanese editors”
HT2.A2	“Research writing and NNSs: from the editors”
HT2.A3	“Discourse functions of subject in scientific research articles”
HT2.A4	“Success in research article writing and revision: a social–constructionist perspective”
HT2.A5	“An aspect of holistic modelling in academic writing: propositional clusters as heuristic for thematic control”
H3	<i>Evaluation in academic research articles</i>
HT3.A1	“Evaluated entities and parameters of value in academic research articles”
H4	<i>Evaluation in experimental research articles</i>
H4.A1	“Evaluation and ideology in scientific writing”
H4.A2	“Professional conflict: disagreement in academic discourse”
H4.A3	“Evaluation and organization in a sample of written academic discourse”
HT5	<i>The economic regeneration of Britain’s central coalfields: an evaluation of policy and politics in the 1980s and early 1990s</i>
HT5.A1	“Industrial subsidies and the manipulation of industrial culture: the case of a West Yorkshire mining town”
HT5.A2	“From coal mining to a high technology economy? The case of an innovation centre in South Yorkshire”
HT5.A3	“A task force in a locality of coal mining decline: the case of Doncaster”

Appendix 2

Two Samples of Comparable Texts drawn from Humanities and Scientific Theses and Articles

* Comparable parts are underlined in both texts

Thesis HT3

In this chapter I focus especially on which entities in a text are evaluated and in what terms. This is closely related to Hunston's (1993b) exploration of the relationship between evaluation and ideology in scientific writing. My main aim is to investigate the following:

- (i) the "things" in ARAs to which evaluation is attached;
- (ii) the kind of qualities/values used to judge these "things";
- (iii) whether these qualities can be reduced to a small number of predictable categories.

I am aiming at a broad but simple classification of the entities and values which in a pedagogical context (i.e. in EAP) can then serve as a kind of check-list to help the reader sort out the evaluations being made. This hopefully will enable the reader to correctly identify the viewpoint being propounded in papers that (s)he reads. In addition, these categories should reflect the pursuit of knowledge in academic fields.

Article HT3.A1

The study

Aims

The present paper forms part of a broad study of evaluation in the ARA which investigates how evaluation works through a text to convey the writer's overall purpose. The study focuses, especially on which entities in a text are evaluated and in what terms. This is closely related to Hunston's (1993) exploration of the relationship between evaluation and ideology in scientific writing. The main aim is to investigate the following:

- (i) the "things" in ARAs to which evaluation is attached;
- (ii) the kind of qualities/values used to judge these "things"; and
- (iii) whether these qualities can be reduced to a small number of predictable categories.

This paper aims at a broad but simple classification of the entities and values that can then serve as a kind of check-list for students to help them sort out the evaluations being made. This hopefully will enable them to correctly identify the viewpoint being propounded in papers that they read.

Thesis ST5

Laboratory studies of the behaviour of dissolved humic compounds under simulated estuarine conditions

2.1. Introduction

Knowledge of the behaviour of naturally occurring dissolved organic compounds in estuaries is crucial to our understanding of the coastal and marine organic carbon cycle and has been reviewed in chapter one. This review reveals how little is known about the subject and in general and in particular highlight our ignorance of the mechanisms involved in the removal of dissolved organic compounds under conditions of varying salinity. This has prompted the work described in this chapter in which several possible mechanisms were investigated.

The chapter is divided into two sections the first of which deals with those reactions that take place between insoluble products. The second section describes some interactions between organic matter and a variety of clay minerals under conditions of varying salinity.

2.2. Removal processes arising from reactions in solution

A number of workers (Seiburth and Jensen, 1968; Parakash, 1970; Hair and Bassett, 1973) have suggested that reactions which involve the flocculation and precipitation of humic materials are the major processes by which these substances are removed from solution in estuaries. This conclusion has been reached from the results of both laboratory mixing experiments (Seiburth and Jensen, 1968), and from field observations of the abundance of particulate organic matter (Hair and Bassett, 1973).

Article ST5.A1

The interactions of humic compounds with electrolytes and three clay minerals under simulated estuarine conditions

A knowledge of the behaviour of naturally occurring organic compounds in estuaries is crucial to our understanding of the coastal and marine organic cycle. A substantial proportion of the organic compounds passing into estuaries from rivers consists of humic compounds or "geopolymers" (Reuter, 1977), which are residual compounds resistant to biological degradation. It is therefore likely that processes leading to the removal of these compounds from solution will be mainly chemical or physico-chemical in nature. Such processes include precipitation reactions involving the formation of insoluble salts and adsorption reactions with inorganic flocculates or mineral particles.

Early studies in this field (e.g. Seiburth & Jensen, 1968; Hair & Bassett, 1973) suggested that large quantities of riverine dissolved humic material are rapidly precipitated in the presence of seawater.

Appendix 3

The Original Text of the Constructed Propositions Presented as ex. 4.11 (ST1.A2)

Introduction

Infective endocarditis is a disease with a mortality rate of 30% (Oakley, 1980). It occurs when bacteria in the bloodstream colonize a sterile cardiac thrombus. A number of surgical procedures can cause bacteraemia, including dental operations, and it is therefore recommended that antimicrobial prophylaxis is given prior to dental treatment (Oakley, 1980; BSAC, 1982).

Amoxycillin in a single 3 g oral dose has been recommended for prophylaxis of infective endocarditis before certain types of dental treatment (BSAC, 1982). Some problems have been encountered with the use of amoxycillin, in particular the selection of resistant oral bacterial strains and alterations in body flora (Lacey *et al.*, 1983; Southall *et al.*, 1983; Woodman *et al.*, 1984). To let the oral flora return to a normal commensal state it is prudent to allow at least a month to elapse before antibiotic prophylaxis with amoxycillin is repeated (Southall *et al.*, 1983; Woodman *et al.*, 1984). This delay is frequently unacceptable and means that parenteral non-penicillin antimicrobials may be needed (BSAC, 1982). A wider choice of alternative oral antibiotics suitable for prophylaxis against bacterial endocarditis should be considered. Cephadrine is a broad spectrum, β -lactamase stable cephalosporin available orally and parenterally. Past editions of the British National Formulary (BNF, 1982), have recommended cephalosporins for cardiac prophylaxis but it is not clear if this applies to the prophylaxis of infective endocarditis.

Appendix 4

Examples of the Top Level and Middle Level Propositional Analyses of Parts of Two Texts Drawn from Humanities and Science Articles and Theses

4.1. Examples of the Top Level and Middle Level Propositional Analyses of Text (HT1.A1) which Helped in Producing the Summary of this Text Presented on pp.122-125

4.1.1. Extraction of the Question Element (Top Level Element)

Original Text	Summary
<p><u>Why Ask Questions in Monologue? Language Choice at Work in Scientific and Linguistic Talk</u></p> <p>Abstract</p> <p>This paper investigates an important aspect of interaction in academic talks: the use of questions in monologue. The study is based on the analysis of naturally-occurring university lectures and research talks. The aim of the paper is to consider how academic speakers (lecturers and research presenters) use questions to establish an interaction with their audiences. The paper considers similarities and differences in the use of questions used in research talks and lectures. It also discusses differences in the use of questions in two subject areas- applied science and applied linguistics- and attempts to link these to differences in discipline-related discourse features of academic talks in the two fields.</p> <p>Introduction</p> <p>Those of us who teach and talk about our research in lectures and research presentations are too well aware of the effort required to engage the attention of our various audiences and to maintain their interest throughout what might be lengthy and complex monologue. In an effort to do so, we may draw on a range of involvement strategies (Tannen, 1989), such as the introduction of personal narrative elements and the use of metaphors and idioms (Thompson, 1997). One such involvement strategy is the use of questions. In formulating his or her message, an academic speaker may simply give information, leaving no opportunity for the audience to do other than listen unless a member of the audience decides to challenge the speaker's point by interrupting. However, an academic monologist may also choose to involve the audience by asking questions.</p> <p>Because asking a question projects an answer, there is an obvious relationship between questions and interactivity in both spoken and written texts (Thompson & Thetela, 1995).</p>	

Biber comments that questions 'indicate a concern with interpersonal functions and involvement with the addressee' (1988: 227), while Frank's study of questions in direct sales letters finds that advertising copywriters use questions as a strategy to involve readers in 'conversational' interaction by 'simulating the processes, structure and dynamism of everyday conversation' (1989: 225). It could be argued that advertising makes special use of questions in order to persuade, by mimicking the persuasive techniques of face-to-face sales interactions. However, Webber's study of questions in scientific journal genres, including editorials, research papers and letters finds that the main functions of questions in medical texts are to 'create anticipation, arouse interest, challenge the reader into thinking about the topic of the text, and have a direct appeal in bringing the second person into a kind of dialogue with the writer' (1994: 266). Perhaps surprisingly, the use of questions in monologues has been relatively neglected in comparison with the range of studies of questions in written texts, though the potential attraction for speakers of using questions in monologue in order to exploit their interactive and inter-personal functions is, I think, clear. The present study aims to fill this gap through the analysis of a corpus of questions in lectures and research presentations from two discipline areas: applied linguistics and applied science.

