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The Structure of Discourse and "Subordination"

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Clause Combining in Discourse and Grammar.

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<p>The use and nature of clause combining in natural discourse are explored in this paper. First, a theory of text structure, Rhetorical Structure Theory, is introduced and illustrated for a number of short texts. Then, it is shown how the grammar of clause combining can be explained in terms of the structuring of text. The paper focuses on one particular way of combining clauses and shows how it is used to express a nuclear-satellite structuring of text identified by Rhetorical Structure Theory.</p>				
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1 Introduction

The nature of clause combining in grammar, including "subordination" and its relationship to "co-ordination," has been the subject of much discussion.¹ However, rather little of this discussion has addressed the general problem of "subordination" in terms of the structure of the discourse within which the "subordinate" clause appears. (Some exceptions include Chafe (1984), Dillon (1981: Chapter 6), Golikova (1968), Grimes (1975), Halliday and Hasan (1976), Longacre (1970), Longacre and Thompson (1985), Mithun (1984), Thompson (1985a), (1985b), Tomlin (1985), and Winter (1982).)

This paper will first suggest that it is not possible to define or even characterize "subordinate clause" in strictly sentence-level terms. In other words, in order to characterize what it is that distinguishes a "subordinate" from a "main" clause, one must appeal to the discourse context in which the clause in question appears. To a discourse-oriented linguist, this might seem self-evident. Yet it is striking that none of the attempts to define "subordinate clause" in the literature that we are aware of has been made in recognition of the consequences of this perspective. We will then propose and justify a discourse account of the notion of "subordinate clause." Specifically, we will show that in written English discourse, a certain kind of what linguists have called "subordinate clauses," namely "hypotaxis," can usefully be viewed as a grammaticalization of a very general property of the hierarchical structure of the discourse itself.

This work can thus be seen as a contribution to the study of "natural grammar." We are proposing an answer to the question "What discourse function motivates the grammar of hypotaxis?" But in order for this approach to yield results, we have to identify the kind of clause combining we are interested in. As we do this in the next section, it is important to keep in mind that we are looking for grammatical interpretations of clause combining that make functional sense, that is, that we can relate to *function* in discourse.

¹See, for example, Andersson (1975), Beekman and Callow (1974), Davison (1979), (1981), Grimes (1975), Haiman and Thompson (1984), Halliday (1985), Halliday and Hasan (1976), Handke (1984), G. Lakoff (1984), R. Lakoff (1984), Longacre (1970), (1976), (1983), McCray (1981), (1982), Martin (1983), Olson (1981), Payne (1973), Posner (1972), Quirk et al (1985), Rappaport (1979), Rutherford (1970), Schiffrin (1985b), Smaby (1974), Sopher (1974), Talmy (1978a, b), Van Valin (1984).

2 Interpreting the clause combinations to be studied

In discussions of clause combining, there is a good deal of variation both in terminology and in the substance of different analyses. To avoid any confusion, we want to be very clear about what kind of category we are looking at and how it differs from other categories involving clauses. We will start by exemplifying the kind of clause combinations we will be focusing on. We will then characterize them informally as clause combinations without relying on any traditional existing categories. The problem we face is that there is no traditional, generally accepted interpretation that we can rely on. We will first look at embedding and differentiate it from clause combining, and then look at clause combining by coordination. Since the kind of clause combining we wish to focus on cannot be interpreted as combining by coordination, we will turn to Halliday's work for an additional kind of clause combining that has not been clearly differentiated in much recent work. After discussing some of the functions a clause may serve in grammatical structure, we will draw attention to the need to keep considerations of functions distinct from the assignment of a clause to a particular grammatical class.

While we will touch on some distinctions we think are crucial in the study of clauses and clause combinations, we will not try to present a typology of clause combining or an exhaustive list of the parameters such a typology has to take into account: That is the task undertaken by Lehmann in his contribution to this volume.

2.1 Characterization by exemplification

Let us first exemplify the kind of clause combinations we are interested in. We interpret them as and call them **clause combinations**, but we do not want to give them a specific traditional name, since any name is likely to presuppose a particular kind of interpretation. Further, the traditional names for the clause combinations we want to study all imply interpretations we think are both grammatically misleading and unhelpful when we try to account for their discourse function.

- A. ... I made an appointment with the best hand surgeon in the valley to see if my working activities were the problem.
- B. ... the end result is no use of thumbs if I don't do something now.
- C. While attending Occidental College ... he volunteered at the station as a classical music announcer.
- D. As your floppy drive writes or reads, a Syncom diskette is working four ways to keep loose particles and dust from causing soft errors, dropouts.
- E. Before leaving Krishnapur to escort his wife to Calcutta, ... , the Collector took a strange decision.

Figure 1: Examples of the clause combinations to be discussed

2.2 General characterization of clause combining

The clause combinations in the examples above present propositions that are related circumstantially. The circumstantial relation is coded by a connective in one of the clauses in a combination; a number of these are listed in Figure 2.

The clause combinations we illustrated in Figure 1 can all be diagrammed as clauses combined by circumstantial relations. The last example (E) in Figure 1 is represented in Figure 3. There are two circumstantial relations: MOTIVATE glosses a causal relation (purpose), and PRECEDE glosses a temporal relation. The purpose relation (MOTIVATE) holds between two simple clauses coding simple propositions. The temporal relation (PRECEDE) holds between this combination of clauses and another, simple clause. The scoping over the combination of clauses is indicated by the box in the diagram.

The diagram does not represent an analysis -- it is simply a visualization of the combining relation. The main part of our paper explores what kind of discourse (text) organization clause combinations of the kind illustrated in the figure reflect. Before we turn to the nature of discourse (text) organization, we will explore the grammatical

circumstantial relation	connective
temporal	<i>when, while, as before, after, etc.</i>
conditional	<i>if, unless, provided that, as long as, etc.</i>
reason	<i>because, since, as, etc.</i>
concessive	<i>although, even though, except that, etc.</i>
purpose	<i>/in order/ to, so that, in order that, etc.</i>
means	<i>by</i>
manner	<i>as if, as, etc.</i>

Figure 2: Connective coding circumstantial relations

interpretation of the kind of clause combination visualized in the diagram. We will approach the grammatical analysis in two steps. First we will distinguish clause combining from embedding, and then we will ask how we can treat our examples as clause combining without interpreting them as combinations by coordination.

2.3 Type of function: embedding vs. clause combining

We are concerned with clauses whose function can be stated in relation to other clauses, in other words we are concerned with combinations of clauses.

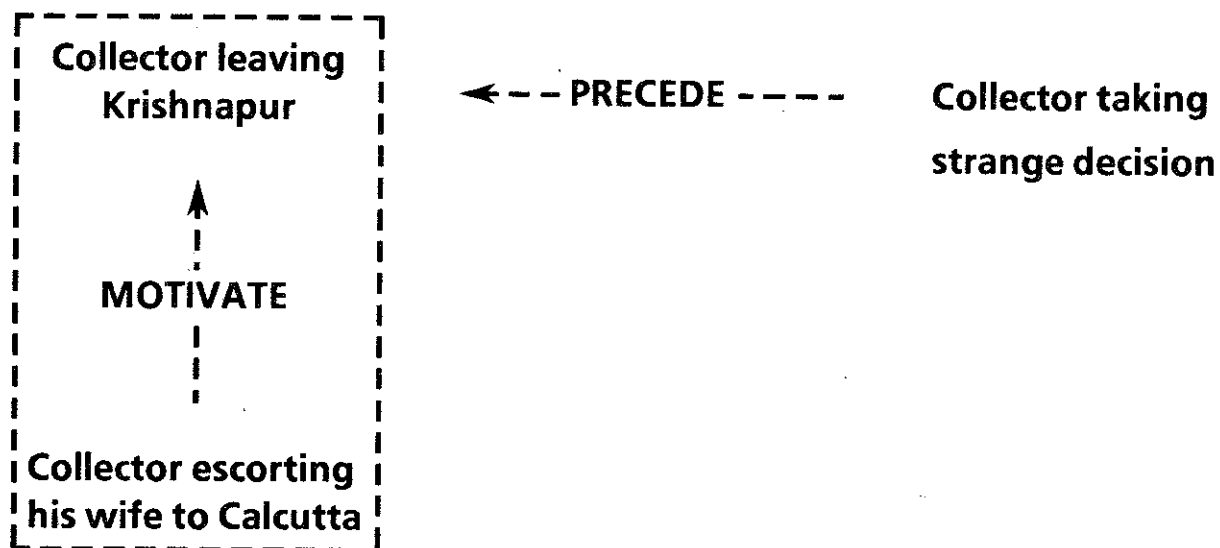


Figure 3: Visualization of clause combination

2.3.1 Embedding

There is a different kind of environment for a clause, where it does not combine with another clause:

Those were the days when every single poem had bristled with good qualities like a hedgehog and had glutted itself with praise like a jackal, the happy days before the Magistrate had been invited.

(Farrell)

Here the clause *before the Magistrate had been invited* is **embedded** within a noun phrase:

[_{NP} the happy days before the Magistrate had been invited _{NP}]

This is **not** a case of **clause combining**: There is no other clause that *before the*

Magistrate had been invited combines with. Rather, it functions within a noun phrase as a (post) modifier of the head noun *days*. It serves the same function that a restrictive (defining) relative clause typically serves.

We also have an embedded *before* clause in the following example, this time functioning as the complement in a clause:

All the same, the Padre sometimes had a worried look;
 this was because he was afraid that the duties
 to which the Lord had called him might prove too
 much for his strength.

(Farrell)

As in the case of embedding within a noun phrase, we do not have a clause combination here, but simply a case of one clause functioning as a constituent, a complement, within another clause.

It is generally agreed that these kinds of cases are interpretable in terms of embedding.

The examples in Figure 1 have generally been treated as cases of embedding: One clause is said to be embedded within another clause as an adverbial (or adjunct); they are often referred to as adverbial clauses. We find this approach in many traditional grammars (cf. Jespersen (1924)). But we also find it more recently in e.g. Quirk et al (1985)² and in Foley & Van Valin (1984). A few linguists have taken a different view: Longacre and Halliday, as well as other linguists working within the tagmemic and systemic traditions, have treated examples of the kind listed in Figure 1 as clause combinations, not as embeddings.³

²They make finer distinctions and separate adjunct clauses from disjunct clauses, but they consider both to be instances of embedding.

³Longacre (1970) differs from Halliday (1985) in that he takes a clause combination to constitute a sentence. A sentence may have constituents other than clauses, but the important point in the present context is that there is a distinction between being a constituent of a clause and being a constituent of a sentence.

We are in agreement with this approach. As we have already indicated by calling them clause combinations, we do not think that our examples can be interpreted as clauses embedded within other clauses. In other words, these clauses do not function as adverbials (or adjuncts). A detailed discussion is beyond the scope of our paper, so we will make only two observations:

1. if we paraphrase our examples using a prepositional phrase functioning as an adverbial, the result is a grammatical metaphor,
2. we find combinations of one clause with a combination of clauses. A brief discussion of each of these observations follows.

(i) Paraphrasing leads to grammatical metaphor

Sometimes a substitution test is used to show that a clause functions as an adverbial in the same way a prepositional phrase does. But the test indicates that so-called adverbial clauses do not in fact function as adverbials. When we replace one of them with a prepositional phrase in context, trying to preserve part of the meaning, we will typically find that the complement of the preposition is a nominalization, not an ordinary noun, and this is quite significant. For instance, *Before leaving Krishnapur, the Collector took a strange decision* becomes *Before his departure from Krishnapur, the Collector took a strange decision*, which is different from e.g. *Before noon, the Collector ...*, with a time noun rather than a nominalization. The nominalization *departure* is a metaphor, which presents an event as an entity (see Hopper & Thompson, 1984; Halliday, 1985: ch. 10). This is a marked way of presenting an event: Rewording the "adverbial clause" with a prepositional phrase to show that it is an adverbial does not show that at all; it shows that the result of representing the event of leaving as if it was an adverbial is a metaphor.

(ii) Clauses may combine with clause combinations

When one clause combines with just one other clause, it may seem to function as an adverbial, although it does not. But when one clause combines with a combination of clauses, it is quite clear that there is no single clause it could be an embedded

constituent part of. Let's consider a fairly complex example taken from a conversation between parent and child analyzed in Halliday (1985: 270). The part we want to focus on is italicized:

Child: How do you see what happened long ago before you were born?

Parent: You read about it in books?

Child: No, use a microscope to look back.

Parent: How do you do that?

Child: Well, *if you're in a car or you're in an observation coach, you look back and then you see what happened before* but you need a microscope to see what happened long ago because it's very far away.

The italicized part breaks down into a conditioning disjunction of clauses, *if you're in a car or you're in an observation coach*, and a conditioned coordinated sequence, *you look back and then you see what happened*. The point of the example is that the condition does not relate to a simple clause but to a clause **combination**: There is no simple clause that the condition could be analyzed as embedded in. Here are three additional examples, the first two taken from Longacre (1970) and the third from Halliday (1985b). In all three, there is a combination with a coordinative clause combination, in italics:

While Ed was coming downstairs, *Mary slipped out the front door, went around the house, and came in the back door.*

Although Ed never slept more than five minutes overtime, *his father got cross with him and made things generally unpleasant.*

When you have a small baby in the house *do you call it it or do you call it she or he?*

We can diagram the first example in the same way we did in Figure 3 to bring out the organization of the clause combinations; see Figure 4.

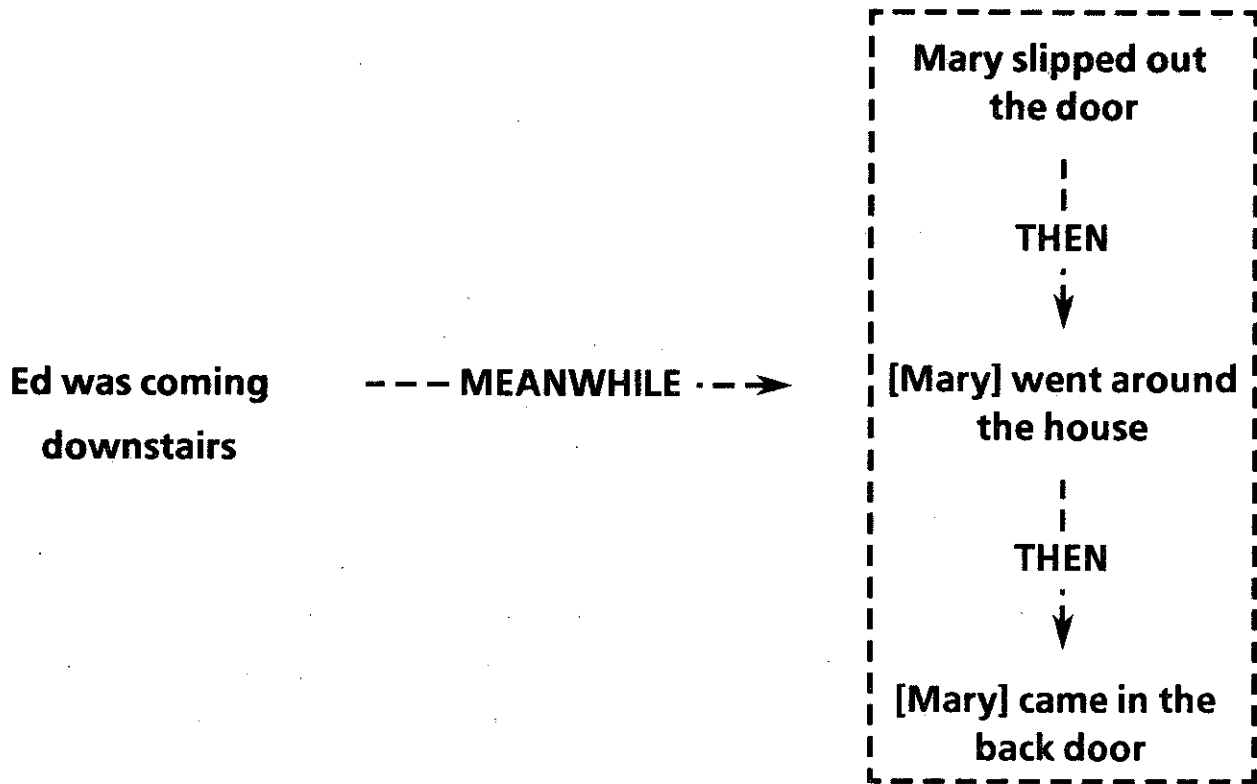


Figure 4: Clause combining with clause combination

Note that the diagram in Figure 4 is quite similar to the diagram in Figure 3. In the earlier example, the temporal relation combines a clause with a clause combination. (The difference is that that clause combination in the earlier example is not a coordinative one, but is of the kind we are studying in this paper.) In fact, *you need a microscope to see what happened long ago because it's very far away* is quite parallel to the example we diagrammed in Figure 3. If we treated the reason clause as an embedded part of *you need a microscope*, we would be unable to bring out the fact that its domain is the whole clause combination. This kind of situation where a clause combines with a clause combination rather than a single clause is quite common. In Section 3, we will see that it reflects a very basic organizational property of discourse in general.

2.3.2 Combining by coordination

We have shown that embedding has to be distinguished from clause combining and that our examples illustrate clause combining rather than embedding. There is a potential problem with this interpretation, since clause combining where two or more clauses combine without being constituent parts of one another traditionally implies coordination or apposition: In many traditional grammars, we only have two categories at our disposal, embedding and clause combining by coordination. (Sometimes apposition is recognized as distinct from coordination.) They are usually simply called subordination and coordination.⁴ Given that only "subordination" and "coordination" have been available as analytic tools to many grammarians, it is perhaps not surprising that they have tried to force examples such as those in Figure 1 into the subordination model by calling them adverbials.

What we need at this point is a framework that is richer than the traditional one and allows us to interpret our examples as instances of clause combining without having to treat them as coordination (or apposition). We will follow Halliday and other systemic linguists in assuming that there are two degrees of clause combining, parataxis (e.g., coordination) and hypotaxis.

2.4 Two degrees of clause combining: hypotaxis and coordination

For English, Halliday and grammarians working within the systemic tradition distinguish between (i) "embedding," which includes essentially clauses embedded as

⁴This is not to suggest that all traditional grammarians who made a distinction between coordination and subordination believed that it is a clear-cut dichotomy. For example, Kruisinga (1932: 501) remarks: "It is perhaps hardly necessary to observe that the distinction between coordination and subordination is a relative one, allowing of intermediate cases." He discusses cases of apparent coordination and apparent subordination, drawing a distinction between formal appearance (of coordination or subordination) and real function. Thus, a clause may appear to be subordinate, but function as a main clause. Kruisinga does not, however, revise the distinction between coordination and subordination or make his criteria very explicit.

restrictive relative clauses and subject and object complements⁵, and (ii) clause combining or clause complexing in Halliday's terms.

Halliday recognizes a number of different types of clause combining. In terms of the degree of interdependence, he distinguishes between paratactic combining, "parataxis," and hypotactic combining, "hypotaxis." Parataxis includes coordination, apposition, and quoting.⁶ **Hypotaxis** includes essentially clause combining involving non-restrictive relative clauses, clauses of reported speech, and the clause combinations we exemplified in Figure 1. These are clause combinations where we do not gain any grammatical or discourse insight by interpreting one clause as a constituent part of another clause. Although the clauses are interdependent and stand in a kind of head-dependent relation to one another at some level, there is no sense in which one is a part of the other.⁷ In our discussion of discourse organization, we will show that the head-dependent organization is a general characteristic of discourse and will suggest that the grammatical facts of hypotactic clause combining reflect this kind of discourse organization.

⁵These are all instances of rankshifted clauses in Halliday's terms; cf. Halliday (1961). Clauses of reported speech combined with clauses of "saying" are not treated as embedded clauses by Halliday; cf. Halliday (1980, 1985). See also Haiman & Thompson (1984: 519-520), Longacre (1970: 266-267), and Munro (1982); cf. also Foley & Van Valin (1984: 252), who recognize that such clauses are not objects, though they still think of them as embedded.

⁶Parataxis is thus more general than the traditional notion of coordination. But since our focus is on hypotaxis, we will not discuss Halliday's notion of parataxis.

⁷For discussions in the systemic literature of embedding, clause complexes, parataxis, and hypotaxis, see, for example, Halliday (1963) on intonational differences; Halliday, McIntosh, and Stevens (1964: 25-28); Halliday (1965); Huddleston (1965); Scott, Bowley, Brockett, Brown, and Goddard (1968); Hudson (1968); Muir (1972: Section 2.4); Berry (1975: Chapters 6 and 7); Young (1980: Chapters 17 - 21); Halliday and Hasan (1976: 136); Halliday (1979); Halliday (1985b); and Halliday (1985: Chapter 7). In addition to hypotaxis and parataxis, Hudson operates with a third type of clause combining, indeterminate between the two. He uses it for appositional and asyndetic clause combinations. In a different framework, Foley and Van Valin (1984) and Van Valin (1984) propose a typology of clause combining where they recognize "cosubordination" in addition to the traditional notions of coordination and subordination. They suggest that the concept cosubordination was "originally developed" in Olson (1981), but in fact it is similar to Halliday's earlier notion of hypotaxis; both entail dependency but not embedding. Their three-way distinction is thus comparable to Halliday's parataxis vs. hypotaxis vs. embedding, but they don't use the distinctions in the same way as he does for English. For example, they treat "adverbial clauses" as embedded in the periphery of another clause, which is very much like the traditional analysis we have rejected, but Halliday treats them as hypotactically related to (and not embedded within) another clause. Their distinction between cosubordination and subordination is also reminiscent of Longacre's distinction between inner peripheries in sentence structure and constituents of clause structure (Longacre, 1970).

2.5 Type of interdependence in clause combining

We have characterized our examples in Figure 1 as hypotactic clause combinations, and can follow Halliday one step further in differentiating them from other types of clause combinations, particularly from other types of hypotaxis. Our examples illustrate **enhancing** hypotactic clause combinations. In addition to the distinction between parataxis and hypotaxis in terms of degree of interdependence between clauses being combined, Halliday distinguishes a number of different types of interdependence: projection vs. expansion, and within expansion elaboration vs. extension vs. enhancement.⁸ Elaborating hypotaxis involves combinations with non-restrictive relative clauses; extending hypotaxis involves clauses of replacement (*instead of spending a lot of money in a restaurant we'll get ourselves invited to dinner somewhere*) and addition (*besides visiting our relatives we went down to Texas*).

We will not discuss this range of types, since our focus is only on enhancing hypotaxis. But the point is that it is not enough only to look at the degree of interdependence, which is what often happens in discussions of clause combining.⁹ The discourse properties of enhancing hypotaxis are related to those of other kinds of hypotaxis. Nevertheless they are crucially different and we need to recognize enhancing hypotaxis as a distinct category if we are to fully understand it in discourse terms.

As we have said, we will concentrate on what Halliday has called **enhancing hypotaxis**. Enhancing hypotaxis refers to hypotactic clause combining that involves some kind of circumstantial relation like condition, reason, purpose and others kinds of cause, time, space, manner, and means. One clause enhances another clause circumstantially.

When we introduced the examples in Figure 1, we said that we did not want to name

⁸Names referring to the type of relation in the literature have included "logico-semantic relation," "conjunctive relation," "rhetorical relation," "rhetorical predicate," "interclausal relation," and "clause relation."

⁹The two sets distinctions, degree and type of interdependence, are not arbitrary, of course; they are also the dimensions linguists have recognized in rhetorical organization: cf. Section 3 and references cited there.

them because there simply is no satisfactory traditional term for them. We can now use the Halliday term *enhancing hypotaxis* for this kind of clause combining. This term is now meaningful: it separates the examples in Figure 1 from embedding and it indicates their distinction from other types of clause combination, that is, parataxis (e.g., clause combining by coordination) and other types of hypotaxis.

2.6 The function of clauses in combination vs. the class of a clause

We have concentrated on the grammatical **function** that a clause may serve. We have used *before* clauses in several examples. Repeating two of them, the first in changed form, we have:

Before he left Krishnapur, the Collector took a strange decision.

the happy days before the Magistrate had been invited

In terms of grammatical function, the two *before* clauses are quite different. The first is part of an enhancing hypotactic clause combination, whereas the second is embedded in a noun phrase. And yet we refer to them both as *before* clauses and this captures a number of similarities: they are both introduced by the marker *before* and they could not be interrogative.

We can extend these similarities by assigning the clauses to the same **class** of clause. For example, we may choose to set up a **class** of *before* clauses, of temporal clauses, of circumstantial clauses, etc.. This does not require that they all have the same grammatical **function**. We can set up classes of clauses to make generalizations about markers like *before*, about mood alternatives, about transitivity patterns, about thematic possibilities, about word order, and so on. Similarly, we can set up classes of noun phrases to make generalizations about case, person, determination possibilities (e.g., proper vs. common), and so on. These classes of clauses do not entail a particular grammatical function.

Just as in other areas of grammar, function and class have to be kept distinct when we study clause combining. This may seem to be stating the obvious, but there are four important reasons to draw attention to the distinction.

First, the terminology in this area is often unclear. For example, the term *subordinate clause* is sometimes used to refer to a particular function a clause may have, the clause is 'subordinated' in relation to another grammatical unit -- sometimes to a particular class of clause.¹⁰ Similarly, the term *adverbial clause* is used to denote a possible function of a clause or to name a particular class of clause.¹¹ We have chosen to avoid both terms in our paper.

Second, the lack of terminological clarity may in fact reflect a mixture of class and functional criteria in the treatment of clauses. Brondal observed in 1937 the two viewpoints are often mixed; his observation remains applicable.

Third, various criteria for recognizing a particular class of clause are often used in arguments for a particular analysis of what grammatical functions a clause serves. For example, observations about word order in German, Dutch, or Swedish are sometimes used as evidence for a treatment of the whole class of clauses with a particular kind of word order as embedded. We are not claiming that there are no correlations between class and function, yet the function of a clause is not a necessary consequence of a particular word order pattern. To take an example from English; in clauses with a *wh*-item, the sequence is typically *wh*-item + the rest of the clause. This is true of direct and indirect interrogative clauses as well as of relative clause, i.e. of "*wh*-item clauses," but we would obviously not be tempted to say that relative clauses and interrogative clauses have the same grammatical function. In the same way, it does not follow that all clauses in German with the finite verb in final position must have the same kind of grammatical function.¹²

Fourth, when we examine the use of clauses in discourse, grammatical function is a

¹⁰For a discussion of the uses of the term and a carefully defined use of it, see Lehmann's paper in this volume.

¹¹In this respect, the potential for terminological confusion is very similar to the problem with the term *adverb*. *Adverb* is sometimes used to refer to a class of word, sometimes to a function in the clause (= adverbial or adjunct).

¹²As König and van der Auwera show in their paper in this volume, word order in German or Dutch in any case varies according to discourse factors even in so-called "subordinate" clauses.

more sensitive tool in distinguishing clauses than grammatical class is. Clauses of the same class with different functional potentials are sometimes counted in the same category in discourse studies. Clauses functioning in grammatically different ways usually have very different discourse properties, although they may belong to the same class.

2.7 Why not "subordinate" or "adverbial" clause?

We can now state why we chose not to refer to the clause combinations in Figure 1 as involving "subordinate" or "adverbial" clauses. The problem with both terms is that they have been used to refer both to grammatical function and grammatical class, as we have just indicated above. However, even if we make it clear that we intend grammatical function rather than class, the terms are still misleading. If *subordinate clause* is considered as a clause that functions as subordinated to another grammatical unit, this fails to make the distinction between embedding and clause combining. If *adverbial clause* is considered as a clause that functions as an adverbial, this treats it as embedded within another clause rather than as an instance of clause combining. We have rejected the embedding interpretation for our set of examples.

2.8 Towards a discourse characterization

The approach to the study of the grammar of clause combining we have outlined sketchily in this section is highly differentiating; in this respect, we follow e.g. Halliday and Longacre. Enhancing hypotaxis is just one of many functionally distinct ways of clause combining. The high degree of differentiation is grammatically motivated, as is the particular interpretation of enhancing hypotaxis that we have adopted. But we have in fact described the grammatical reflection of the rhetorical organization of discourse. We now have a good starting point for investigating the discourse function of clause combining, since the grammatical interpretation does not lump together distinctions between embedding vs. hypotaxis that are crucial to an understanding of discourse function. We will now leave the grammar of clause combining so that we may explore the rhetorical organization of discourse (text). This means going up one level in abstraction from grammar to discourse. After providing an independent account of the rhetorical organization of discourse, we will then return to the grammar of clause combining to show how it reflects the higher-level organization of discourse.

3 Relations in discourse structure

This section will discuss the important aspects of discourse organization to support our claim that the grammar of clause combining reflects discourse organization.

3.1 Text relations: an overview

It is not controversial to say that discourse is coherent -- that parts of a discourse "go together" to form a whole. As background to the discussion of the discourse basis for hypotaxis, we will consider one type of discourse, small written expository texts in English, and describe one factor involved in the creating and interpreting of texts as coherent. This factor is the existence of perceived organizational, or rhetorical, relations between parts of the text. We will consider one type of discourse, small written expository texts in English; this restriction is a useful limitation for illustrative purposes.

Our study of expository English has revealed that a number of relations continually recur; in line with a number of other discourse linguists (see Note 20), we have identified a set of twenty or so such relations.

These relations, which are often not directly signalled, are essential to the functioning of the text as a means for a writer to accomplish certain goals. These relations involve every non-embedded clause in the text and they form a pattern of relations that connects all the clauses together.

Let's first consider a short text as an illustration. The text has been broken down into components, which we will call (rhetorical) "units," which are roughly coded as what most grammarians would call "clauses" (except that clausal subjects and complement¹³ and restrictive relative clauses represent units that are part of their matrix unit rather than separate units.¹⁴).

¹³With the exception of "reported speech" related to clauses of saying; cf. remarks in Note 6.

¹⁴The size of the units is arbitrary; we choose the clause as the basic reference point for ease of exposition.

(from Language Sciences, April, 1969)

Unit 1. Sanga-Saby-Kursgard, Sweden, will be the site of the 1969 International Conference on Computational Linguistics, September 1-4.

Unit 2. It is expected that some 250 linguists will attend from Asia, West Europe, East Europe including Russia, and the United States.

Unit 3. The conference will be concerned with the application of mathematical and computer techniques to the study of natural languages, the development of computer programs as tools for linguistic research, and the application of linguistics to the development of man-machine communication systems.

This text can be seen as a general claim (Unit 1), followed by two pieces of detail elaborating this claim (Units 2 - 3). Accordingly, we can postulate Unit 1 as being the most central to the writer's purpose in creating this text. Without Unit 1, Units 2 and 3 are senseless; whereas without Units 2 and 3, Unit 1 would still convey a message, albeit a difficult one to respond to. Thus we postulate a text relation of ELABORATION between Unit 1, on the one hand, and Units 2 and 3, on the other, with Unit 1 as the **nucleus** and Units 2 - 3 as the **satellite**. We can also postulate a LIST representation for the fact that Units 2 and 3 function together as co-equal realizations of the ELABORATION satellite. Schematically, we can represent this relation of ELABORATION as shown in Figure 5.

Before discussing the implications of these claims, let's consider another text:

(from UCLA Senate Report, June, 1984)

1. The Senate Office will be closed from July 30 through August 10 during the Olympic Games.

2. The Executive Board decided to close the office during this period in response to the fact that so many departments on campus will also be curtailing their operations during the Olympics.