A number of studies of academic and professional discourse (see, for example, Bazerman, 1981; Dudley-Evans & Henderson, 1990) have shown the important influence of discipline on discourse choices. Gunnarsson *et al.* argue that domains such as the law, medicine and science each have 'a unique set of cognitive needs, social conditions and relations with society at large' and that 'for each area the roles of language and discourse vary' (1997: 5). Love concludes that discourse choices in introductory geology textbooks 'reflect, and, to a certain extent, construct the epistemology of the discipline' (1993: 216-17), while Dudley-Evans finds that differences in the overall organisation of lectures according to field' reflect the disciplinary procedures and agendas of the subjects' (1994: 148). Such studies show that, even within the same text type, important discourse features can be associated with academic field.

(From Title and Abstract)

Top Level Element (Question)

The present study aims to fill a gap, that is the neglect of the use of questions in monologue lectures and presentations from two discipline areas: applied linguistics and applied science.

Commentary

To extract the main summative top level proposition that reflects the top level element, the Question, I follow a number of steps. First, having the probing question 'What is/are the eligible proposition(s) in this text which could be considered the main Research Question of this study?' in my head, I skim the first part of the text (up to the methodology section, by which point I can very strongly expect a Question to have been introduced) to find statements that may be eligible candidates for answering this question. To do so, I eliminate all the other statements that do not seem to answer my question – this coincides to some extent with the rule of *deletion* that van Dijk and Kintsch (1983) report using (see further discussion on the similarities and differences below). Second, having found statements that look eligible to be an expression of a Research Question, I check their eligibility by identifying any signals in them that show that they could be representatives of a Question (see section 5.2.1). Third, to

further check the eligibility of the same statements I cross check them with the Title and the Abstract of the text, where the writer him/herself provides a summary of the main elements. One of the linguistic signals that may show that the selected statements are the most eligible ones to represent the Question of the text is that they have repeated key lexical items that match/replicate the key lexical items presented in the Title and the Abstract. Finally, having become fully aware of the main Question of the text, I may use a more general statement(s) presented by the writer as the summary of the Question – in this way I will be using a version of the *generalisation* rule (van Dijk and Kintsch, 1983), or I may decide to reformulate another statement that sums up the main ideas presented in the Question – in this case I will be using a *construction* rule (van Dijk and Kintsch, 1983).

In the text above, to identify the Question, I started by skimming the first part of the article up to the end of the Introduction Section where Questions, according to the general conventions of writing articles presenting applied science in the academic field, are likely to be presented. While reading I was getting signals from the text through lexical repetition that this study revolves around issues like 'Questions', 'Monologue', 'Language Choice in Linguistic and Scientific Talk'. As I was reading the first part of the Introduction, it seemed that the final statement of the second paragraph of the Introduction (underlined in the text) could be considered eligible to be a Question statement because it seemed to focus more on discussing the present study. It was different from the statements coming before which seemed to be very general in the way they talk about the use of questions in monologue or to be explicitly signalled as referring to other people's research. Similarly, the following statements referred to specific studies carried out on the use of questions by other people. To further check the eligibility of this statement, I looked for signals in the wording. The fact that the statement begins with the phrase 'The present study aims to ...', which is a typical signal of a Research Question according to my model of analysis, helped to confirm that it could be eligible to be a Question statement. Furthermore, a comparison with the Title and the Abstract indicated that the repeated key lexical items were words like 'Questions', 'Monologues', 'Scientific and Linguistic talk/Academic talk/Applied Linguistics and Applied Science talks', 'Lectures and presentations', 'Interaction', and 'Discipline-related differences'. The statement selected from the Introduction Section included many, if not all, of these key lexical items that were identified as major items from the analysis of the Title and the Abstract. This confirmed further my selection. Thus, to produce a statement that could be considered a summary of the Question element, it seemed possible to use the statement presented by the writer at the end of paragraph two. However, since the statement includes an anaphoric reference item 'this gap' (italicised in the text above) that refers to the preceding sentence 'the use of questions in monologues has been relatively neglected in comparison with the range of studies of questions in written texts', I needed to sum up the previous statement and include it in my main Question statement.

If we compare the rules used by van Dijk and Kintsch (1983) and the procedure that I used to produce the summary of the Top level Proposition of the Question, there are similarities, but they are indirect. The key difference is that van Dijk and Kintsch's rules were not designed to be used following a top-down approach but rather in a bottom-up approach. This is mainly because they apply them to texts by first analysing the single statements that make up these texts one by one and then by attempting to find similarities and differences between these statements in terms of their ideas to be able to extract the summative macrostructure of the text using the rules of *generalisation* (i.e. by finding statements that may replace a number of other statements), *deletion* (i.e. eliminating statements that seem to be subsidiary to the main ideas in the text), or *construction* (i.e. by producing new statements that sum up the overall ideas of a number of other statements). In extracting the top level propositions I do not start by analysing the single statements of the text as they do, but rather I skim the whole text first before deciding on the parts, rather than single statements again, that may be eligible representatives of the elements I am trying to identify. These rules in fact seem to work better while extracting the middle and lower level

elements in my approach (see the following extract). However, a version of the rule of *deletion* was applied in sequentially discarding the statements that were considered as ineligible to serve as the Question statement, and in confirming their subsidiary function in relation to the Question once this was identified. Also, in the selected statement of the Question, I deleted the reference to the part 'the analysis of the corpus' as it seemed to refer to methodology, Response, rather than Question. It was not really necessary to apply the rule of *generalisation* since the statement at the end of paragraph two in the Introduction Section already incorporated most of the relevant information in a generalised form. However, the general statement picked up was modified slightly to include the rest of the preceding statement to which it refers. This corresponds fairly closely to the rule of *construction*, more specifically through a process of incorporation or inclusion.

4.1.2. Extraction of the Setting Element (Middle Level Element)

Original Text	Summary
<p>Why Ask Questions in Monologue? Language Choice at Work in Scientific and Linguistic Talk</p> <p>Abstract</p> <p>This paper investigates an important aspect of interaction in academic talks: the use of questions in monologue. The study is based on the analysis of naturally-occurring university lectures and research talks. The aim of the paper is to consider how academic speakers (lecturers and research presenters) use questions to establish an interaction with their audiences. The paper considers similarities and differences in the use of questions used in research talks and lectures. It also discusses differences in the use of questions in two subject areas- applied science and applied linguistics- and attempts to link these to differences in discipline-related discourse features of academic talks in the two fields.</p> <p>Introduction <u>Those of us who teach and talk about our research in lectures and research presentations are too well aware of the effort required to engage the attention of our various audiences and to maintain their interest throughout what might be lengthy and complex monologue. In an effort to do so, we may draw on a range of involvement strategies (Tannen, 1989), such as the introduction of personal narrative elements and the use of metaphors and idioms (Thompson, 1997). One such involvement strategy is the use of questions. In formulating his or her message,</u></p>	<p>Middle Level Elements (Setting)</p> <p>Research Background</p> <p>Teachers, lecturers and presenters use ways to attract the audience's attention during lengthy monologues.</p> <p>Asking questions is one of these ways used by monologists to invite interaction.</p>

an academic speaker may simply give information, leaving no opportunity for the audience to do other than listen unless a member of the audience decides to challenge the speaker's point by interrupting. However, an academic monologist may also choose to involve the audience by asking questions.

Because asking a question projects an answer, there is an obvious relationship between questions and interactivity in both spoken and written texts (Thompson & Thetela, 1995). Biber comments that questions 'indicate a concern with interactional functions and involvement with the addressee' (1988: 227), while Frank's study of questions in direct sales letters finds that advertising copywriters use questions as a strategy to involve readers in 'conversational' interaction by 'simulating the processes, structure and dynamism of everyday conversation' (1989: 225). It could be argued that advertising makes special use of questions in order to persuade, by mimicking the persuasive techniques of face-to-face sales interactions. However, Webber's study of questions in scientific journal genres, including editorials, research papers and letters finds that the main functions of questions in medical texts are to 'create anticipation, arouse interest, challenge the reader into thinking about the topic of the text, and have a direct appeal in bringing the second person into a kind of dialogue with the writer' (1994: 266). Perhaps surprisingly, the use of questions in monologues has been relatively neglected in comparison with the range of studies of questions in written texts, though the potential attraction for speakers of using questions in monologue in order to exploit their interactive and inter-personal functions is, I think, clear. The present study aims to fill this gap through the analysis of a corpus of questions in lectures and research presentations from two discipline areas: applied linguistics and applied science.

A number of studies of academic and professional discourse (see, for example, Bazerman, 1981; Dudley-Evans & Henderson, 1990) have shown the important influence of discipline on discourse choices. Gunnarsson *et al.* argue that domains such as the law, medicine and science each have 'a unique set of cognitive needs, social conditions and relations with society at large' and that 'for each area the roles of language and discourse vary' (1997: 5). Love concludes that discourse choices in introductory geology textbooks 'reflect, and, to a certain extent, construct the

Research Context

Thompson and Thetela (1995) pointed to the relation between questions and interactivity.

Biber (1988) discussed interpersonal functions and the involvement of the addressee.

Frank (1989) studied the use of questions in sales letters and ads to show their persuasive function.

Webber (1994) studied the functions of questions in scientific journal genres.

The study of questions was neglected previously.

Studies on the difference in discourse features in various disciplines, and in the same text type, and which also showed that there is variation in discourse features according to discipline include those done by Dudley-Evans (1990, 1994), Love (1993) and Gunnarsson *et al.* (1997).

epistemology of the discipline' (1993: 216-17), while Dudley-Evans finds that differences in the overall organisation of lectures according to field' reflect the disciplinary procedures and agendas of the subjects' (1994: 148). Such studies show that, even within the same text type, important discourse features can be associated with academic field.

Commentary

To extract the main summative middle level propositions that reflect the middle level element of the Setting, I needed to identify any propositions that were eligible to represent the *Research Background* and the *Research Context* which constitute the sub-elements of the Setting. To do so, I followed a number of steps that were essentially similar to those followed in identifying the Question. First, I skimmed the Introduction Section to locate any propositions that may be considered representatives of the two sub-elements being identified to be able to answer the probe question in my mind 'What are the propositions which could be eligible to be considered the Setting of this study?'. This was done by conceptually relating the propositions of the Introduction to the Question proposition identified earlier. In the case of the Research Background, all propositions that seemed to provide more general information than that presented in the Question and at the same time help to lead in to the more specific information presented in the Question proposition were considered eligible candidates. On the other hand, any propositions that reported other studies that seemed to focus on similar or different issues from those raised by the research Question were considered eligible to be candidates of the Research Context propositions. Having identified these eligible statements, to further confirm that they are the ones that actually report the Setting sub-elements, I needed to look for the different signals that show that they are Background or Context sub-elements. As mentioned in section 6.3., the key signals included using present tense statements and general qualifiers in the case of Background propositions, and the use of integral and non-integral citation forms in Context statements. Further signals that were checked to confirm the status of these propositions included the lexical items in these eligible statements and how far they repeated some of the key lexical elements of the Question proposition. The lexis was also expected to include non-repeated but related words that refer to the more general context in which the study is presented in the case of the Background propositions, while it was expected to include non-repeated reference to other researchers and findings of other studies in the case of Context propositions. An important feature of the Context statements is that they will often have items which are broadly equivalent to those in the Question, indicating the common research topic, but will also have items which are instantially in opposition to those of the Question, indicating differences of focus or outcome. Finally, having identified the propositions that represent the Setting sub-elements, it was necessary to arrive at the propositions that could be used to sum up this element. This could be arrived at by using some of the actual statements used in the text and deleting others, thus using the rule of *deletion* (van Dijk and Kintsch, 1983), or by producing a more general statement that sums up the information expressed in a number of other preceding or following statements, the rule of *generalisation* (van Dijk and Kintsch, 1983), or by reformulating the information in new statements, the rule of *construction* (van Dijk and Kintsch, 1983). In some cases the whole element and/or its sub-elements may be represented by only one proposition or by a number of propositions depending on the length of the text and the number of concepts that could be considered important to represent this element and its sub-elements.

In the above text, the whole of the first paragraph of the Introduction section seemed to be a candidate as it referred to the general idea of attracting the attention of the audience especially in the context of teaching and presenting academic work monologues, one issue discussed in

the Question. Furthermore, by the end of the paragraph, the writer was trying to narrow down this general introduction by focusing attention on the possibility of using different strategies to attract the audience even while using monologues and in particular by referring to using questions as one of the involvement strategies used by monologists. This brought this part nearer to the Question of the study and further confirmed that this part is eligible to be the Research Background to this study. For further confirmation, I looked at the signals that usually indicate the use of a generalised statements. It was possible to identify the generalised statements that use simple present tense (e.g. One such involvement is the use of questions) and include generalised expressions like (Those of us who teach ...are too well aware of the effort required to ... etc.). It was also noticeable that the participants referred to are general language users rather than researchers. This further confirmed that these statements are background statements. Also, it was confirmed by the repeated use of the words 'monologue', 'presentations', 'talks', and 'questions' that they are related to the main research Question expressed earlier. Thus it seemed clear that these propositions are meant to provide a more general Background to the specific Question stated at the end of paragraph two. To arrive at the propositions that summed up this paragraph, a general statement was produced that used most of the lexical items identified above. This meant drawing on the *generalisation* rule (van Dijk and Kintsch, 1983). In addition, since the different types of involvement strategies used in monologues and the previous citations on these could be referred to generally as different 'ways for attracting the audience's attention in lengthy monologues' these were deleted in the summative statements and hence I used the *deletion* rule to arrive at the final two propositions presented above to represent the Background to the study.

On the other hand, the Research Context was identified first by skimming the Introduction Section and relating it to the Question of the text. It was noticed that the second and the third paragraphs of the Introduction Section included references to many studies all of which relate to the issue of using questions in order to involve an audience or to refer to studies that show the difference between disciplines in relation to the use of different discourse choices. This showed that these two paragraphs could be eligible candidates to present Research Context propositions. This was further confirmed by the fact that they included clear signals that are usually used to report Research Context. These included relevant integral and non-integral citations used by the writer (e.g. 'Love concludes that ...(1993: 216-17)', '... there is an obvious relationship between questions and interactivity ... (Thompson and Thetela, 1995)') that refer to related studies on using questions in different contexts. Further signals that confirmed that these paragraphs are representatives of the Research Context sub-elements are the use of a number of lexical items that replicate the key lexical items in the research Question. Examples of these are the words 'question(s)', 'arouse interest', 'questions in monologues', and 'influence of discipline/ academic field' all of which coincide with the key lexical items of the Question. Having confirmed that these parts are representative of the Research Context, the following step was to extract from them propositions that sum up this particular sub-element. It was found beneficial to produce a single proposition to represent each of the studies reported and to report the main characteristic of each of these studies that show how it resembles or differs from the study reported in the text explored. To do so, the rule of *deletion* was applied first to eliminate the details that seem to be less crucial in representing the study and then the rule of *construction* was applied to produce a new statement that sums up the study. An example of this is the first statement in paragraph two - 'Because asking a question projects an answer, there is an obvious relationship between questions and interactivity in both spoken and written texts (Thompson & Thetela, 1995)' - which was summed up as 'Thompson and Thetela (1995) pointed to the relation between questions and interactivity'. Since it was considered that the most important items to be kept are the names of the researchers, the date of the study and the main fact that their study revealed the relation between questions and interactivity, as they are key items mentioned in the Question, it was felt necessary to eliminate all the other less important elements in order to produce the final summary of this proposition. In other cases it was necessary to use the *generalisation* rule (van Dijk and Kintsch, 1983) to extract the Context proposition. A good

example of this is the proposition extracted to sum up the third paragraph. It was noticed from the first and last sentences in the third paragraph that this paragraph presents some references that show that discourse features may vary as a result of the variation of the discipline, even within the same text type. This coincided with the research Question which stated that this study wants to show that use of questions varies according to whether the discipline is scientific or linguistic. In addition, the fact that the words 'discipline', 'disciplinary procedures', 'subjects' and 'field' were used repeatedly or replaced each other in the same paragraph showed that the effect of the discipline is one of the key aspects that all these references share. Hence a proposition was produced using the *generalisation* rule depending on the general statements presented at the beginning and the end of this paragraph to emphasise this aspect by stating that such studies were all on the 'differences in discourse features in various disciplines' and that they 'showed that there is variation in discourse features according to discipline'. However, instead of stating specifically the outcome of each of these studies, and given that the general proposition summed up the final outcome of these studies, the more detailed description of the outcome of such studies in sentences three, four and five in the third paragraph were deleted and only the names of the researchers and the dates of their studies were included. Hence the rule of *deletion* was also used to extract the final propositional statement of the Research Context sub-element of this particular study.