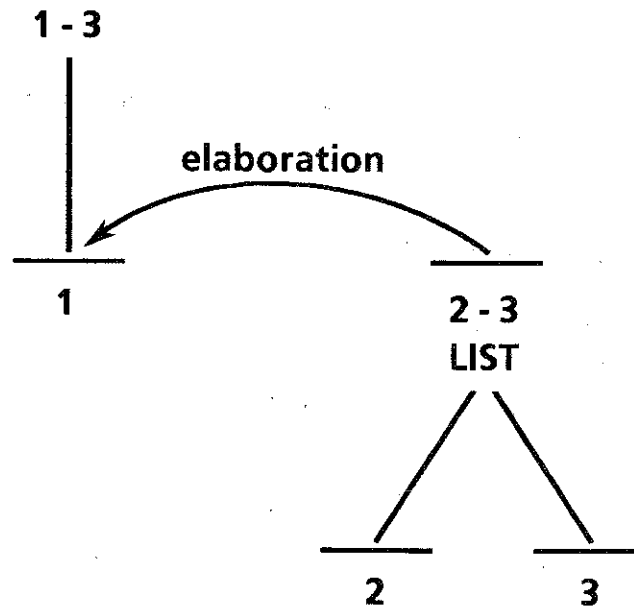


Figure 5: Relational Structure of the "Computational Linguistics" Text

In this text, Unit 2 can be seen as providing a reason for the action described in Unit 1.

Once again, Unit 1 represents the writer's main goal in creating this text.

We can therefore propose that a text relation of REASON exists between these two parts of this text. Schematically, we diagram the relational structure of this text as follows:

Now let's see what apparatus we have constructed so far. We have seen that a description of the **"rhetorical (relational) structure"** for a text can be given in terms of the **rhetorical relations** between its component parts. This relational structure shows the rhetorical relations between parts of the text, and it shows how each component unit is linked to the rest of the text by a network of such relations.

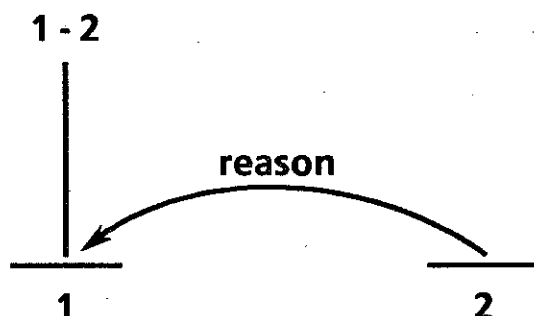


Figure 6: Relational Structure of the "Closed for Olympics" Text

The perception of texts in terms of **hierarchically organized groups of units** is a linguistic reflex of a general cognitive tendency; Lerdahl and Jackendoff's description of this process for the interpretation of tonal music (1983:13), could have been written to describe the interpretation of texts:

"the process of grouping is common to many areas of human cognition. If confronted with a series of elements or a sequence of events, a person spontaneously segments or "chunks" the elements or events into groups of some kind. The ease or difficulty with which he performs this operation depends on how well the intrinsic organization of the input matches his internal, unconscious principles for constructing groupings."

Their comment that "grouping can be viewed as the most basic component of musical understanding" (p. 13) holds equally well for text understanding.

We have also seen that two types of relations can be distinguished: those in which one member of the related pair is ancillary to the other (diagrammed with an arc from the ancillary portion to the central portion), and one in which neither member of the pair is ancillary to the other (diagrammed as descendents from a LIST node). This distinction is crucial. The first type we might call a "**Nucleus-Satellite**" relation, the second a

"List" relation.¹⁵

We suggest that all text can be described in terms of such hierarchical relations among its various parts.¹⁶ It is important to note that these relations are defined in terms of the functions of segments of text -- in terms of the work they do in enabling the writer to achieve the goals for which the text was written.

The rhetorical structure of texts is therefore claimed to be **composed of function-specific elements**. Further, the rhetorical structure of a text can be composed of both "Nucleus-Satellite" relations and "List" relations. Of these two types of relations, we will focus on the Nucleus-Satellite relation.

The Nucleus-Satellite distinction is one which characterizes the organization of all of the texts we have analyzed, and which furthermore seems to be pervasive as a text-organizing device.¹⁷ We take it to reflect the fact that in any multi-unit text, certain portions realize the **central goals** of the writer, while others realize **goals which are supplementary** or ancillary to the central goals.¹⁸ That is, the nuclear part is the one whose function most nearly represents the function of the text span "covered" by that relation. For example, in the "Computational Linguistics" text considered above and diagrammed in Figure 5, the analysis claims that Unit 1 is the nucleus of this text, with

¹⁵Grimes (1975) makes a similar distinction between two types of what he calls "rhetorical predicates," which are very similar to our text relations. By "rhetorical predicates" he means predicates which take propositions, rather than noun phrases, as their arguments. See Mann and Thompson (1985a) for discussion of the similarities and differences between Grimes' theory and ours. Grimes (p. 209) distinguishes between "paratactic" predicates, which "dominate all their arguments in coordinate fashion," and "hypotactic" predicates, which "relate their arguments to a proposition that dominates them" (p. 212). Beekman, Callow, and Kopesec (1981) also make a similar distinction between addition and head-support.

¹⁶These relations differ among themselves to some extent since they may reflect more closely either relations among "real-world" events or more closely considerations of text organization. We return to this issue below in Section 3.2.7 and in Figure 14.

¹⁷This distinction is reminiscent of the "nucleus-margin" distinction of tagmemic linguistics, as exemplified in the analysis of texts in Pike and Pike (1983:chap. 1).

¹⁸In this respect, the process of producing text is like human action (behaviour) in general undertaken in the pursuit of goals; writing or speaking is symbolic action. Planning in general seems to rely on the distinction between central goals and subsidiary or supplementary goals.

Units 2 and 3 providing supplementary, elaborating material. This nuclear-satellite distinction reflects the fact that the central goal for the writer of the text, as perceived by readers, is to convey the information that a particular computational linguistics conference will be held.

Judgments about what is nuclear and what is supplementary are made by readers as part of the general cognitive tendency. This has been investigated in depth by Gestalt psychologists (see, e.g., Ellis (1938), Koffka (1935), and Kohler (1929)) to impose structure reflecting "central" and "less central" on certain types of perceptual input. For texts, these judgments are based on our perceptions, as ordinary readers, of what the text is designed to accomplish. Such judgments are generally easy to make although there may be problematic cases. The analysis of texts into hierarchically organized nuclear and satellite parts reflects the fact that readers consistently make such judgments as part of their comprehension of texts, and writers construct texts expecting them to be able to do so.

It should be clear that nuclearity and hypotaxis are quite distinct from each other. There are many Nucleus-Satellite relations which do not involve hypotaxis, such as that illustrated in the "Computational Linguistics" text: Units 2 and 3 are joint satellites to the nuclear Unit 1, but each of these units is a sentence. There is no hypotaxis anywhere in this text. We wish to emphasize that Nucleus-Satellite relations are pervasive in texts independently of the grammar of clause combining.

Now, if the number of relations one needs to posit to describe the relational structure of any coherent text turns out to be relatively small, and if precise definitions of these relations can be given, then we have the foundations for a theory of the organizational structure of texts. In fact, this number does seem to be small (about 20), definitions can be given, and such a theory has actually been proposed. The description of text structure that we are offering here is an adaptation of this theory, modified in the interests of accessibility.

We will not attempt to present or justify this theory here, since a full description of

the theory and careful definitions of each of the relations would distract us from the goal of relating issues of hypotaxis to discourse structure (for more rigorous, though brief, treatments, see Mann (1984) and Mann and Thompson (1985), (1986), and (to appear)). Instead, since our point can be made independently of the precise definitions one gives for each relation, we will proceed to simply identify and exemplify some of the other relations which recur in the analysis of texts, and discuss the question of hypotaxis in terms of these relations.¹⁹

The list of twenty or so relations which we have found to be useful were subjectively arrived at through analysis of more than one hundred texts.²⁰ While our list may not precisely match those of other researchers, our point here is simply that some such list of relations, as has been recognized by researchers mentioned in Note 20, is central to an understanding of the organizational structure of texts.²¹ We will discuss only the most frequently recurring of these relations in this paper.

¹⁹This theory, which we call Rhetorical Structure Theory, is being developed by William C. Mann and us, with valuable input from Barbara Fox, at the USC Information Sciences Institute (ISI) in Los Angeles in the context of work on text generation, designing computer programs that have some of the capabilities of authors. It has been influenced by the work of Beekman and Callow (1974), Beekman, Callow, and Kopesec (1981), Crothers (1979), Grimes (1975), Halliday and Hasan (1976), Hobbs (1979), (to appear), Longacre (1976), (1983), Martin (1983), and McKeown (1982).

²⁰These texts ranged from one paragraph to several pages in length, of the following types: administrative memos, personal letters and letters to the editor, advertisements, Scientific American articles, newspaper articles, organizational newsletter articles, public notices in magazines, travel brochures, and recipes. There seems to be no limit in principle on the length of the text whose organizational structure can be analyzed in terms of this theory.

²¹It is an open question whether analysis of texts from other languages will reveal the same set of relations as has our analysis of English texts. The implication in the work of people involved with translation, such as Beekman, Callow, and Longacre (cited above) is that the proposed lists of relations are cross-linguistically valid, but our impression is that texts from other cultures may be organized according to different conventions and hence may call for a slightly different set of relations from those we propose here. For example, Thomas Payne (p.c.) has shown that relations of location are significant in the oral prose of some languages. The possibility of such differences has, of course, implications for differences in grammatical coding.

3.2 Individual relations

3.2.1 ENABLEMENT

In texts which issue directives or make offers, it is common to find an ENABLEMENT relation. Here is an example:

(from The Linguistic Reporter, Fall, 1971)

Unit 1. The University Press of Kentucky has announced the establishment of the Kentucky Foreign Language Conference Award to be given annually for the best manuscript dealing with some aspect of foreign language and/or literatures.

Unit 2. The Award, \$500 and acceptance of the manuscript for publication, is offered in conjunction with the Kentucky Foreign Language Conference.

Unit 3. The deadline for submission of manuscripts for the 1972 Award is December 1, 1971.

Unit 4. For further information write: KFLCA,
The University Press of Kentucky, 104 Lafferty Hall,
Lexington, Kentucky 40506.

This offering text can be diagrammed as shown in Figure 7.

An ENABLEMENT relation holds between a nuclear portion of text issuing the directive or offer and a portion providing the means which enable the reader to comply with the directive or take advantage of the offer.

Figure 7 claims that the "Kentucky Award" text is structured in the following way: Unit 1, the announcement of the award itself, is nuclear to the ELABORATION satellite, Unit 2. Then both Units 1 - 2 are nuclear to the ENABLEMENT satellite, jointly realized by Units 3 - 4. Here the ENABLEMENT portion of the text tells readers how to avail themselves of this offer by specifying the deadline and where to find further information.

This multi-unit text provides us with an opportunity to point out two further features of our analysis. First, note that Figure 7 appropriately reflects the **scope relations**

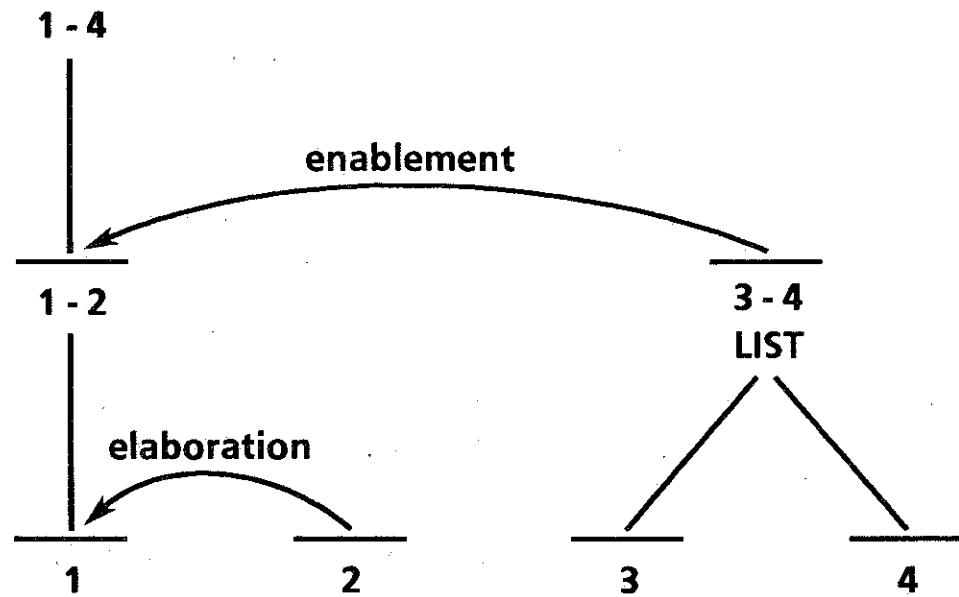


Figure 7: Relational Structure of the "Kentucky Award" Text

which readers assign to the "Kentucky Award" text. That is, as just mentioned, Units 3 and 4 are understood as being in an ENABLEMENT relation with the combination of Units 1 and 2. The scope relations are reflected in the levels in the diagram, i.e., in the **hierarchic organization**. The ENABLEMENT relations and the ELABORATION relation are not on the same level (they are not "sister" satellites). Rather, there is one satellite per level. Second, note that Figure 7 reveals Unit 1 to be the nucleus, not only for its own satellite, Unit 2, but also for the text as a whole. In fact, the analysis allows us to claim that the unit which is found by tracing only vertical (nuclear) lines from the top of the relational structure diagram will always be the nucleus of the text as a whole, that unit which most succinctly represents the goal for which the text was created.²²

²²In the case of a text with more than one central goal, of course, a multi-nuclear structure would be the best representation.

3.2.2 MOTIVATION

Another relation commonly found in texts that issue directives or make offers is the MOTIVATION relation. Here is an example:

(from the ISI librarian, a message appearing on the electronic ISI bulletin board, May 14, 1984)

Unit 1. Some extra copies of the Spring 1984 issue of AI Magazine are available in the library.

Unit 2. This issue includes a "Research in Progress" report on AI research at ISI.

Figure 8 shows the relational structure of this text.

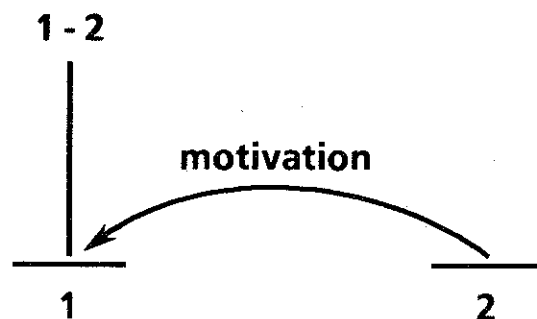


Figure 8: Relational Structure of the "AI Magazine" Text

By convention, we restrict the MOTIVATION relation to instances of one part of the text providing motivation to the *reader*, rather than to the subject of the clause realizing the nucleus. Thus a MOTIVATION relation is invoked only for texts which convey offers, requests, or directives.

This example illustrates a MOTIVATION relation between the nuclear offer and the

satellite providing motivation for the reader to take advantage of the offer. In this case, the writer of the text intends to motivate ISI researchers to consult the latest issue of AI Magazine by pointing out that they may find themselves mentioned in it.

3.2.3 BACKGROUND

One portion of a text can provide the background for another portion, as in this text:

(from an ISI researcher, message appearing on the ISI electronic bulletin board)

Unit 1. Someone left a coffee cup in my office over the weekend.

Unit 2. Would the owner please come and get it

Unit 3. as I think things are starting to grow?

The writer of this message is implying that the coffee cup is not welcome in the writer's office because mold has started to grow in it. According to our definitions, the BACKGROUND relation holds for a text span which provides for the comprehensibility of an item mentioned in another text span. We can thus analyze this small text as follows: Unit 1 provides background information for the request expressed in Unit 2, for which Unit 3 provides motivation. This grouping can be represented as in Figure 9.