4.2. Examples of the Top Level and Middle Level Propositional Analyses of Text (ST4.CH7) which Helped in Producing the Summary of this Text Presented on pp.126-132

4.2.1. Extraction of the Answer Element (Top Level Element)

Original Text	Summary
<p>Chapter 7</p> <p>Factors Affecting Permeability and Degradation</p> <p>Introduction</p> <p>Exposure to moisture and heat may result in deterioration of the mechanical properties and integrity of the filling. This "hygrothermal aging" has contributions from both physical and chemical reactions (Marom 1985). Many <i>in-vitro</i> investigations of wear have used recently prepared samples, or ones that had been stored in a static environment. <u>The experiments reported in this chapter used silver nitrate staining to investigate the effects of thermal or mechanical cycling on the surface of composites.</u> In addition, the action of solvents (Food Simulating Liquids) was investigated.</p> <p>...</p> <p>Summary</p> <p>The experiments in this chapter investigated some</p>	<p>TOP LEVEL ELEMENT (Research Question)</p> <p>The experiments reported in this chapter used silver nitrate staining technique to investigate the effects of thermal cycling on the surface of composites.</p>

of the physical and chemical agents that might affect a composite restoration in the mouth. Although it was possible to cause considerable degradation of the surface by extended storage at 60°C or high rates of temperature change, the clinical experiment indicated that these processes are unlikely to be effective clinically. The temperature fluctuations in the mouth may increase the depth of penetration of oral fluids. Mechanical cycling caused deeper penetration in the region close to the point of application of the load. The area of penetration was highly dependent upon the individual material. Thermal cycling did not potentiate the effect of mechanical cycling. The Food Simulating Liquid ethanol increased the depth of penetration of the silver stain. Both ethanol and heptane caused chemical degradation of the surface which potentiated the subsequent penetration of fluids.

TOP LEVEL ELEMENT (Research Answer)

Although it was possible to cause considerable degradation of the surface by extended storage at 60°C or high rates of temperature change, the clinical experiment indicated that these processes are unlikely to be effective clinically. The temperature fluctuations in the mouth may increase the depth of penetration of oral fluids.

Commentary

The above extracts are drawn from text S4.CH7, which constitutes the seventh chapter of a scientific thesis. Only the first part of this chapter, which reports a study of the thermal cycling effect on restoration composites, was turned into an article and published (ST4.A2). Therefore, the process of producing the summary of this part (see pp 118-125), which I call a p-text, was applied to this part of the chapter only.

It is worth noting that many of the propositions extracted to represent the summary of the Top and Middle level elements of this text were more or less the same statements that the writer himself has produced. The reason for this is that the writer of this longish text was always careful to provide the reader with a summary of the different sections of his chapter and these were often comprehensive and general enough to be used to produce the summary for the elements concerned. A good example of this is the short summary he supplied at the end of the chapter and which summed up the main conclusions of the study. I considered this summary a much better alternative for extracting the summary of the Answer element than constructing my own Answer proposition, especially because it is written by the author himself.

In order to arrive at the summary of a part of a thesis I had to follow certain steps that are different from the ones I used to extract the summary of an article as exemplified earlier. The main reason for this is that in the case of the article I was working with a complete, delimited text and could therefore rely on the text itself to extract the summary. In the case of the thesis, on the other hand, the p-text is in principle only identifiable by reference to the final article into which it was transformed. Therefore it was necessary to begin by identifying the main elements in the article and then trying to identify eligible counterparts of each of these elements in the thesis. This enabled me to identify the main 'skeleton' of the p-text from which the article was derived, and in turn to produce a summary of this p-text. In practice, this matching of article with p-text was most crucial for the Research Question, since, as I have argued, the other elements are largely dependent on this. Having identified the main Research Question of the p-text, it was then possible to identify the other elements related to it and verify the selection of the propositions they represent in the p-text by two means, external and internal. External identification and verification techniques involve comparing the propositions selected in the article to represent a specific element/sub-element with

potentially eligible candidates for the same element/sub-element in the thesis. On the other hand, internal identification and verification techniques involve relating potentially eligible propositions for a specific element/sub-element in the thesis/p-text to the other elements already identified in the thesis/p-text - in other words, relying on the same kind of procedure as in analysing the article. Of these, the internal techniques were typically used more consistently, with the external techniques mostly drawn on for confirmation. Having identified all the propositions that represent the top and middle level elements of the p-text, I produce a summary of these elements/sub-elements by using the van Dijk and Kintsch (1983) rules. If the author has already provided summaries for these elements, as with the example given here, it is possible that such rules may not be applied or be applied only when needed.

I started the process of identifying the Research Question of the p-text above by looking at the Research Question of one of the articles produced from this thesis: article ST4.A2. The Question which I had already formulated for this particular article was 'Is it possible to assess the extent of the surface permeability and degradation of dental composites resulting from oral temperature changes using the silver nitrate staining technique (Mair, 1989)?' To identify the part in the thesis from which this article was derived, I started by skimming quickly through the thesis to find any eligible sections that could be related to this Question. Looking through the Abstract, the Overview of the thesis, and the final Conclusions and Summary I felt that this section was likely to be located in the middle of the thesis as part of a chapter discussing the thermal effect on dental composites. This is because in the middle of all these texts there were some paragraphs or parts of a paragraph that referred to 'thermal ... cycling (and how it) caused considerable degradation...'. Looking more closely at the Content Pages I discarded chapters that seemed unlikely to be relevant, such as Chapter 6 on 'Sorption in Dental Composites', or Chapter 11 on '*In Vitro* Wear'. However, other chapters seemed eligible like chapters 7 and 10: 'Factors Affecting Permeability and Degradation' and 'Subsurface Degradation in Three Posterior Composites'. Looking more closely at the sub sections of these chapters it was felt that chapter seven was the most closely related as it had a sub-section on 'Thermal Cycling and Temperature'. This sub-section also included reports on specific studies that were comparable to those mentioned in the article. This seemed to indicate that this chapter is the most likely one to be related to the article in question.

The following step taken was to skim the chapter to identify if it was really the one from which the article was derived. From the Introduction it was clear that this chapter is about many of the aspects considered in the Research Question of the article. It 'used silver nitrate staining' and it reported experiments that were meant to investigate 'the effects of thermal or mechanical cycling on the surface of composites'. All of these lexical items mentioned in the final sentences of the Introduction section, echoed many of the items used in the title and the Introduction section of the article and the Research Question formulated to summarise the top level element of this article. The only item that seemed to be irrelevant was that of 'mechanical' as the article did not touch on the effect of 'mechanical cycling'. Further skimming of the chapter and comparison of the chapter with the summary of the Response element of the article showed that they both more or less refer to similar experiments. It was clear from the final paragraph of the Introduction section in the article that 'Three experiments were conducted, first to investigate the effect of thermal cycling, second to determine the effects of the high and low temperatures individually, and third to determine the temperature changes at the surface of a composite restoration in the mouth, so that the results of the experiments could be related to the clinical situation', and that these were comparable to the thermal experiments reported at the beginning of the chapter as the writer indicated on the first pages (pp.121-122) of the chapter that 'The effect of thermal cycling rather than constant temperature was studied because it was more comparable to the clinical situation. ... a second experiment investigated the effect of temperature alone. Two additional experiments were performed to enable clinical interpretation of the results. The temperature changes at the surface of a restoration in-vivo were determined and compared with temperature profile in the thermal cyler'. This confirmed further that this chapter is the p-text for article ST4.A2. and

hence I began the process of identifying the various propositions that make up the elements of this p-text and relating them to the article's propositions as well as the propositions of the other elements of the chapter to verify them.

The first elements of the p-text to be identified in detail were the Questions and the Answer. It was felt that the last sentences in the Introduction section of the chapter were the most eligible ones to include as the Research Question for this chapter. This was not only because it is comparable to that of the Question formulated for the article derived from it, but also because its position and format are likely to be those of a Question. However, since the article does not report on the effect of 'mechanical cycling' or 'the action of solvent (Food Simulating Liquids)', which are studies reported in the rest of the chapter, these parts of the final sentences were not considered to be part of the p-text from which the article was derived, even though they are clearly part of the Research Question investigated in this particular chapter. So, to arrive at the summary of this Question I more or less used the same proposition used by the author, but I had to eliminate the reference to the item 'mechanical' and the final sentence referring to study on 'Food Simulating Liquids'. Thus, I used the rule of *deletion* described by van Dijk and Kintsch (1983).

To extract the Answer of this p-text, I searched for propositions that were comparable to the Answer of the article related to this p-text and which could provide an Answer to the Question extracted earlier. To do so, I followed both external and internal techniques. First, I looked at the summary of the Answer element of the article extracted during the analysis of the article on its own. This summary was provided by the author himself in the form of a short final conclusion of the article. I then skimmed the chapter for an eligible counterpart that could be considered an Answer element to the p-text concerned. Again, the writer provided a summary of the whole chapter whose first part matched very closely with the final conclusions of the article. The conclusion of the article was as follows:

Temperature and cyclic temperature change caused surface changes in dental composites. Prolonged storage at high temperature or successive rapid temperature changes caused layers of surface degeneration which stained different colors with silver nitrate. Slow rates of temperature change did not cause layering but resulted in an increased depth of penetration of the stain compared with uncycled samples. The most likely effect of temperature change in the mouth is to increase the depth of diffusion of oral fluids.

It is clear from comparing this paragraph with the part of the summary of the chapter underlined above that they report more or less similar conclusions. For example, both of the Answers mention the effect of 'Prolonged storage at high temperature or successive rapid temperature changes' (= 'extended storage at 60°C or high rates of temperature change') and how they may cause 'layers of surface degradation' (= 'considerable degradation'). Both Answers also reported the 'most likely effect of temperature change in the mouth' (= 'The temperature fluctuations in the mouth') and how it may 'increase the depth of diffusion of oral fluids' (= 'increase the depth of penetration of oral fluids'). This was supporting evidence that the part selected from the summary of the chapter was the Answer of the p-text from which the article was derived. The fact that the rest of the summary was not mentioned in the Answer of the article indicated that these parts did not comprise part of the p-text concerned.

On the other hand, to further confirm the selection of above Answer propositions and to make sure that none of the unselected propositions of the summary of the chapter were relevant, I turned to the internal techniques to identify and verify the Answer element of the p-text in hand. I skimmed the whole text for an eligible candidate that could be considered an Answer to the Question I had identified for the text investigated, using the same kinds of clues as described above for the first extract. Since the main Question of the p-text revolved around the need to find out about the outcome of applying the silver nitrate staining technique to

identify the effect of thermal cycling on the surface of composites, it was expected that the Answer must provide a final conclusion that reveals the outcome of the experiments that were reported to show this effect. In fact, the first part of the summary of the chapter up to the sentence talking about 'Mechanical cycling ...' seemed eligible to be considered the Answer propositions for the Question identified earlier, not only because the Question does not deal with the effect of mechanical cycling or the investigation of Food Simulating Liquids reported in the rest of the chapter, but because the propositions selected relate to the results of the thermal cycling experiments that were reported in the first part of the chapter. Further signals show that there is a relation between this Answer and the Question concerned through the repetition of some lexical items. For example, in the Answer and the Question the words 'surface', 'thermal', 'temperature' were repeated. These are some of the important lexical items that make up the Question as it is about the effect of 'temperature/thermal cycling' on the 'surface' of composites. However, it was noticed that the Answer did not have many repeated lexical items from the Question as the case with the middle level elements that are related to the Question, the Setting and the Question Proper. This is probably because although the Answer is related to the Question, it is an extension to it. Therefore the kind of lexical relations found in this case was the kind where the Question may include a lexical item that is general, or even ambiguous, which is afterwards specified, or becomes clearer, in the Answer. For example, in the case of the above Question and Answer, the Question referred to 'the effect of thermal cycling on the surface of composites' where the item 'effect' is general because it is the item which the researcher still needs to find something about by carrying out his study. In the Answer, however, this item 'effect' is replaced by the items 'considerable degradation' as the researcher finds out that thermal cycling causes considerable degradation to the surface of composites under different conditions. This kind of relational lexical signal also helped in confirming the selection of the above propositions that represent the Answer. On the whole, these internally perceived signals and the external evidence from comparing this Answer element to the Answer element of the article derived from it showed that this part is probably the most eligible part from which the summary of the Answer element could be derived.

To extract the summative Answer proposition, I used the rule of *deletion* (van Dijk and Kintsch, 1983) to eliminate the statements from the summary that do not directly relate to the Question proposition and does not appear in the Answer of the related article. This meant excluding the first sentence in the summary as it seems to replicate the Question and part of the Response element. I also needed to eliminate the Answers that do not relate to the study of thermal cycling, i.e. those related to mechanical cycling and the effect of the Food Simulating Liquids which constitute the final five sentence of the summary of this chapter. The rest of the sentences were considered sufficient and condensed and general enough to represent the Answer of the Question concerned. Thus, I copied these sentences and used them to represent the Answer element for the p-text concerned.

4.2.2. Extraction of the Response Element (Middle Level Element)

Original Text	Summary
<p>Chapter 7</p> <p>Factors Affecting Permeability and Degradation</p> <p>Introduction</p>	

Exposure to moisture and heat may result in deterioration of the mechanical properties and integrity of the filling. This "hygrothermal aging" has contributions from both physical and chemical reactions (Marom 1985). Many *in-vitro* investigations of wear have used recently prepared samples, or ones that had been stored in a static environment. The experiments reported in this chapter used silver nitrate staining to investigate the effects of thermal or mechanical cycling on the surface of composites. In addition, the action of solvents (Food Simulating Liquids) was investigated.

The Effect of Thermal Cycling and Temperature

Marcos-Montes (1986) found that thermal cycling caused an increase in the solubility and abrasion rate of dental composites. In epoxy resins the combined effect of heat and water caused a network of microcracks throughout the matrix of industrial composites (Kaelble & Dynes 1977) and it was anticipated that these cracks would be susceptible to staining. The effect of thermal cycling rather than constant temperatures was studied because it was more comparable to the clinical situation. A problem with thermal cycling is that it is not possible to distinguish between the effects of cycling from those attributable to the individual temperatures. Therefore a second experiment investigated the effect of temperatures alone. Two additional experiments were performed to enable clinical interpretation of the results. The temperature changes at the surface of a restoration *in-vivo* were determined and compared with temperature profile in the thermal cycler.

Methods

Thermal Cycling

Silver nitrate is extremely caustic and it was considered too dangerous to use an open beaker of hot silver nitrate in the thermal cycler. Therefore, the samples were placed with silver nitrate (3 mole/litre) in an open opaque plastic bottle. It was anticipated that the rate of temperature change in the bottle would be more gradual than in the open beaker situation. To compare the two situations, a second set of samples was directly cycled in water, after which the test pieces were dried and immersed in AgNo₃ for 42 days. The control group was stored

Middle Level Element (Response)

~~The effect of thermal cycling rather than constant temperature was studied. A second experiment investigated the effect of temperature alone.~~ Two additional experiments were performed to enable clinical interpretation of the results. The temperature changes at the surface of a restoration *in-vivo* were determined and compared with temperature profile in the thermal cycler.

Data

Silver nitrate and seven dental composites

Procedures

Thermal Cycling

Samples treated with silver nitrate were put in opaque plastic bottles (3 mole/litre) to avoid dangers of using open beakers.