3.2.4 CONCESSION

A CONCESSION relation holds when one portion of a text concedes a point potentially damaging to the argument the writer wishes to make. Here is an example taken from the beginning of a personal letter:

Unit 1. Your kind invitation to come and enjoy cooler climes is so tempting

Unit 2. but I have been waiting to learn the outcome of medical diagnosis

Unit 3. and the next 3 months will be spent having the main thumb joints replaced with plastic ones.

Here, with respect to a previous invitation to come and visit, the letter-writer concedes

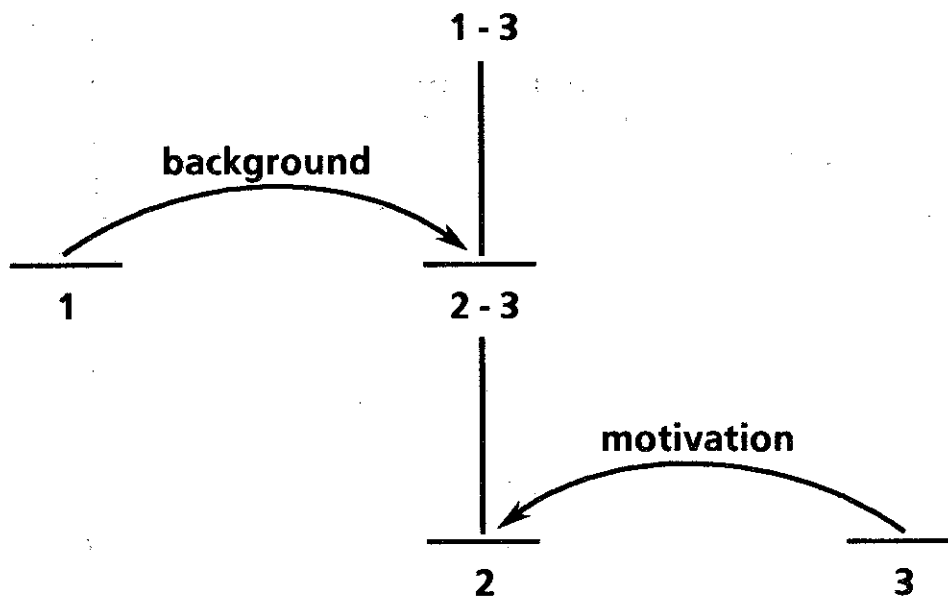


Figure 9: Relational Analysis of the "Coffee Cup" Text

in the satellite Unit 1 that the idea is a tempting one. But her nuclear argument (in Unit 3) is that thumb surgery will preclude her accepting the invitation. With Unit 2 as background to Unit 3, here, then, is the analysis of this text:

3.2.5 CIRCUMSTANCE, ELABORATION

Here is an excerpt from the description of a national public radio announcer:

Unit 1. Peter Moskowitz has been with KUSC longer than any other staff member.

Unit 2. While attending Occidental College,

Unit 3. where he majored in philosophy,

Unit 4. he volunteered to work at the station as a classical music announcer.

Unit 5. That was in 1970.

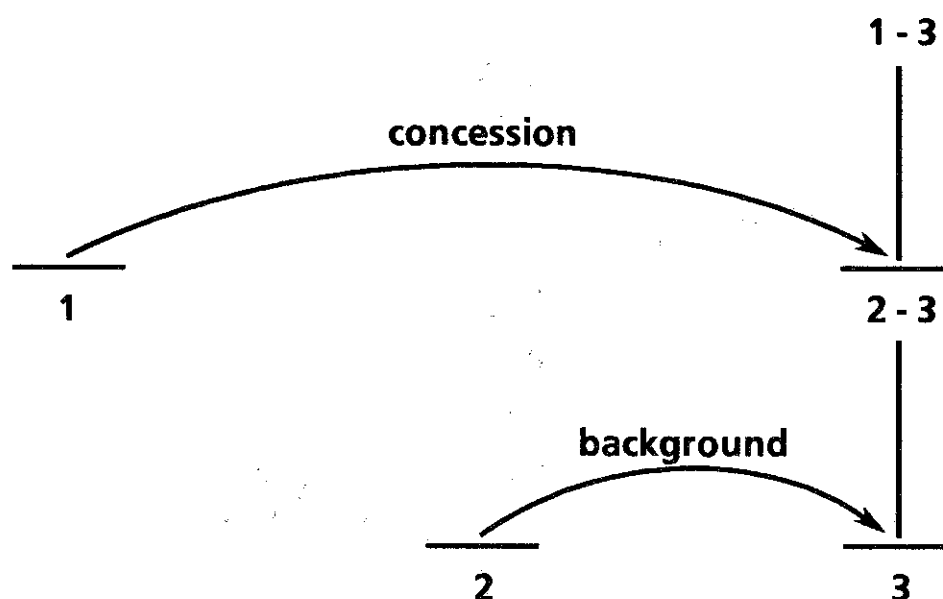


Figure 10: Relational Structure of the "Cooler Climes" Text

The CIRCUMSTANCE relation is exemplified twice in this passage: not only do Units 2 and 3 form a CIRCUMSTANCE satellite for Units 4 and 5, but Unit 5 forms a CIRCUMSTANCE satellite for Unit 4, as shown in Figure 11. (Note again the scoping with one satellite at each level in the hierarchy.)

Figure 11 shows that this excerpt also contains two instances of the ELABORATION relation: Units 2 - 5 form an ELABORATION satellite for Unit 1, and Unit 3 forms an ELABORATION satellite for Unit 2.

3.2.6 SOLUTIONHOOD, ANTITHESIS, PURPOSE, CONDITION

In this excerpt from a few lines later in the same personal letter considered in connection with Figure 10, we can see four new relations. Having announced that she won't be able to come and visit because thumb surgery is going to be necessary, the writer is giving the background story, which involves hereditary arthritis:

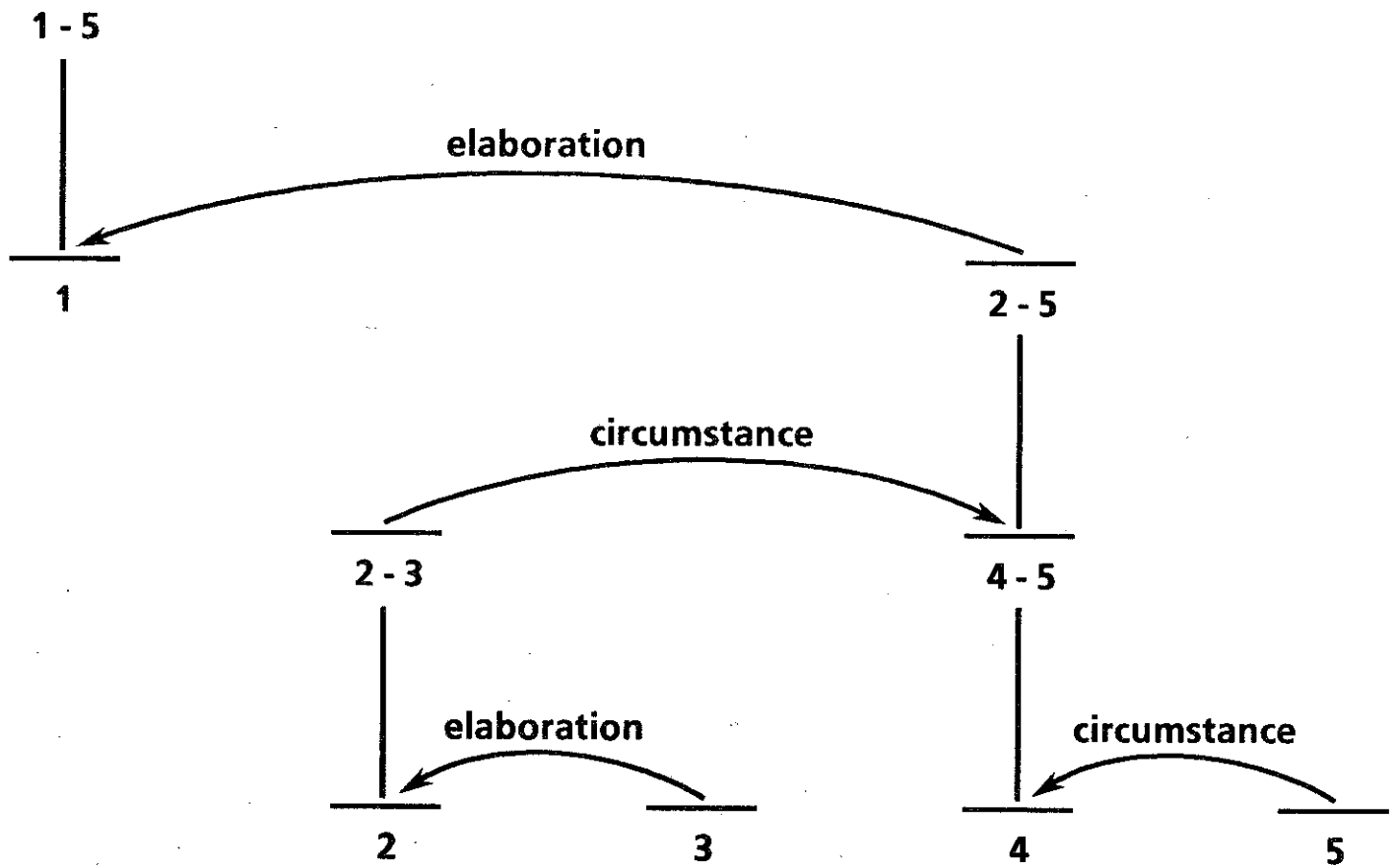


Figure 11: Relational Structure for the "Peter in 1970" Text

Unit 1. Thumbs began to be troublesome about 4 months ago

Unit 2. and I made an appointment with the best hand surgeon in the Valley

Unit 3. to see if my working activities were the problem.

Unit 4. Using thumbs is not the problem

Unit 5. but heredity is

Unit 6. and the end result is no use of thumbs

Unit 7. if I don't do something now.

The ANTITHESIS relation is one of those which is more involved with textual concerns of presentation rather than with spatial or temporal relations between events. This relation can be characterized as follows: the satellite "thesis" expresses a proposition which the writer refuses to identify with, while the nuclear "antithesis" expresses a contrasting proposition which the writer does identify with. In Unit 4 of the "Thumbs" text, the writer offers the thesis that the use of thumbs at work might be the problem, and she signals her refusal to identify with this proposition by the use of the negative. In Unit 5, she offers the antithesis, which she does identify with, that heredity is causing the problem.

This extract from this letter can be rhetorically represented as shown in Figure 12, it also illustrates three other relations. First, Unit 3 can be seen to relate to Unit 2 in a PURPOSE relation, where the satellite, Unit 3, provides a purpose for which the action in the nuclear Unit 2 is undertaken. Second, Units 6 and 7 are in a CONDITION relation: the satellite provides the conditions under which the situation expressed in Unit 6 holds. Note that both PURPOSE and CONDITION are examples of relations which involve interaction among reported events more than presentational aspects of text organization, which characterized the ANTITHESIS relation.

The third, relation illustrated by this example is the SOLUTIONHOOD relation holding between Units 1 and Units 2-3. Here Unit 1 states a problem, the troublesome

thumbs; the solution, making an appointment with the best specialist available, is expressed in Units 2 - 3.

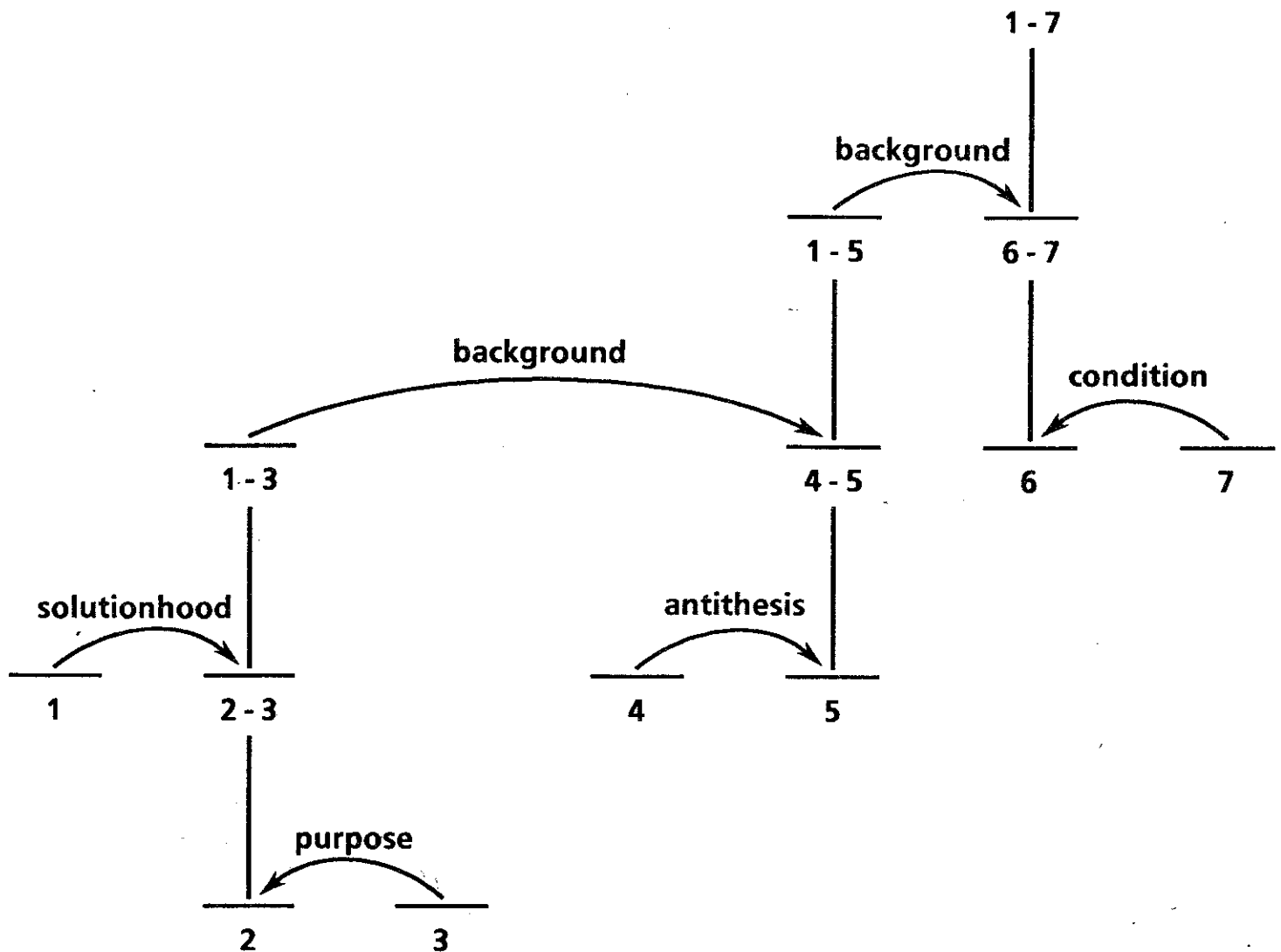


Figure 12: Relational Structure of the "Thumb Heredity" Text

Figure 12 provides a particularly clear illustration of the way groupings are **hierarchically organized**. For instance, each of the two occurrences of the BACKGROUND relation in the relational structure for this text is at a different "level" of structure. Units 1 through 3 are background for Units 4 and 5, and Units 1 through 5 are background for Units 6 and 7. There is one satellite at each level in the hierarchy.

3.2.7 Typology of rhetorical relations

Having illustrated a number of the relations which we have found to characterize coherent text, we can now present a partial typology of rhetorical relations.²³ Recall that we have distinguished between "List" relations and "Nucleus-Satellite" relations, as shown:

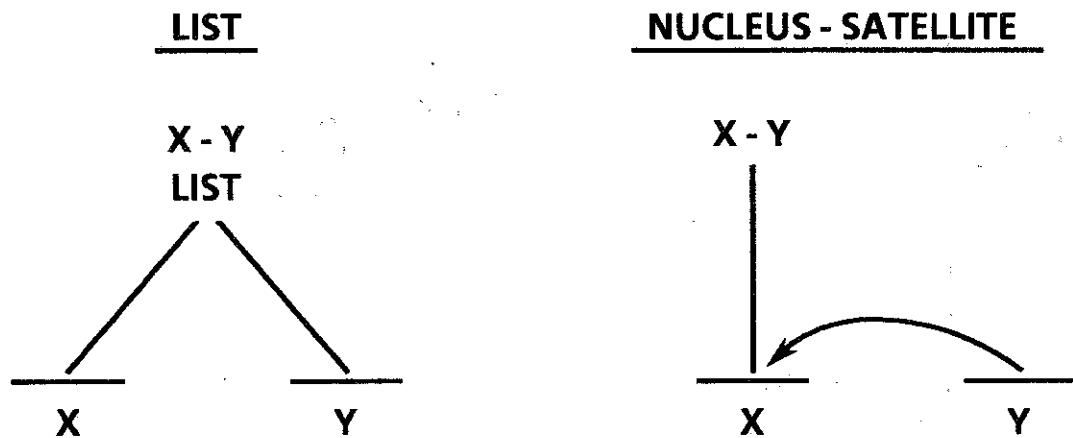


Figure 13: The distinction between "List" and "Nucleus-Satellite" relations

Within the category of Nucleus-Satellite relations, we can distinguish (i) relations having to do with the success or felicity of a rhetorical act such as requesting, and (ii)

²³This is a partial typology in that there are more categories which could have been included; it suffices for our present concerns, however.

relations pertaining to the subject matter of the text.²⁴ Within (ii), we also distinguish three subtypes. They are tabulated in Figure 14.

NUCLEUS-SATELLITE	
[1] RHETORICAL ACT	MOTIVATION BACKGROUND SOLUTIONHOOD ANTITHESIS

[11] SUBJECT MATTER	
Elaborating	ELABORATION

Enhancing	PURPOSE CONDITION CIRCUMSTANCE CONCESSION

Figure 14: Typology of rhetorical relations

All of the relations in [i] are used to ensure the success or felicity of a rhetorical act. For example, MOTIVATION is used to ensure the success of a request or an offer by specifying information intended to make the reader/listener feel inclined to comply or accept. Similarly, BACKGROUND is used to provide the reader/listener with information that will enable him/her to comprehend an item mentioned in the nucleus. The relations in [i] tend to be scale insensitive--they may occur at any level in a text where there is a request, offer, or claim, but they often scope over an entire text.

The subtypes of [ii] are taken from Halliday (1985); they were previously mentioned in

²⁴It is possible to identify cross-classifications in this taxonomy. For example, some of the relations of type (i) are enhancing (cf. below) just as are some of the relations of type (ii). However, for our purposes the typology presented here is sufficient. Although we will not pursue this matter here, we may note that the rhetorical distinction between (i) and (ii) is consequential for clause combining.

Section 2.5: An elaborating relation is used when there is a relation of 'being' between two or more units: this is the very general relation that obtains between an attribute and a value, between a set and its members, or between a generalization and its specific instances. Elaborating relations are distinct from other rhetorical relations in that they do not necessarily hold between propositions per se, but may relate terms in the propositions (e.g., one term in the proposition may be related to another as type to subtype). Like the "rhetorical act" relations in type [i], elaborating relations also tend to be scale-insensitive; they may occur at any level in a rhetorical structure.

Enhancing relations are used when units are circumstantially related to one another. "Circumstantial" needs to be understood in a very general sense. In principle, the relation corresponds to a parameter of the physical world: temporal, spatial, causal, instrumental, etc.. Events or situations are related temporally, spatially, and so on.²⁵

Unlike the other two types of relations in the typology, there is a tendency for enhancing Nucleus-Satellite relations not to be used at the very top of a rhetorical structure, i.e., not to be scale-insensitive. In fact, they are typically found towards the bottom of a rhetorical structure which is related to their special role in clause combining.

3.3 Summary

We have been assuming that the imposition of organizational, or rhetorical, relations between parts of the text is part of people's creating and interpreting of texts as coherent. We have described and exemplified some of the relations in terms of which the organizational structure of texts can be made explicit. We have shown how these relations are essential to the functioning of the text as a means for a writer to accomplish certain goals, and how they form a pattern of relations which connects all the clauses together.

²⁵It is clearly possible to expand the typology of enhancing relations, e.g. to posit a causal-conditional subtype of enhancing relations (what Grimes (1975) calls "co-variation"), with its own subtypes CAUSE, REASON, PURPOSE, and CONDITION. However, we have taken the typology as far as is necessary for the purpose of this paper.

We have also emphasized that the Nucleus-Satellite distinction is one which characterizes the organization of all of the texts we have analyzed. It reflects the fact that in any multi-unit text, certain portions realize the central goals of the writer, while others realize goals which are supplementary or ancillary to the central goals. Among the properties of rhetorical units defined by the Nucleus-Satellite relation, the following are especially important for our purposes:

1. **Use & markedness:** The use of a satellite in a text depends on the goals of the speaker or writer; it is only used if it serves a purpose. The nucleus derives its justification and function directly from its place in the rhetorical structure, but the satellite is related to the rest only via its nucleus. The satellite is therefore the marked member of the Nucleus-Satellite pair.
2. **Distinctness:** The nucleus and the satellite in a Nucleus-Satellite relation are rhetorically distinct.
3. **Scope:** Rhetorical units defined by *enhancing* rhetorical relations always consist of a nucleus and *one* satellite. That is, a text is always scoped in such a way that there is one satellite per nucleus.
4. **Sequence:** For all Nucleus-Satellite relations we find instantiations of both sequences of nucleus-plus-satellite and satellite-plus-nucleus.

Finally, we have offered a typology of the relations being discussed, which we expect to be useful in the rest of this paper. The next section relates these observations to the nature of enhancing hypotaxis.

4 Text Relations and Enhancing Hypotaxis

We can now examine how the role of text relations in the organization of text relate to enhancing hypotaxis, as we described it in Section 2. First we will draw an analogy between the organization of clause combinations and of discourse (text) in general. We will hypothesize that clause combining is a grammaticization of the rhetorical organization of discourse. The remainder of the section shows how the hypothesis is borne out, argues that some properties ascribed to enhancing hypotaxis are not necessary properties that they have, and shows why it is important to distinguish embedding from hypotaxis when discourse function is studied.

4.1 Analogy between clause combining and text relations

There are several implications of the preceding discussion of rhetorical relations for the issue of clause combining. As a first step in exploring the relationship between rhetorical text relations and clause combining, we ask how clause combining is to be understood in the light of rhetorical organization. We can ask the question in the following way. How is a clause combination like a text?

The question is meaningful, because we made a distinction between the rhetorical organization of discourse (text) and the grammatical organization of clauses into clause combinations. In other words, having made the distinction, we can now ask whether there is an analogy between clause combining and the rhetorical organization of discourse. We think there is a fundamental analogy between the two.

The first point to notice is that the relationships among the units coded by clauses in our examples are exactly the same type as those in the higher-level rhetorically defined text spans. This suggests that the principles of clause combining should not be thought of as different from those governing the general organization of texts.

The second point is that clauses also combine in the same two ways as the rhetorical units of a text. Both display a kind of structure where the elements are interdependent either as the members of a list or as a nucleus to a satellite. In rhetorical organization, we recognized a distinction between Listing and Nucleus-Satellite relations, which is exactly paralleled by the grammatical distinction between parataxis (e.g. coordination and apposition) and hypotaxis. As a consequence of the structural similarity, both clause combining and rhetorical organization show the same kind of scoping characteristics. For example, a clause or rhetorical unit may combine with a combination of clauses or a combination of rhetorical units. We diagrammed the scoping for clause combinations in Figures 3 and 4, which reflect the same kind of scoping characteristics as the rhetorical structures in Figures 7 and Figures 9 through 12.

There is an implicit contrast in the analogy between the structuring of a clause combination and the rhetorical organization of a text: a clause combination is organized

like the rhetorical structure of a text, but it is not organized like a clause. We can clarify the contrast by referring to Bloomfield's (1933) distinction between exocentric constructions and endocentric constructions. He pointed out that the actor-action relation is exocentric; the generalization is that a clause is exocentric in its case-frame-like organization. In contrast, we have shown that a clause combination is structured endocentrically, and so is a text. Bloomfield further defined two types of endocentric structuring: subordinative and coordinative, which we can now reinterpret in the context of clause combining as hypotactic clause combining and paratactic clause combining.²⁶

4.2 Hypothesis

Our two observations about the analogy between clause combining and discourse organization are that:

1. The same relations define clause combinations as texts in general.
2. Clause combinations and texts are structured and scoped in the same way, using both Listing and Nucleus-Satellite organization.

We suggest, then, that there is a fundamental analogy between a clause combination and the rhetorical organization of a text. In order to explain why clause combining is organized the way it is, we suggest that clause combinations represent (code, symbolize) units of text rhetorically combined. This can be explicitly stated as a hypothesis:

Hypothesis: Clause combining in grammar has evolved as a grammaticalization of the rhetorical units in discourse defined by rhetorical relations.

²⁶If we analyse text in genre-specific terms, we find a type of organization that differs from the rhetorical organization we have identified and described in this paper: that is the rhetorical organization found in the generic structure of a narrative, a nursery tale, a folk story, a service encounter, an advertisement, and so on. These structures are specific to a particular genre of discourse. They are exocentric rather than endocentric and as Halliday has pointed out (Halliday, 1981, 1982) there is an analogy between this kind of discourse organization and the organization of a clause. The tentative generalization is that there are two modes of organization simultaneously in a text, an exocentric kind (the generic structure of a particular genre) and an endocentric kind (what we have called rhetorical structure). There is an analogy between one of these, the exocentric one, and the clause, and between the other, the endocentric one, and the clause combination.

Our hypothesis predicts a number of characteristics of clause combining based on what we observed about rhetorical organization in Section 4. We will confine ourselves to Nucleus-Satellite relations of the enhancing type. The more specific version of our hypothesis we will consider is:

Narrower hypothesis: Enhancing hypotactic clause combining has evolved as a grammaticalization of rhetorical relations in text of the enhancing Nucleus-Satellite type.

4.3 Predictions about the grammar of clause combining based on rhetorical relations

If we hypothesize that enhancing hypotactic clause combining is a grammaticalization of enhancing rhetorical Nucleus-Satellite relations, we can make the following predictions about the characteristics of enhancing hypotaxis based on the characteristics of rhetorical relations listed in Section 3.3:

1. **Use of hypotactically enhancing clause:** The use of a satellite in a text depends on the goals of the speaker or writer; It is only used if it serves a purpose. Consequently, we should expect hypotactic enhancement to be used under the same conditions.
2. **Scope:** Rhetorical units defined by *enhancing* rhetorical relations always consist of a nucleus and *one* satellite. Consequently, we should expect enhancing hypotactic clause combinations to have the same scoping property. (This can be contrasted with multi-nuclear units which may continue indefinitely without any change in scoping.)
3. **Grammatical marking:** The nucleus and the satellite in a Nucleus-Satellite relation are rhetorically distinct. Consequently, if there is grammatical marking at the level of clause combining, we would expect that the nucleus and the satellite should be grammatically distinct, that is, there should be marking such that one clause is identifiable as coding the nucleus and the other clause is identifiable as coding the satellite.
4. **Sequence:** For all Nucleus-Satellite relations we find instantiations of both sequences of nucleus-plus-satellite and of satellite-plus-nucleus. Consequently, we should find both orderings in enhancing hypotactic clause combinations. Further, the two different sequences are typically systematically different. We should expect to find the same systematic differences in the alternative sequence of clauses.
5. **Typical coding:** If enhancing hypotactic clause combinations are

grammaticalizations of enhancing Nucleus-Satellite rhetorical units, the prediction is, of course, that rhetorical units of this kind are indeed coded as enhancing hypotactic clause combinations in text if they are coded as grammatically related clauses. In other words, we predict that they are predominantly hypotactic rather than paratactic or coordinative clause combinations.

4.3.1 Use of a hypotactically enhancing clause

Whether a clause is enhanced through hypotaxis or not depends entirely on whether it is the nucleus in a Nucleus-Satellite relation or not. If there is a satellite to express, the clause may be hypotactically enhanced. There is nothing in the grammar of English that demands hypotactic enhancement. In this respect, hypotaxis is just like coordination (or parataxis in general). However, it is quite different from embedding, where the use of the embedded clause depends on what it is embedded as, for example whether it is embedded as subject (in which case it is affected by the same constraints as subjects in general) or as post-modifier in a noun phrase (in which case it is grammatically optional, as post-modifiers generally are).

4.3.2 Scoping and number of clauses

We have stated that clause combinations are structured and scoped in the same manner as texts are. But as we have also claimed that a clause combination represents rhetorical organization, it follows that a major discourse function of a clause combination is to reflect the scoping and structuring of a rhetorical unit in a text. Halliday (1985: 201) points to this kind of motivation for using a clause combination (complex): "The clause complex is of particular interest in spoken language, because it represents the dynamic potential of the system -- the ability to 'choreograph' very long and intricate patterns of semantic movement while maintaining a continuous flow of discourse that is coherent without being constructional."

Rhetorical units defined by an enhancing Nucleus-Satellite relation have only one satellite. This satellite may be realized by a list of rhetorical units, but it is still a single satellite. Consequently, we predict that the same characteristics will hold for enhancing hypotactic clause combinations. Consider the following clause combination "spoken by a girl aged nine" (Halliday, 1985):

Our teacher says that

1. if your neighbour has a new baby and
2. you don't know whether it's a he or a she,
3. if you call it 'it'
4. well then the neighbour will be very offended.

We can identify the following conditional parts: *if your neighbour has a new baby, (if) you don't know whether it's a he or a she, and if you call it 'it'*. Rhetorically, these are not three sister satellites in a flat structure organized around the same nucleus. Ultimately, they are all related to *the neighbour will be offended*, but there is nesting (layering). Rhetorically, as shown in Figure 15, we analyze it as one conjoined condition: Units 1 and 2, *if your neighbour has a new baby and you don't know whether it's a he or a she*, which scopes over the combination of Units 3 and 4, where Unit 3 is a condition on Unit 4, *if you call the baby it 'it' well then the neighbour will be very offended*. There are, then, two rhetorical units of condition. The rhetorical nesting is reflected in the grammatical analysis given to the example; see Halliday (1985).

4.3.3 Grammatical marking

As our prediction suggests, the grammatical marking of the hypotactic clause combination is such that nucleus and satellite are differentiated. In fact, there are essentially two types of marking, both on the satellite.

1. **Connective:** The clause coding the satellite is typically introduced by a connective (see Figure 2). The connective is either a conjunction or a preposition.
2. **Finiteness:** The clause coding the satellite may be marked with respect to finiteness by being non-finite (infinitival or participial).

These two types of marking are interrelated in an interesting way. Finite clauses that are hypotactically related are always marked by a connective, whereas non-finite ones often are not. For example, purpose satellites are often coded as infinitival clauses without a special connective such as *in order* or *so as to*.