Three groups of samples were prepared and treated differently: 36 samples were prepared; 12 were cycled in silver nitrate by placing them in a cycler, then cycled for 2.25 min at 60°C and 6°C.

uncycled in AgNo₃ at room temperature. The thermal cycle was 2.25 min at 60°C (= 1) and 2.25 min at 6°C (= 3) with two changeover times of days corresponding to 1000, 5000, 10,000 and 50,000 cycles. At each time interval nine samples were processed as previously described (Fig 5-2).

Individual Temperatures

Only four materials were used in this experiment (P30, Occlusin, Silux, Profile). Samples were prepared and divided into groups of twelve. One group was placed in a water tight opaque bottle containing silver nitrate and this was placed in a 60°C water bath. Group 2 was placed in a similar container at 6°C. The third group was stored in silver nitrate at room temperature. A fourth group was thermal cycled in silver nitrate for comparison. Samples from each group were removed and processed after 14, 21, 42, and 90 days (fourteen days is equivalent to the time in the 60°C water bath during 42 days thermal cycling)

Details of these experiments are summarised in tables 7-1.

Measurement of Temperature Changes *in vivo*

A thermocouple probe (KM1202 Kane-May Ltd. Welwyn Garden City, Herts. U.K.) was placed on the surface of a composite restoration inserted into the Occlusal surface of a temporary premolar post crown. The volunteer patient was asked to drink some hot soup and then to eat a hot toasted cheese sandwich followed by some ice cream. Finally, he was asked to eat part of another hot sandwich. This particular snack was chosen because hot cheese maintains its temperature. The volunteer was asked to eat the food when it was as hot as reasonably possible and to ensure that he bit into both foods with the temporary crown. A second probe of the thermocouple was used to monitor the temperature of the food on the plate.

Characterisation of the Thermal Cycle

One probe of the multi-channel thermocouple was placed in the plastic bottle containing the sample cycled in silver nitrate. A second was placed on the surface of a specimen openly cycling in water and a third was buried in the middle of this specimen. The recording apparatus was set to simultaneously record the three temperatures every 10 sec during immersion and every 2

Time of the cycles corresponded to the time of doing 1000, 5000, 10,000 and 50,000 cycles; another 12 samples were cycled in water then dried and immersed in silver nitrate for 42 days; the last 12 samples were stored uncycled in silver nitrate. For each interval 9 samples were processed.

Individual Temperatures

48 samples of four materials only were explored (P30, Occlusin, Silux and Pro-file-TLC). 12 groups of samples were processed in the following ways: (i) Thermal cycling in water/silver nitrate at 60°C and then (ii) at 6°C. (iii) Other samples were stored in silver nitrate at room temperature and (iv) some samples were thermal cycled using the methods described earlier for comparison. Samples from each group were removed and processed after 14, 21, 42, and 90 days.

Measurement of Temperature Changes *in vivo*

Using two thermocouple probes, the temperature changes of the surface of a composite restoration of a patient eating hot and cold items of food as well as the temperature of the food he was eating were monitored and measured.

Characterisation of the Thermal Cycle

One probe of the multi-channel thermocouple was placed in the plastic bottle containing the sample cycled in silver nitrate. A second was placed on the surface of a specimen openly cycling in water and a third was buried in the middle of this specimen. The recording apparatus was set to simultaneously record the three temperatures every 10 seconds during immersion and every 2 seconds during changeover.

seconds during changeover.

...

Summary

The experiments in this chapter investigated some of the physical and chemical agents that might affect a composite restoration in the mouth. Although it was possible to cause considerable degradation of the surface by extended storage at 60°C or high rates of temperature change, the clinical experiment indicated that these processes are unlikely to be effective clinically. The temperature fluctuations in the mouth may increase the depth of penetration of oral fluids. Mechanical cycling caused deeper penetration in the region close to the point of application of the load. The area of penetration was highly dependent upon the individual material. Thermal cycling did not potentiate the effect of mechanical cycling. The Food Simulating Liquid ethanol increased the depth of penetration of the silver stain. Both ethanol and heptane caused chemical degradation of the surface which potentiated the subsequent penetration of fluids.

Commentary

To extract the propositions that sum up the middle level element of Response from the p-text ST4.Ch7 from which article ST4.A2 was derived, it was necessary to find eligible candidates in the chapter by relating this element to the Answer element of the same p-text and to confirm the selection of these propositions by checking that they correspond to the Response element already identified in the article - in other words, by using the internal and external techniques discussed earlier in extracting the top level elements. The final step in this process was to produce the summative propositions of the elements concerned, either by taking them as they are in the original text or by applying the rules of van Dijk and Kinstch (1983) for extracting them.

The first step I took to carry out this process was to examine the text in relation to the Question and the Answer identified for the p-text in question. I identified parts which seemed related to the major Question of the study as they represented different ways of examining the effect of 'thermal cycling', as well as other thermal effects, using silver nitrate on the surface of composites. The titles of the sub-sections of the Methods section repeatedly referred to these aspects. In addition, the information reported under each of these sub-sections also included lexical signals that relate to this Question. Such signals include words and phrases like 'thermal cycler', 'rate of temperature change', 'the surface of composite restoration', and 'stored in silver nitrate at room temperature'. In addition, as the Answer is the Outcome of carrying out the steps and procedures identified in the Response element, examining the Answer element of the p-text identified earlier supported the view that the underlined propositions are eligible to be representatives of the Response element. This is because the Answer selected provided the final conclusions of the main experiments reported in this part of the chapter. For example, the first study that aimed to investigate thermal cycling showed that 'it was possible to cause considerable degradation of the surface by ... high rates of

temperature change' and the study of the individual temperatures showed that this may happen by 'extended storage at 60°C'. The final clinical study of the temperature changes occurring in the mouth of a patient showed that 'The temperature fluctuations in the mouth may increase the depth of penetration of oral fluids'.

To further confirm that these parts are the representatives of the Response propositions in the p-text explored, I compared them with the summary of the Response element of the article. The summary of the Response element in the article was found at the end of the Introduction section of the article:

Three experiments were conducted, first to investigate the effect of thermal cycling, second to determine the effects of the high and low temperatures individually, and third to determine the temperature changes at the surface of a composite restoration in the mouth, so that the results of the experiments could be related to the clinical situation.

This compared fairly closely to the propositions identified by internal techniques. For example, according to the article the first experiment aimed to investigate 'the effect of thermal cycling', and the title of the first sub section in the chapter 'Method' section was 'Thermal Cycling'. Also, the second experiment in the article aimed to 'determine the effects of the high and low temperatures individually', and the title of the second section was 'individual temperatures'. In fact, further skimming of the article indicated that the section entitled 'Materials and Methods' matched many of the parts under the section entitled 'Methods' in the chapter. Hence, all these signals showed that the parts underlined in the text above were eligible propositions that coincide with the Response element identified in the article and its sub-sections of Data and Procedures.

To extract the summative propositions of the Response element for this p-text, I depended at times on the propositions provided by the author himself, and at other times I applied the rules of van Dijk and Kintsch (1983) extensively (e.g. in extracting the data as they were not separated out in the article or the chapter). But in many cases I needed to do both. An example of the first process is the final part on the 'Characterisation of the Thermal Cycle' which I felt to be general enough in describing the procedures concerned and hence I copied it as it is without making any changes. On the other hand, an example where I needed to mainly resort to the rules to produce the summary of the Response element is the case of attempting to sum up the specific procedures followed in carrying out the study of the 'Measurement of Temperature Changes *in vivo*'. Since many of the propositions in the paragraph dedicated in the chapter for this study were too specific and reported the specific tool used to measure the particular part(s) in the mouth of the patient, the types of foods he consumed and in what order, I needed to use the rule of *deletion* to eliminate many of the statements that report these specific details. I then used the rule of *construction* to produce a single proposition, rather a long one, that summed up the description of the tools used and the procedures followed and to what purpose. Finally, an example where the two procedures were followed was in extracting the summary of the Response element on the whole. It was found that the propositions underlined in the section entitled 'The Effect of Thermal Cycling and Temperature' are most convenient as they refer generally to the three experiments reported in the following sections. Although I copied these statements more or less exactly as they appear in the original text, I depended on the rule of *deletion* to eliminate all the statements that do not refer to methods (e.g. general statements or reference to previous research as in 'In epoxy resins the combined effect of heat and water caused a network of microcracks throughout the matrix of industrial composites (Kaelble & Dynes 1977)'), or to statements that added extra information about the method which were too specific (e.g. the specific limitations of the method as in 'A problem with thermal cycling is that it is not possible to distinguish between the effects of cycling from those attributable to the individual temperatures.'