As Halliday notes (1985: 217-218), there is a reason for this pattern of marking:

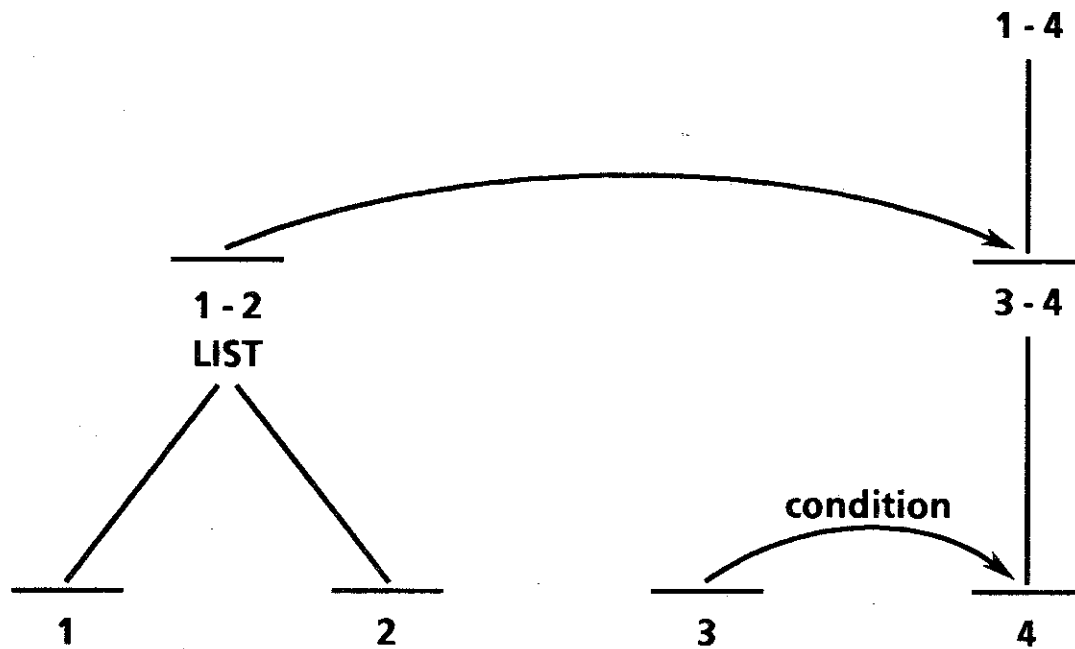


Figure 15: Relational Structure of the "Neighbour" Text

A finite clause is in principle independent: it becomes dependent only if introduced by a binding (hypotactic) conjunction. If it is joined in a clause complex, its natural status is paratactic. ... A non-finite clause, on the other hand, is by its nature dependent, simply by virtue of being non-finite. It typically occurs, therefore, without any other explicit marker of its dependent status.

In other words, unless a finite clause is introduced by a connective of the kind in Figure 2, it does not code the satellite-status explicitly. It may still code a satellite, of course, but the grammar does not mark it as a satellite.

4.3.4 Sequence of clauses

We have noted that rhetorical units defined by the Nucleus-Satellite relation occur in texts both in the sequence nucleus-plus-satellite and in the sequence satellite-plus-nucleus. (The relative frequency of each sequence is highly dependent on the kind of rhetorical relation that obtains.) Our prediction is that the same ordering characteristics hold for rhetorical units coded as enhancing hypotactic clause combinations.

Indeed we do find both Nucleus-Satellite sequences and satellite-nucleus sequences of the same enhancing type coded as clause combinations. In fact, the property of being positionally variable has sometimes been considered criterial for a definition of "subordination." However, a consideration of discourse structure reveals that it is by no means the case that such clause types are simply "preposable" with respect to their "main clauses"; that is, there is no free variation between initial and final position. Rather, as might be expected, the sequence in which nucleus and satellite occur is highly discourse-determined.

Differences in sequence are manifestations of differences in **thematic status**. In particular, when the clause coding the satellite precedes the clause to which it is related, it is thematic (in the sense of Halliday (1967) and (1985)).

Fries (1983) shows how thematic status is manipulated in discourse to reflect the method of development of a text. There are various consequences of his findings. For example, certain relations are often found at major breaks in the relational structure of a text, reflecting the fact that the satellites in these relations, because of their semantic ability to serve as "guideposts" (to use Chafe's (1984) term), are typically involved in transitions from one major portion of text structure to another (cf. Longacre (1970), Longacre & Thompson (1985), and Winter (1982)). The grammatical consequence of a hypotactic clause serving this text function is that such a hypotactic clause would appear before its nucleus. One such relation is that which we have called CIRCUMSTANCE, as exemplified by the italicized Unit 3 in this extract from the beginning of an advertisement for Syncom diskettes for cleaning floppy drive heads:

Unit 1. What if you're having to clean floppy drive heads too often?

Unit 2. Ask for SYNCOM diskettes, with burnished Ectype coating and dust-absorbing jacket liners.

Unit 3. *As your floppy drive writes or reads,*

Unit 4. a Syncom diskette is working four ways

Unit 5. to keep loose particles and dust from causing soft errors, dropouts.

The relational analysis for this extract is shown in Figure 16.

A major break in the text occurs between Units 2 and 3: this is the point at which a lengthy MOTIVATION section begins, which gives the reader a plethora of reasons why he/she should want to buy Syncom diskettes.

Thus, the CIRCUMSTANCE relation is typically found preceding its nucleus (which may not simply be a "main clause," but may consist of any number of clauses) when it serves to signal a new structural portion of the text.

Another such relation, which is often found at transition points between major structural portions of text, is the PURPOSE relation, as exemplified by the italicized Unit 4 in the following extract:

(from the beginning of a gardening advice newspaper column)

Unit 1. There's a gardening revolution going on.

Unit 2. People are planting flower baskets with living plants,

Unit 3. mixing many types in one container for a full summer of floral beauty.

Unit 4. *To create your own "Victorian" bouquet of flowers,*

Unit 5. choose varying shapes, sizes, and forms, besides a variety of complementary colors.

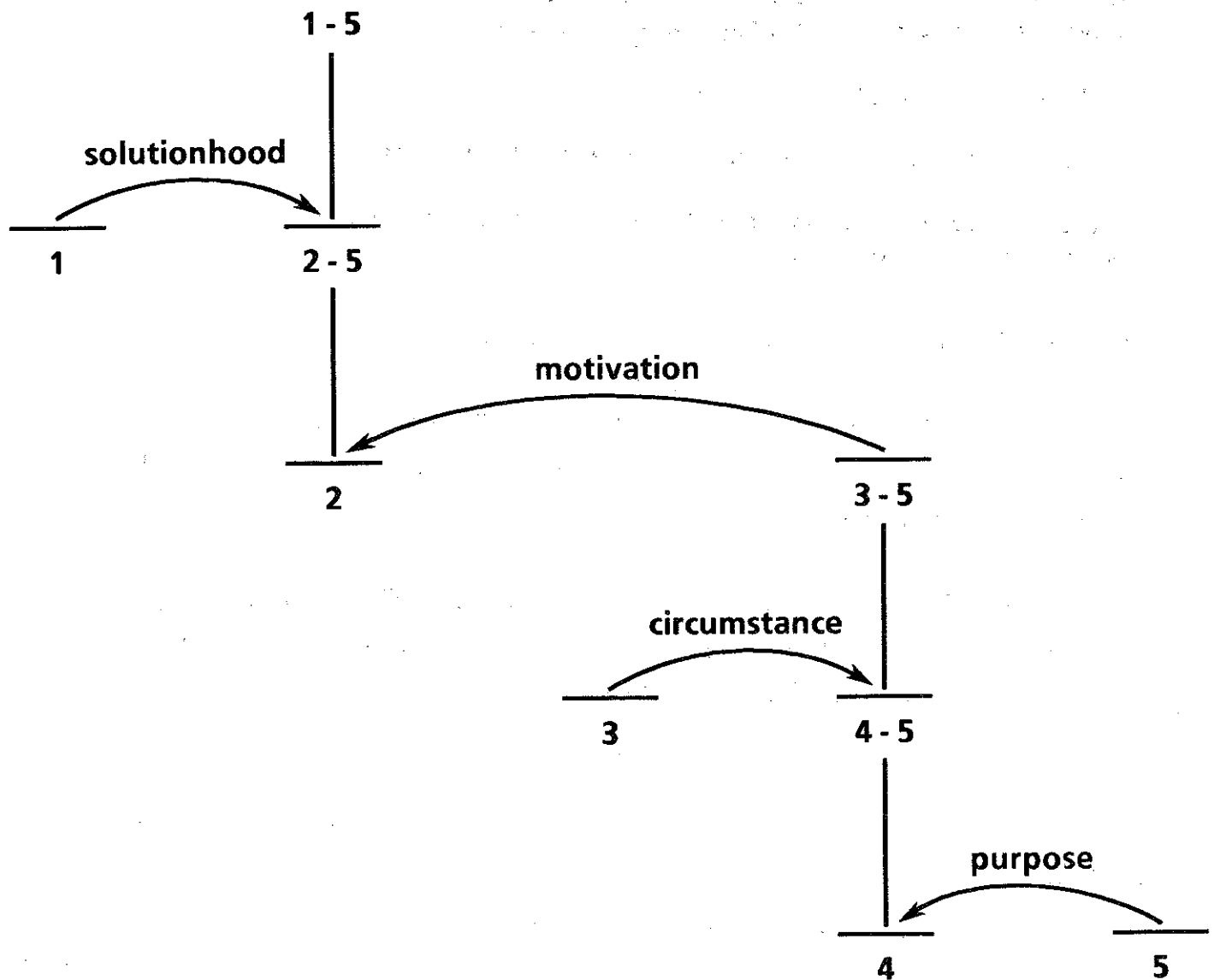


Figure 16: Relational analysis of the "Writes or Reads" Text

Figure 17 shows the relational analysis of this extract.

Figure 17 shows that the purpose clause given as Unit 4 occurs at a major structural

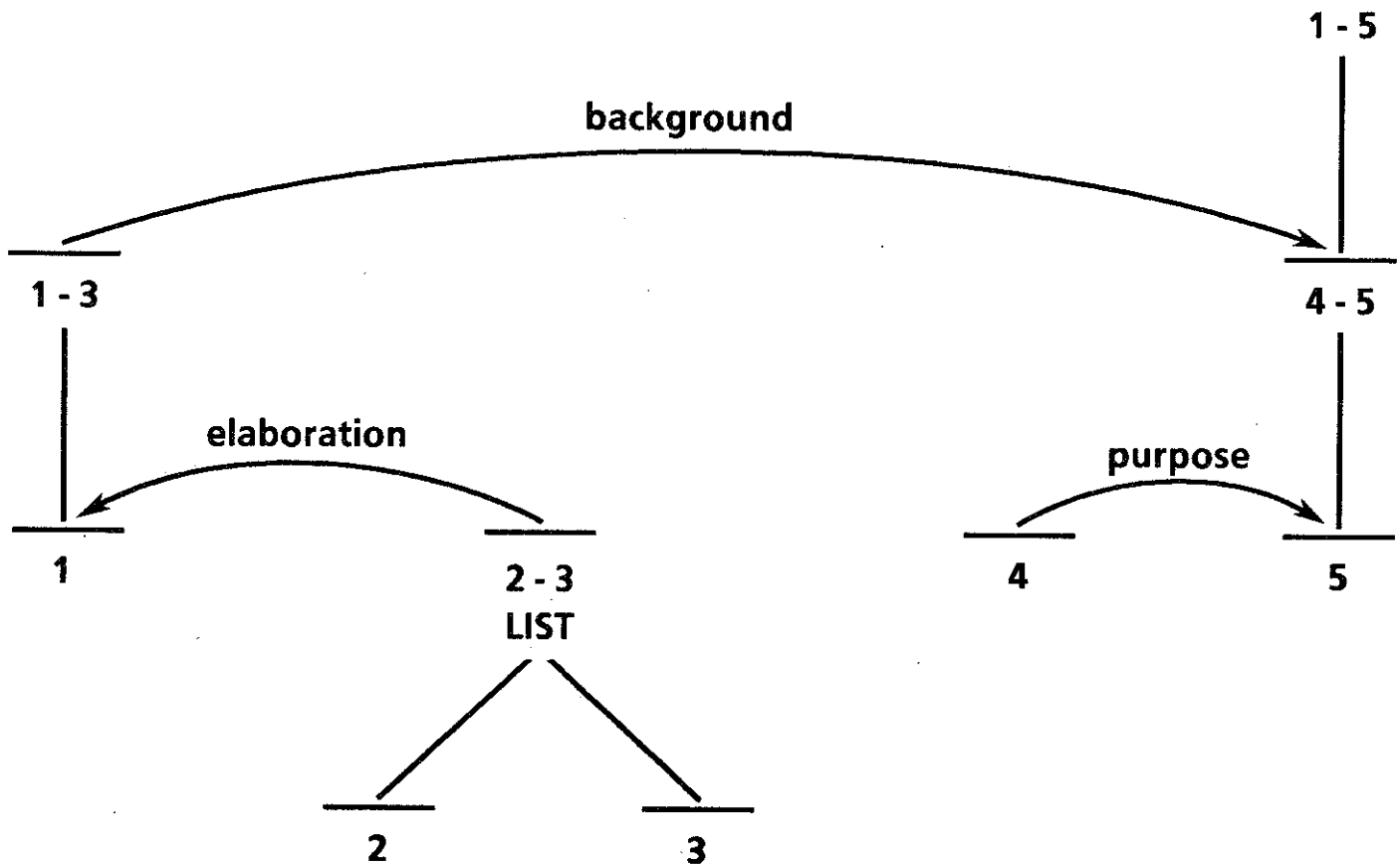


Figure 17: Relational Analysis of the "Gardening Revolution" Text

break in the text. To orient the reader to the new structural element, which contains the "solution" to the problem posed by the purpose clause, namely how to plant your own flower basket, the problem is articulated in the form of a clause expressing purpose.

In these terms, the issue is not so much one of hypotactic "subordinate" clause types being "preposable," but of having certain relations, such as CIRCUMSTANCE and PURPOSE, which are particularly appropriate for orienting the reader to a new text span.

Thus, the apparent variation in the possible positions for circumstantial and purpose clauses, and by extension other clauses with this apparent "preposability" property, is not simply a grammatical option in terms of which to attempt to categorize clause types. Rather, we suggest that this variation finds its explanation in the radically different discourse functions which certain relations can serve. (See Chafe (1984), Ford and Thompson (to appear), Longacre and Thompson (1985), and Thompson (1985b) for further discussion of this point, and Schifffrin (1985b) for a discussion of factors involved in the order of clauses in causal sequences in conversational English.)

4.3.5 Predominant coding type in text

We have suggested that hypotactic enhancing clause combinations are a grammaticalization of enhancing Nucleus-Satellite rhetorical units. From this claim it follows that the characteristic coding in text of rhetorical units of this kind should reflect the grammaticalization.

To a satisfying extent, this prediction is borne out. Counts made of 18 short texts in our database revealed the following correlations for Nucleus-Satellite units and List units in general:

	hypotactic	"co-ordinate"
Nucleus-Satellite	45 (92%)	4 (8%)
Nucleus-nucleus (List)	3 (11%)	24 (89%)

Figure 18: Coding correlations for expanding relations

The ratios for the mappings are roughly 9:1; thus the hypothesis accounts for about 90% of the data. Consider a comparable count for enhancing relations only--here hypotaxis seems to be even more highly favoured, as the correlations are even stronger.

Enhancing:	hypotactic	"co-ordinate"
Nucleus-Satellite	36 (95%)	2 (5%)

Figure 19: Coding correlations for enhancing relations

Note that the numbers in Figures 18 and 19 show clearly that there is no circularity in our argument, since there are some instances of hypotaxis which do not reflect Nucleus-Satellite relations and vice-versa. We offer the following excerpt as an example from a narrative, in which the hypotactic *when*-clause would be analyzed as the nucleus of the CIRCUMSTANCE relation in which it occurs with the clause beginning with *my temper...*

Towards the finish, however, we must have held rather too independent a line, for we lost the hounds, and found ourselves plodding aimlessly along miles away from anywhere. It was fairly exasperating, and my temper was beginning to let itself go by inches, *when on pushing our way through an accomodating hedge we were gladdened by the sight of hounds in full cry in a hollow just beneath us.*

(H.H. Munro)

Our point is that we have an argument in favor of our claim that hypotaxis is revealingly viewed as a grammaticization of Nucleus-Satellite relations in the fact that when such relations are grammatically coded, they are often, *but not always*, coded as hypotaxis.

As an example of a Nucleus-Satellite relation that is coded as one clause and not as a hypotactic clause combination, consider the sentences of the following excerpt with italicized phrases:

(From a capsule history of the Aztec calendar.)

Soon after the Conquest, the stone was buried on the main plaza area together with other religious stonework and idols. When accidentally discovered in 1560, it was reburied *for fear that it might accidentally create unrest among the Indians*. Uncovered again in 1790, this time it was affixed to one of the walls of the Cathedral, where it remained for almost a century before being moved to the former downtown museum.

(L. Carlson)

The text is organized around time; the time indications are thematic in initial position (cf. Fries (1983)). The temporal circumstance satellites are coded as "adverbial clauses,"

except for the first, which is coded as a prepositional phrase with a nominalized complement and is part of a clause. Later, there is a reason satellite, giving the reason the stone was reburied: 'they feared that it might create unrest among the Indians.' It is coded again as a nominalization--not as a clause--and the prepositional phrase *for fear that ...* is part of the clause that codes the nucleus 'it was reburied'. Thus, in these two examples, the Nucleus-Satellite relation is coded grammatically but not as a hypotactic clause combination.

4.3.6 Summary

We have suggested that if our hypothesis that hypotactic clause combining is a grammaticalization of the rhetorical structure of a text is correct, then certain predictions can be made about characteristics of clause combining. We have seen that these predictions are borne out.

4.4 The grammarian's intuition about hypotaxis

One important implication of our interpretation of hypotaxis is that it is only in some such discourse-oriented terms that we can begin to make sense of the characterizations of a hypotactic clause as "subordinate" to, "less important" than, "dependent" on, or "not on a par" with its main clause. That is, only when we see hypotaxis as a special case (namely the single-clause case) of the satellite relation can we specify what it is that makes it seem "subordinate." It is "subordinate" because of its subordinate role with respect to the nucleus, as these function in the organization of the text to serve the *writer's* goals.

For example, Quirk et al. (1985: 918) try to characterize the difference between "subordination" and "co-ordination" this way:

Both co-ordination and subordination involve the linking of units of the same rank; but in co-ordination the units are constituents at the same level of constituent structure, whereas in subordination they form a hierarchy, the subordinate unit being a constituent of the superordinate unit.

Since the only examples given are of phrases, it is not clear how one would determine whether, for example, an *although* or a *since* clause is "on the same level" as the clause

with which it is associated. The intuition that is being expressed here is correct, that such clause types as those in Figure 2 are "on a different level" from the unit to which they are "linked." But it is difficult, if not impossible, to make this intuition explicit as long as one tries to do it in terms of isolated sentences. Only when one considers the clause types in the discourse context where they actually occur can one identify text goals and begin to associate clause types with central and supporting goals.

Similarly, Lyons (1968:178) suggests that:

"Complex sentences are divided into: (a) those in which the constituent clauses are grammatically co-ordinate, no one being dependent on the others ...; and (b) those in which one of the clauses is 'modified' by one or more subordinate clauses grammatically dependent on it..."

Our interpretation of the intuition expressed in this quote is, once again, that Lyons is attempting to state in *grammatical* terms the *rhetorical* fact that there is a set of clause types in English which typically function as satellites in discourse. One aspect, of the linguist's intuition, that hypotactic clauses are "subordinate" or somehow "not on a par with" their main clauses is that hypotactic clauses function rhetorically in discourse in *satellite* roles.

One clear indication of the source of the grammarian's intuition comes from situations of the kind illustrated by the Munro text in Section 4.3.5. In that excerpt, a *when*-clause codes a nucleus rather than a satellite. Linguists often characterize such clause combinations as very similar to coordination, thus reflecting sensitivity to the rhetorical facts.

We now return to the distinction between hypotaxis and embedding to show that the hypothesis we have been arguing for could not have been made without a clear distinction between these two types of grammatical constructions.

4.5 Embedding

The characterization of hypotactic clauses as non-principal or appended information is not new, of course; cf. Wellander (1948: 473) on Swedish. The important point we want to make in this paper is that the rhetorical status of the clause is determined by the explicit rhetorical organization of the type discussed in Section 3. There have been arguments against interpretations of the type exemplified in Wellander (1948). For example, both Jespersen (1924: 105) and Andersson (1975: 9-10) argue against an interpretation of main clause vs. subordinate clause as 'principal' vs. 'appended'. However, both writers use clauses **embedded** as participants in a clause (subordination at the core level in Foley & Van Valin's terms (1984: 250 ff)) when they give examples intended to show that the distinction of 'principal' vs. 'appended' is invalid.

One of Jespersen's examples is

This was because he was ill.

His observation is that "the principal idea is not always expressed in the 'principal clause'" (the non-italicized part in his example). Jespersen's example is a clause with another clause embedded as a constituent and is thus different from the clause combinations under discussion in this paper (cf. Section 2.3.1. for a similar example of embedding, quoted in context).²⁷ However, this difference is not explicit until we distinguish enhancing hypotaxis and embedding: Jespersen's argument is correct, but only for embedding. There is no reason to generalize it as hypotaxis.

Andersson falls into the same kind of "subordination" trap as Jespersen. He refers to Wellander's observation that principal information is given in main clauses and that subordinate (or appended) information is given in subordinate clauses. He writes:

According to such a generalization, a sentence like (1) should be more or less without importance. But as far as I can see, it is not.

²⁷ Jespersen's example illustrates a not uncommon strategy: A consequence (of a cause) is stated in one clause. It is then referred to anaphorically in the next clause, in which its cause is ascribed to it.

(1) *That Sweden cooperates with Vietnam* **shows** *that Sweden can hardly be regarded as a member of the free world*
(Our italics, CM & ST)

The only word in (1) that is not a member of a subordinate clause is the verb *shows*. Is that the only important word in the sentence? The answer is obviously: No.

(Andersson, op cit.)

Andersson's example is one of **embedding** and not one of any kind of **hypotaxis**. Consequently, although his remarks apply to embedded clauses of this kind, the example is not a counterexample to our proposal. Rather, just as Jespersen's example, it serves to indicate how extremely important it is not to group embedding and hypotaxis together as "subordination." They are quite different not only grammatically, but also from a discourse point of view.²⁸

There is another problem with Andersson's remarks. It is worth pointing out that 'important' is not the same as 'main', 'principal', or 'nuclear'. 'Subordinate', 'appended', or 'satellite' information may also be important for the success of a text. There is nothing to suggest that Wellander thought that "subordinate" information was unimportant or "more or less without importance" in Andersson's terms.

What we hope to have shown in this section is that we can only arrive at an understanding of the relation between hypotaxis and discourse structure which we have been arguing for in this paper if we carefully distinguish hypotaxis from embedding, for they can be shown to have radically different discourse functions.

²⁸Incidentally, it is not at all clear that Andersson's example is a counterexample to what Wellander had in mind. In the section where Wellander makes his observation, he characterizes the subordinate clause as follows: "(it) determines the main clause in one respect or another, specifying more specific circumstances: time, place, manner, cause, consequence, purpose, etc." (1948: 473). This characterization fits adverbial clauses much better than it fits embedded complement clauses, but as long as both are known as subordinate clauses it is hard to be sure which type claims like Wellander's apply to.

4.6 Examples of non-necessary alleged properties of hypotaxis

Some of the traditional criteria for hypotaxis include variations in word order (as in Swedish, Dutch, and German), dependence, givenness, and preposability, among others. Given that in the literature there are discussions of counterexamples to most of these criteria (e.g., Andersson (1975), Davison (1979))), and Schuetze-Coburn (1984)), we will confine ourselves to just a few examples.

4.6.1 Information status: Are hypotactic clauses "known"?

Our discussion of certain clause type's typically satellite role, may help us to uncover the discourse parameter that underlies claims about "subordinate" clauses being "known" or "given" (e.g., Winter (1982) and Givon (1979a), (1982)).

For example, Winter (1982:45) insists on "the contrast between independent clause and subordinate clause in respect of their information status as 'new' and '**known**' or 'given'." But this claim is simply not supported by the facts: none of the adverbial clauses in the texts we have considered in this paper (which Winter would consider "subordinate"), are 'known' in the sense that the reader is expected to know the information they express in advance.²⁹ As an example, let us consider the "Thumb Heredity" text once more:

²⁹Kruisinga, as long ago as 1932, made the same observation (p. 410): he suggested that different kinds of clauses of cause differ in information status: "A clause of cause can bring forward a cause that is an explanation of an action or occurrence in order to *inform the reader of this explanation*; but it may also *take the reader's knowledge for granted*, and serve only to *remind him* of the reason for the action of the main clause. The most important conjunctions in clauses expressing a reason that is assumed to be *known* or *acknowledged as correct*, are "as" and "since." (Our italics, CM and ST.) There is, in fact, no particular reason to think that the differentiation of different degrees of clause combining should serve to signal differences in information status. As e.g. Halliday (1967) has shown, information status is signalled by intonational prominence in English.

Unit 1. Thumbs began to be troublesome about 4 months ago

Unit 2. and I made an appointment with the best hand surgeon
in the Valley

Unit 3. *to see if my working activities were the problem.*

Unit 4. Using thumbs is not the problem

Unit 5. but heredity is

Unit 6. and the end result is no use of thumbs

Unit 7. *if I don't do something now.*

Each of the two italicized clauses, Units 3 and 7, is one which most grammarians (including Winter) would be content to consider "subordinate," yet there is no sense in which the information in either of them can be said to be "known" (see Dillon (1981:129ff) for further arguments against considering "subordinate" clauses to convey "known" information).

Givon (1980:372) proposes that "subordinate-adverbial clauses tend to be primarily **presupposed**," he intends "presupposed" to mean "not part of the same assertion" as the main clause. Again, a perusal of Units 3 and 7 suggests that matters are not quite so straightforward, since they both could defensibly be argued to be part of the same assertion as the main clauses with which they are associated. For a discussion of problems with the presupposition analysis, see Andersson (1975).

The italicized hypotactic clauses in the "Thumb Heredity" text both occur in final position; functionally, they are non-thematic (in the sense discussed in Section 4.3.4) and they are not "given" or "known". There are, however, certain conditions under which hypotactic clauses encode information which can be said to be "given" or "known." In particular, a thematic clause may serve to link the current clause combination to preceding text, by repeating or summarizing information already presented in the preceding text; See Longacre (1970), Longacre & Thompson (1985), and Thompson (1985) on hypotactic purpose clauses relating to expectations raised in the

text. This use of thematic hypotactic clauses points to the connection between thematic status and the method of development in a text as described by Fries (1983). When a hypotactic clause is used to repeat or summarize prior text, there are typically cohesive chains (in the sense of Halliday & Hasan (1976)); we find ellipsis, substitution, anaphoric reference, lexical repetition, and so on. Thus we find the anaphoric *do + this* in the following example with a thematic purpose clause (italicized):

We have done enough for this first lesson on using the UNIX editor, and are ready to quit the session with edit. *To do this* we type "quit" (or "q") and press carriage return: ...

(Kernighan)

But even a thematic hypotactic clause is by no means necessarily "known" or "given" in the sense of repeating or summarizing information presented in prior text. It often functions to re-orient the reader or listener by introducing "new" information. The clause *While attending Occidental College* in the radio announcer text presented in Section 3.2.5 above serves this kind of function; it introduces a new frame.

We suggest that when grammarians describe hypotactic clauses as "given" or "known" they should treat one specific discourse use of these clauses as characteristic hypotactic clauses in general.

4.6.2 Illocutionary force: Are hypotactic clauses "unchallengeable"?

In a later work, Givon (1982) considers "subordinate" clauses to be "unchallengeable," which brings us closer to a characterization of a role they often play in texts. It is an interpretation of these clauses in terms of 'illocutionary force' rather than information status ("known," "given," etc.). Illocutionary force seems like a more promising candidate, since it is signalled grammatically by the mood selection of a clause, and hypotactically related clauses are either non-finite (and hence without a mood selection) or finite but with an invariably declarative mood selection. In other words, there is no way in which illocutionary forces can be differentiated by different mood selections in a hypotactically related clause, and the default declarative mood is not in opposition with other mood selections. By "unchallengeable" Givon does not

mean that the message of the clause literally cannot be challenged,³⁰ but rather that the writer is implicitly asking the reader to "accept for the sake of argument" the message expressed by certain clauses in relation to other clauses. Dillon (1981:132) refers to this as "subordinate clauses establishing common grounds with the reader." For instance, both Units 3 and 7 in the "Thumb Heredity" text, and many of the satellite clauses in our data, can be considered "unchallengeable" in this sense. But even "unchallengeability" may not cover all occurrences of hypotactic clauses.³¹

For example, consider the italicized *as*-clause which forms Unit 3 of the "Coffee Cup" text (diagrammed in Figure 8):

(from an ISI researcher, message appearing on the ISI electronic bulletin board)

1. Someone left a coffee cup in my office over the weekend.
2. Would the owner please come and get it
3. *as I think things are starting to grow?*

There seem to be no circumstances under which it would be appropriate to call the *as*-clause in Unit 3 "unchallengeable," let alone "known"; yet it is clearly a hypotactic clause. Only certain occurrences of satellite clauses, are "unchallengeable" in their discourse context (see Chafe (1984) for further discussion of this point).

What makes such satellite clauses often interpretable as "unchallengeable" is that certain text relations typically convey information which is intended as unchallengeable with respect to the nuclear information. One clear example can be found in the

³⁰As Michael Halliday, p.c., in attributing the property "arguable" to a given clause, has pointed out, it is often possible, in fact, to explicitly deny or question the proposition in a hypotactically related clause. Huddleston (1965: 583) points out that non-defining relative clauses (elaborating hypotactic clauses) may contain interrogative tags: *They're going to Alford, which is near Skegness isn't it* The tag serves to invite the listener's comment on whether he/she agrees with the information offered by the speaker (cf. Halliday (1985)), thus allowing for a challenge.

³¹As an indication, we note that it is possible to at least construct examples of *although* or *because* clauses with tags (cf. footnote --), as in: *You should register for classes tomorrow, although you're taking only the seminar, aren't you?*, or *We'd better take an umbrella, because it might rain, don't you think?*

italicized Unit 3 in this extract from the "Syncom diskettes" advertisement (diagrammed in Figure 16):

1. What if you're having to clean floppy drive heads too often?
2. Ask for SYNCOM diskettes, with burnished Ectype coating and dust-absorbing jacket liners.
3. *As your floppy drive writes or reads,*
4. a Syncom diskette is working four ways
5. to keep loose particles and dust from causing soft errors, dropouts.

As illustrated by Unit 3, the satellite of a CIRCUMSTANCE relation is typically unchallengeable with respect to its nucleus, since it conveys material which describes the circumstances under which the proposition(s) expressed by the nucleus holds. Readers are expected to accept these circumstances as a context within which to interpret the nucleus. For such relations, the satellites, and hence the hypotactic clauses which may realize them, are often taken as unchallengeable. Such an interpretation is especially likely when these satellites precede their nucleus, as discussed in Chafe (1984), Dillon (1981: 134ff), Longacre and Thompson (1985), and Thompson (1985b).³² Since not all relations are of this type, however, it seems a mistake to equate either hypotaxis or satellite status with "unchallengeable."

4.6.3 Another alleged grammatical property: pronominalization

Backward pronominalization in English has been suggested as a characteristic of what we are calling hypotactic relations. However, it does not serve to single out hypotactic clauses. On the one hand, it works with constituent phrases (in thematic position) as well as clauses. For example:

³²This was also noticed by Kruisinga (1932: 465): "Clauses of reason will mostly precede, just as those of cause will generally follow; this explains why *as*-clauses of this type precede, those with *because* follow. Of course, this is not a law...." His distinction between reason and cause was mentioned above.