Appendix 5

Samples of the Outcome of the Reading of Two Expert Readers of Selected Parts from Some Interrelated Texts to Identify their Top Level Elements: Questions and Answers

READER ONE

Text A: Thesis (ST5)

AN INVESTIGATION INTO THE BEHAVIOUR OF HUMIC COMPOUNDS IN ESTUARIES

ABSTRACT

The subject of the nature and behaviour of humic compounds in estuaries is reviewed in terms of the known changes in their chemical and physical properties on entering a saline regime. Particular attention is paid to the physico-chemical reaction of these compounds in estuaries with regard to their interactions with inorganic species such as colloidal iron, aluminium and clay minerals. The interactions of humic compounds with biological species are also discussed. Simple calculations of the distribution of organic carbon in estuaries are presented which indicate that a world total of 19.0×10^9 gC, yr are lost from solution to estuarine and near shore sediments by precipitation reactions in estuaries.

The results of a series of laboratory simulated estuaries reaction experiments are presented. In these the reactions of humic compounds on encountering changes in pH and ionic strength, and increases in dissolved magnesium, calcium, iron and aluminium concentrations were examined. Significant amounts of humic compounds were removed from solution by such reactions, particularly those with iron. The reactions of two humic compounds with clay minerals illite, kaolinite and montmorillonite, under conditions of varying salinity, were examined. Such reactions are shown to lead to some preferential removal of the higher molecular weight fractions of humic compounds.

The results of surveys of humic compounds in estuaries are given. Humic compounds were extracted from the water, suspended material and sediments and their fluorescent and light absorption properties and their molecular weight distributions were examined. The elemental composition and total acidity of some samples were also determined. Very significant changes in many of these properties (particularly in the dissolved fraction) are demonstrated to occur within the estuaries. In particular, the fluorescent properties, extinction coefficients and molecular weights of dissolved humic compound decrease with increasing salinity, whereas total acidity increases.

The suitability of a novel technique involving the use of the surface active agent cetyl pyridinium bromide and Amberlite XAD-2 resin to examine humic-metal interactions was investigated. Whilst satisfactory adsorption of the complexes onto the resin at natural pH could be attained, no adequate elution schema was identified.

The stability constants of a number of humic-copper complexes were determined using a gel complex-ometric technique. The values of K_o obtained are broadly similar to others reported using this method. Within an estuary the chelating power of the dissolved humic fraction decreases with increasing salinity. The effects of changing the assumptions in the calculation of K_o respect to molecular weight values are examined and it is shown that some uncertainty in the value obtained for the stability constant of a humic-metal complex is introduced by the lack of a detailed knowledge of this parameter.

1. What do you think is the main research question posed by this specific study?

What happens to humic compounds in saline solutions?

2. What do you think are the main findings/conclusions and implications of the above study?

Precipitation causes the removal of humic compounds, esp. iron.

Text B:

Research Article (ST5.A1)

**The Interactions of Humic Compounds with Electrolytes
and Three Clay Minerals under Simulated Estuarine Conditions**

Key words: Humic substances; electrolytes; clay; estuarine sedimentation

Laboratory studies of the reactions between dissolved humic substances and dissolved sodium, magnesium, calcium, iron and aluminium are described together with studies of the adsorption of humic substances onto the clay minerals illite, kaolinite and montmorillonite under simulated estuarine conditions. It is demonstrated that only minor quantities of humic substances are precipitated in the presence of Na, Mg and Ca up to ca. 1.5 times their seawater concentrations. The total amount of humic substance precipitated is dependent on the cation present and increases in the order $\text{Na} < \text{Mg} < \text{Ca}$. It is shown that, in the presence of Fe, significant quantities of humic substances may be precipitated and there is evidence for the formation of Fe-humate complexes at low salinities. Aluminium-humate interactions are strongest in freshwater and there is no evidence for any significant interactions between these species in saline waters. Interactions between humic substances and clay minerals depend not only on the nature of the compounds or minerals but also on the salinity of the reactions medium. There is evidence that interactions with clay minerals can lead to fractionation of different humic components.

3. What do you think is the main research question posed by this specific study?

What do humic compounds react against?

4. What do you think are the main findings/conclusions and implications of the above study?

Humic substances react in minor quantities in the presence of certain minerals, but absorb more given other surroundings.

5. How do you think the research questions of texts A and B are related?

Text B reads as a more precise version of text A.

6. How do you think the research findings/conclusions and implications of texts A and B are related?

Text B carries more specific implications; text A is more generalised.

Permeability, Degradation and Wear of Dental Composites

ABSTRACT

When early dental composites were used in posterior restorations their wear rate was unacceptable. Many devices were developed to study wear in the laboratory; but the results failed to correlate with clinical experience. One explanation for this was that degradation in the oral environment predisposed to wear. Degradation is partially determined by the permeability of composites to oral fluids. The aim of this thesis was to investigate the wear of three posterior composites together with a study of sub-surface permeability and degradation.

Wu & Cobb claimed to have used silver nitrate to stain a layer of subsurface degradation in restorations which had been removed for replacement [J Biomed Mat Res (1981), 15: 343-348]. Many features reported in the latter publication were found to be artefacts which were eliminated by modifying the staining technique and optical system of the microscope. With this revised method subsurface porosity was less extensive than previously reported. SEM of the stained areas revealed little or no evidence of degradation indicating that the technique of silver staining was more sensitive to increased permeability and degradation.

During these studies a "Silver Sorption Layer [SSL]" was discovered in composites that had been immersed in silver nitrate. The increase in depth of the layer was diffusion controlled. Its colour has been attributed to the scattering of light by small silver particles as predicted by Mie theory. A comparison of silver nitrate and water sorption indicated that the SSL may mark the extent of fluid penetration into the material. This would signify that fluids accumulate closer to surface than previously postulated. The sorption experiments did not support the mathematical criteria for Case II sorption.

In the laboratory both thermal and mechanical cycling caused considerable degradation whilst ethanol increased the depth of penetration of the silver nitrate stain. However, the appearance of the clinical specimens indicated that these processes have limited effects in the mouth.

In a clinical trial of three posterior composites, the two processes of abrasion and attrition occurred at different rates in the materials. The data indicated that local factors had a significant influence on abrasion. The subsurface analysis of failed restorations from the clinical trial indicated that permeability and degradation was highly material specific. There was considerable degradation of the proximal surface of a three year old P-30 restoration; but very little evidence in occlusin or Clearfil. In all the materials occlusal wear occurred faster than the establishment of degradation layers. Therefore it is concluded that the wear resistance of the material was more important than degradation in determining surface loss.

1. What do you think is the main research question posed by this specific study?

Why do restorations wear out?

2. What do you think are the main findings/conclusions and implications of the above study?

Wear resistance is the most important factor.

Text B: Research Article (ST4.A1)

**An investigation into the permeability
of composite materials using silver nitrate**

Abstract A new effect of silver-nitrate staining on dental composites and unfilled polymers has been observed which may be useful in the study of polymer permeability. After extended storage in silver nitrate, the materials developed a layer of brown stain in the subsurface. The color was thought to be caused by the presence of finely divided silver precipitated in microcavities within the composite. Energy Dispersive Analysis by X-ray confirmed the presence of silver in the stained zone. The width and shade of staining varied in different materials. After 90 days, layers of different shades could be seen within the stained zone. The exact shade of the stain is thought to depend upon the size of the precipitated silver particles, which is directly related to the sizes of the microcavities.

3. What do you think is the main research question posed by this specific study?

How does silver nitrate affect dental materials?

4. What do you think are the main findings/conclusions and implications of the above study?

Silver penetrates the materials over time

Implications: Better understanding of composites and staining may help produce new composites.

5. How do you think the research questions of texts A and B are related?

Both dental, both to do with restoration materials.

6. How do you think the research findings/conclusions and implications of texts A and B are related?

Not much relationship!

Hope to find better materials for false teeth and fillings I suppose.

Appendix 6

Questionnaire Given to Both Expert and Novice Writers to Investigate their Perceptions on the Process of Deriving Articles from Theses

Please read the following questions carefully, then choose the most appropriate answer(s) by ticking it (them) or supplementing answers on the dotted lines if applicable.

1. Are you:
 - a) a native speaker of English
 - b) a non-native speaker of English

2. What is your subject speciality (e.g. Engineering, literature, etc.)?
.....

3. When do you think researchers usually attempt to write their research articles which are derived from their thesis work?
 - a) before writing the thesis
 - b) during writing the thesis
 - c) after writing the thesis
 - d) other:

4. Approximately how long do you think it takes to write the first draft of a research article derived from thesis work?
 - a)days
 - b) weeks
 - c) months
 - d) other:

5. How many drafts, on average, do you think a researcher needs to make before submitting a research article to the publishers?
 - a) One
 - b) two
 - c) three
 - d) more than three
 - e) other:

6. What type of changes do you think research writers are likely to make when trying to derive a research article from a thesis work? These changes will be concerned with:
 - a) the explanation of the purpose of the study
 - b) the overview of previous literature
 - c) the description of the methodology used
 - d) the findings of the study
 - e) the conclusions of the study
 - f) the implications of the study
 - g) the positioning of information in the text
 - h) the visual representation of data or findings
 - i) the organisation of the different sections in the text
 - j) the ways of linking between these sections

continued

- k) the style of writing
- l) the accuracy of the language used in the text
- m) other:

7. Approximately how many times do you think research writers will need to revise their first versions of articles before being accepted by the editors?

- a) none
- b) once
- c) twice
- d) three times
- e) more than three times
- f) other:

8. What type of major revisions do you think research writers will be asked to make for their research article to be accepted by the editors? These revisions are likely to be concerned with:

- a) the explanation of the purpose of the study
- b) the overview of previous literature
- c) the description of the methodology used
- d) the findings of the study
- e) the conclusions of the study
- f) the implications of the study
- g) the positioning of information in the text
- h) the visual representation of data or findings
- i) the organisation of the different sections in the text
- j) the ways of linking between these sections
- k) the style of writing
- l) the accuracy of the language used in the text
- m) other:

9. Why do you feel research writers may need to make changes while transforming their theses into articles?

- a) to suit the new readership
- b) to produce a text that follows more closely the conventional organisation and language of a research article
- c) to expand/limit the scope of the study
- d) to adhere to the contributors' guidelines of a specific journal approached
- e) to give the text a more satisfying shape as a research article (as opposed to a thesis chapter)
- f) to make the text more suitable for the policy of a particular journal
- g) to limit the text to the number of words specified for the research article
- h) other:

Appendix 7

Selected Parts from the Tapescript of the Interviews Made with the Two Case Studies (the Linguist and the Dentist)

From the Interviews with the Linguist

- I want ..um.. to start with some general questions about the process of .. you know.. deriving articles from theses and things like that ... some questions might be detailed.. others will be more general .. so probably the first question I am thinking of now ..um..sss..how far is it important for somebody like you ... an academic working in university to produce articles? and ..um... do you do it from theses most of the time?.. is it a common way of doing it ?... or something about this .. Is there a perceived need .. you know .. to depend on your thesis .. to .. produce articles..
- well. First thing is that it is very very important to produce articles regularly .. OK.. that's increasingly important now in British universities .. So academics have to have a steady output of publications. Preferably books but also articles obviously .. um .. for somebody who is doing .. in the process of doing the PhD ..um. it is not unusual I think for people to produce articles at that stage while they are working towards the thesis. .. I did that myself.
- Right
- And then once the thesis is finished ..um.. you can take as many articles .. or or .. indeed turn it into a book .. but it is quite normal to pull three or four articles out of the thesis if you possibly can .. and that's the process I have been going through over the last couple of years.
- I noticed that you have produced articles before doing the thesis and then you've done some after doing this. what's the difference between the one you have done before and after because the one before I think you have mentioned in the thesis.
- Yes ..that's right..yeah
- There is one on intonation in monologue .. OK .. in 1994 .. ah .. but that was a completely different set of data .. it was not at all the same data I used in my thesis and really it was a way of working out um.. just trying to work out method .. a method of analysing intonation in monologues .. so it is a kind of a pilot study ...
- Yeah
- I knew at the time I was written it that this was something .. something I would probably like to look at for the thesis.
- Yeah ..yeah.. right
- But I thought that it was quite useful .. I thought it is something I could publish anyway and it was quite a useful thing to publish .. That was very early on because I wrote it in 1992 ..um.. 1992 , I think ..and it was published in 1994.. so it was really about the time I started actually to register for my PhD .. So it is very early days.
- OK ... which .. that would be a different kind of .. set of .. kind of article compared with the ones you produced after ..

- Yes .. exactly.
- - because the one you produced after seemed to be more related definitely
- - they are using ..um .. they are using the same data or part of the data plus other data .. if you see what I mean.
- Um..What do you mean by other part ..other data ..so do you add something ..?
- Yeah .. I've been adding to the corpus ..um.. so that few examples I am working now on a paper that compare scientists talking about their work in a conference paper.. research presentations .. which is the thing in the thesis .. um.. I have also now being transcribing some television science documentaries and looking at how they talk about science to the general public. So there is a new comparative corpus that I am building up now to compare .. so as a kind of development of what is in the thesis.
- So .. you say that ..it is a common thing .. you know ... you know .before doing the thesis or after that .. there might be articles produced .. they may have less data or more data depending on ..
- Yeah .. you've got to be careful not to repeat .. I think you can repeat a chapter of your thesis after the thesis is done .. I think you can have almost exactly the same chapter turned into an article .. equally I think you can have an article that can form a chapter of your thesis .. but I was not attracted to that idea at all .. I did not want to do that .. so the ones before the thesis they were a kind .. they were related but they all were with different data and usually quite small scale studies .. exploratory studies.
- Right .. you were formulating ideas about the methodology as you have said..
- Exactly
- Refining this in the thesis I think probably refining it more by looking at different kinds of data.
- Yeah . Yeah .. yes it is quite useful to do that ..

From the Interviews with the Dentist

- yeah .. first of all you have to understand my position when I was writing my PhD. I was already a lecturer in the university ... alright ... therefore I knew that in order to get promoted I have to produce publications. It is a requirement .. basically it is a requirement .. first ..But having said that it is also very important . that everybody understands writing research that ultimately you should publish your research and publish means that you give the research over to a journal where it is looked at by referees .yeah and that process is very important because it makes sure that it is not your ideas that are being published .. you have the ideas .. but they are not your personal opinion ..they have to be .. they have to be scrutinized by referees .. sometimes papers come back and the referee say no .. No I don't agree .. there is something wrong in the logic .. and therefore it never goes to the reader ever.. So the process of research is that you should carry out a study .. then it must go forward for publication .. The PhD is actually a complication within that process because you're also trying to get an examination .. Yeah and you must remember too it is the highest examination that the university awards .. well .. so then you say how do you know from your PhD .. How do you go ahead and decide what to publish?

- that's right .. is it everything you do you decide to publish ..? That's the idea..
- No, it is not ..you have to be sensible ..for a starter . right .. One thing you have to decide is .. what is most likely to get published .. first of all? .. This is very important ... You have to publish so, you might think that this is the most important part of my PhD, but what is the most important is what is going to be published .. alright.
- Accepted by referees ...and
- But more than referees you have editors...The editors of a journal .. they have what we call them ..
- Tendencies?!
- Yes ! Yes!
- For the journal itself you would know..
- We say that the journal has its own flavour .. do you understand that?
- Yes.. right.
- So, for instance, the ..
- You have been publishing in Dental Materials, Journal of Dentistry and the British Dental Journal.
- Yes you see here the British Dental Journal .. The British Dental journal is the Journal of the British Dental profession .. so it is read by all the dentists in this country . Whereas Dental Materials is a specialist journal which is read predominantly by researchers in dental materials. So an ordinary dentist will never see that ..
- But would look at the British ..
- Yeah, they would. So, if I had sent the paper about Silver Staining to the Dental Journal, it will come back to me and our readership will not be interested in that.
- Because it does not have clinical application or something like that..
- Yeah
- Because I have noticed in the Dental Materials you're describing the process or discovery that you have found .. So that would be more interesting for research...
- Yeah .. so then .. because you want to publish as many papers as you can from your PhD without doing "salami" ..slicing too much ..