By the door of her₁ son's room the mother₁ knelt
upon the floor and listened for some sound from within.
(S. Anderson)

On the other hand, we find the pattern in coordinative clause combinations (the first two examples), just as in hypotactic clause combinations (the third example):

I found him₁ hilarious, but Antoine₁ had a serious
and gifted side to him₁ like most of our kind.
(T. Williams)

Other men on the farm about him₁ worked too hard and were
too tired to think, but to think of the farm and to be
everlastingly making plans for its success was a relief for
Jessee₁.

(S. Anderson)

When he₁ talked to George Willard, Wing Biddlebaum₁
closed his fists and beat with them upon a table or on
the walls of his house.
(S. Anderson)

In the natural coordinative examples, a rhetorical interpretation in terms of ANTITHESIS seems quite plausible, with the pronoun occurring in the thesis satellite. Rhetorically, there is a satellite-nucleus relation--grammatically, there is no hypotaxis.

It is not clear what the patterns of "backward pronominalization" with respect to hypotaxis and parataxis are in naturally occurring discourse.³³ Bolinger (1979) gives constructed examples that seem to indicate that the phenomenon is not confined to ANTITHESIS relations nor to satellite-nucleus relations in general. In the natural coordinative examples, the referents had already been introduced when the backward pronominalization occurred; the pronominalization was backward only in a local sense, i.e., local to the grammatically combined clauses. Whether this would be true of all such cases is a matter for empirical investigation. (It is also true of the third hypotactic

³³Carden (1982) offers an enlightening discussion of the phenomenon with examples from actual texts, but all of them involve hypotactic clauses.

example; the three examples are quite parallel in this respect.) What is clear, however, is that backward pronominalization is not a criterion of hypotaxis.

5 Conclusion

We have shown that hypotactic clause combining is best understood as a grammaticalization of the Nucleus-Satellite relations which characterize the rhetorical organization of certain types of written discourse.

In other words, the independently motivated textual notion of nuclearity can be seen to underlie the grammatical notion of hypotaxis. In attempting to answer the question of what discourse function motivates this aspect of grammar, we are able to offer a more satisfying account of the phenomenon than have previous approaches, including traditional ones, which have attempted to characterize hypotaxis in sentence-level semantic terms. We have shown that systematicity in grammatical structure flows out of systematicity in functional demands placed on language.

There is no advantage to postulating a grammatical category of "subordinate" clause. Rather, the grammar of English (and perhaps of other languages as well) suggests that a distinction between what we have been calling "hypotaxis" and "embedding" is crucial.

There is an interesting consequence of these suggestions for attempts to consider clause combining from a cross-linguistic perspective: if hypotaxis in English is a grammaticalization of rhetorical relations, then it follows that the grammar of clause combining may differ radically from one language to another. Indeed, preliminary discourse-based investigations of such phenomena in unrelated languages strongly suggests that this is the case. If the basic approach to clause combining taken in this paper is correct, then the interesting cross-linguistic issue is how and to what extent the grammar of clause-combining in a given language reflects the rhetorical organization of discourse in that language (for some intriguing suggestions on differences among languages with respect to rhetorical organization, see Hinds (1983)).

BIBLIOGRAPHY

1. Allen, Sture (ed.). 1982. Text Processing. (Proceedings of Nobel Symposium 51.) Stockholm: Almqvist & Wiksell.
2. Allerton, D. J., Carney, E., and Holdcroft, D. (eds.). 1979. Function and Context in Linguistic Analysis. Essays Offered to William Haas. Cambridge: Cambridge University Press.
3. Andersson, Lars-Gunnar. 1975. Form and Function of Subordinate Clauses. Gothenburg Monographs in Linguistics 1. Goteborg: University of Goteborg Department of Linguistics.
4. Bailey, Charles-James, and Shuy, Roger (eds.). 1973. New Ways of Analyzing Variation in English. Georgetown: Georgetown University Press.
5. Beaman, Karen. 1982. "Coordination and Subordination Revisited. Syntactic Complexity in Spoken and Written Narrative Discourse." In Tannen 1982:45-80.
6. Beekman, John, and John Callow. 1974. Translating the Word of God. Grand Rapids, MI: Zondervan Publishing House.
7. Beekman, John, John Callow, and M. Kopesec. 1981. The Semantic Structure of Written Communication. Dallas: Summer Institute of Linguistics.
8. Benson, James D., and William S. Greaves (eds.). 1985. Systemic Perspectives on Discourse, Vol. 1. (Advances in Discourse Processes, Vol. XV.) Norwood, N.J.: Ablex.
9. Benson, James D. and William S. Greaves (eds.). In press. Systemic Functional Approaches to Discourse: Selected Papers from the 12th International Systemic Workshop. Norwood, N.J.: Ablex.
10. Berry, Margaret. 1975. Introduction to Systemic Linguistics I. Systems and structures. London: Batsford.
11. Bloomfield, Leonard. 1933. Language. London: Allen & Unwin.
12. Bolinger, Dwight. 1977. "Pronouns and Repeated Nouns." Bloomington: Indiana University Linguistics Club.
13. Bolinger, Dwight. 1979. "Pronouns in Discourse." In Givón 1979b:289-309.
14. Brondal, Viggo. 1937. "The Problem of Hypotaxis." Reprinted in Householder 1972.

15. Carden, Guy. 1982. "Backwards Anaphora in Discourse Context." Journal of Linguistics 18.361-387.
16. Chafe, Wallace. 1980a. "The Deployment of Consciousness in the Production of a Narrative." In Chafe 1980b.9-50.9-50.
17. Chafe, Wallace (ed.). 1980b. The Pear Stories. Norwood, N.J.: Ablex.
18. Chafe, Wallace. 1984. "How People Use Adverbial Clauses." Proceedings of the Tenth Annual Meeting of the Berkeley Linguistics Society. Berkeley: Berkeley Linguistics Society, 437-449.
19. Cole, Peter (ed.). 1981. Radical Pragmatics. New York: Academic Press.
20. Copeland, James E., and P. Davis (eds.). 1980. The 7th LACUS Forum. Columbia, S.C.: Hornbeam Press.
21. Crothers, Edward. 1979. Paragraph Structure Inference. Norwood, N.J.: Ablex.
22. d'Arcais, Giovanni B. Flores. 1978. "The Perception of Complex Sentences." In Levelt and d'Arcais 1978.
23. Davison, Alice. 1979. "Some Mysteries of Subordination." Studies in the Linguistic Sciences 9.1.105-128.
24. Davison, Alice. 1981. "Syntactic and Semantic Indeterminacy Resolved: A Mostly Pragmatic Analysis for the Hindi Conjunctive Participle." In Cole 1981.101-128.
25. Van Dijk, Teun A. (ed.). 1985. Handbook of Discourse Analysis. Vol. 2: Dimensions of Discourse. New York: Academic Press.
26. Dillon, George L. 1981. Constructing Texts: Elements of a Theory of Composition and Style. Bloomington: Indiana University Press.
27. Ellis, Willis D. (ed.). 1938. A Source Book of Gestalt Psychology. London: Routledge & Kegan Paul.
28. Farr, Cynthia, Ivan Lowe, and Carl Whitehead. 1985. "Explanation in English and Korafe." In Benson and Greaves 1985.135-152.
29. Foley, William, and Robert Van Valin. 1984. Functional Syntax and Universal Grammar. Cambridge: Cambridge University Press.
30. Ford, Cecilia, and Sandra A. Thompson. To appear. "Conditionals in Discourse: A Text-Based Study from English." In Traugott et al., to appear.

31. Fries, Peter H. 1983. "On the Status of Theme in English: Arguments from Discourse." In Petofi and Sozer 1983. 116-152.
32. Givon, Talmy. 1979a. On Understanding Grammar. New York: Academic Press.
33. Givon, Talmy. 1979b. Discourse and Syntax. (Syntax and Semantics, Vol. 12.) New York: Academic Press.
34. Givon, Talmy. 1980. "The Binding Hierarchy and the Typology of Complements." Studies in Language 4.3.333-377.
35. Givon, Talmy. 1982. "Logic vs. Pragmatics, with Human Language as the Referee: Toward an Empirically Viable Epistemology." Journal of Pragmatics 6.2.81-133.
36. Golkova, Eva. 1968. "On the English Infinitive of Purpose in Functional Sentence Perspective." Brno Studies in English 7.119-128.
37. Greenberg, Joseph, Charles Ferguson, and Edith Moravcsik (eds.). 1978. Universals of Human Language. Stanford: Stanford University Press.
38. Grimes, Joseph E. 1975. The Thread of Discourse. The Hague: Mouton.
39. Haiman, John, and Sandra A. Thompson. 1984. "'Subordination' in Universal Grammar." Proceedings of the Tenth Annual Meeting of the Berkeley Linguistics Society. Berkeley: Berkeley Linguistics Society, 510-523.
40. Halliday, Michael A. K. 1961. "Categories of the Theory of Grammar." Word 17.3: 241-92.
41. Halliday, Michael A. K. 1963. "Intonation and English Grammar." Transactions of the Philological Society. 143-69.
42. Halliday, Michael A. K. 1965. "Types of Structure." In Halliday and Martin 1981, 29-42.
43. Halliday, Michael A. K. 1967. "Notes on Transitivity and Theme," Part II. Journal of Linguistics 3.199-245.
44. Halliday, Michael A. K. 1979. "Modes of Meaning and Modes of Expression. Type of Grammatical Structure, and their Determination by Different Semantic Functions." In Allerton, Carney, and Holdcroft, 57-80.
45. Halliday, Michael A. K. . 1981. "Text Semantics and Clause Grammar: Some Patterns of Realization." In Copeland and Davis 1980, 31-60.

46. Halliday, Michael A. K. 1982. "How is a Text Like a Clause?" In Allen 1982, 209-49.
47. Halliday, Michael A. K. 1985a. An Introduction to Functional Grammar. London: Edward Arnold.
48. Halliday, Michael A. K. 1985b. "Dimensions of Discourse Analysis. Grammar." In Van Dijk 1985, 29-57.
49. Halliday, Michael A. K., and Ruqaiya Hasan. 1976. Cohesion in English. London: Longman.
50. Halliday, Michael A. K., and James R. Martin (eds.). 1981. Readings in Systemic Linguistics. London: Batsford.
51. Halliday, Michael A. K., Angus McIntosh, and Peter Stevens. 1964. The Linguistic Sciences and Language Teaching. London: Longmans.
52. Handke, Jurgen. 1984. Descriptive and Psycholinguistic Aspects of Adverbial Subordinate Clauses. Heidelberg: Groos.
53. Hinds, John. 1983. "Contrastive Rhetoric: Japanese and English." Text 3.2. 183-195.
54. Hobbs, Jerry. 1979. "Coherence and Coreference." Cognitive Science 3.67-90.
55. Hobbs, Jerry. To appear. "On the Coherence and Structure of Discourse." In Polanyi, to appear.
56. Hopper, Paul J., and Sandra A. Thompson (eds.). 1982. Studies in Transitivity. (Syntax and Semantics, Vol. 15.) New York: Academic Press.
57. Hopper, Paul J., and Sandra A. Thompson. 1984. "The Discourse Basis for Lexical Categories in Universal Grammar." Language 60.4.703-752.
58. Householder, Fred (ed.). 1972. Syntactic Theory 1. New York: Penguin Books.
59. Huddleston, Rodney. 1965. "Rank and Depth." Language 41.574-86.
60. Huddleston, Rodney, Richard Hudson, A. Henrici, and Eugene Winter. 1968. "Sentence and Clause in Scientific English." University College, London: Communication Research Centre.
61. Hudson, Richard A. 1968. "The Clause-Complex." In Huddleston, Hudson, Henrici, and Winter.

62. Jespersen, Otto. 1924. The Philosophy of Grammar. London: Allen & Unwin.
63. Koffka, Kurt. 1935. Principles of Gestalt Psychology. New York: Harcourt, Brace and World.
64. Kohler, Wolfgang. 1929. Gestalt Psychology. New York: Liveright.
65. Kruisinga, E. 1932. A Handbook of Present-Day English. Part II. English Accidence and Syntax. Fifth edition. Groningen. P. Noordhoff.
66. Kuno, Susumo. 1973. The Syntactic Structure of Japanese. Cambridge: MIT Press.
67. Labov, William. 1973. "The Boundaries of Words and their Meanings." In Bailey and Shuy 1973. 340-373.
68. Lakoff, George. 1984. "Performative Subordinate Clauses." Proceedings of the Tenth Annual Meeting of the Berkeley Linguistics Society. 437-449. Berkeley: Berkeley Linguistics Society.
69. Lakoff, Robin. 1984. "The Pragmatics of Subordination." Proceedings of the Tenth Annual Meeting of the Berkeley Linguistics Society 481-492. Berkeley: Berkeley Linguistics Society.
70. Lanin, Ilene. 1977. "You Can Take the Sentence Out of the Discourse but You Can't Take the Discourse Out of the Mind of the Speaker." Papers from the Thirteenth Regional Meeting of the Chicago Linguistic Society. 288-301. Chicago: Chicago Linguistic Society.
71. Lerdahl, Fred, and Ray Jackendoff. 1983. A Generative Theory of Tonal Music. Cambridge: MIT Press.
72. Lenerz, J. 1984. Syntaktische Wandel in Grammatiktheorie: Eine Untersuchung an Beispielen aus der Sprachgeschichte des Deutschen. Tübingen: Niemeyer.
73. Levelt, W.J.M., and G.B. d'Arcais (eds.). 1978. Studies in the Perception of Language. New York: Wiley.
74. Longacre, Robert. 1970. "Sentence Structure as a Statement Calculus." Language 46.783-815.
75. Longacre, Robert. 1976. An Anatomy of Speech Notions. Lisse: The Peter de Ridder Press.

76. Longacre, Robert. 1983. The Grammar of Discourse. Notional and Surface Structures. New York: Plenum Press.
77. Longacre, Robert, and Sandra A. Thompson. 1985. "Adverbial Clauses." In Shopen 1985, 171-235.
78. Lyons, John. 1968. Introduction to Theoretical Linguistics. Cambridge: Cambridge University Press.
79. McCray, Alexa. 1981. "Clause Initial Elements in German." Proceedings of the Seventeenth Regional Meeting of the Chicago Linguistic Society. 205-220: Chicago: Chicago Linguistic Society.
80. McCray, Alexa. 1982. "The Left Dislocation Structure in German." Proceedings of the Eighteenth Regional Meeting of the Chicago Linguistic Society. 336-347. Chicago: Chicago Linguistic Society.
81. McKeown, Kathleen R. 1982. "Generating Natural Language Text in Response to Questions about Database Structure." University of Pennsylvania Ph.D. dissertation.
82. Mann, William C. 1984. "Discourse Structures for Text Generation." USC/Information Sciences Institute, RR-84-127.
83. Mann, William C., and Sandra A. Thompson. 1985. "Assertions from Discourse Structure." Proceedings from the Eleventh Annual Meeting of the Berkeley Linguistics Society. Berkeley: Berkeley Linguistics Society.
84. Mann, William C., and Sandra A. Thompson. 1986. "Relational Propositions in Discourse." Discourse Processes. 9.1.57-90. Also available as USC/Information Sciences Institute, RR-83-115.
85. Mann, William C., and Sandra A. Thompson. To appear. "Rhetorical Structure Theory: A Theory of Text Organization and its Implications for Clause Combining." In Polanyi, to appear.
86. Martin, James R. 1983. "Conjunction: the Logic of English Text." In Petofi and Sozer 1983: 1-72.
87. Mithun, Marianne. 1984. "How to Avoid Subordination." Proceedings from the Tenth Annual Meeting of the Berkeley Linguistics Society. 493-509. Berkeley: Berkeley Linguistics Society.
88. Muir, James. 1972. A Modern Approach to English Grammar: An Introduction to Systemic Grammar. London: Batsford.

89. Munro, Pamela. 1982. "On the Transitivity of 'Say' Verbs. In Hopper and Thompson 1982, 301-19.
90. Nesbitt, Christopher, and Gunter Plum. In press. In Benson & Greaves (in press).
91. Olson, Michael. 1981. "Clause Juncture in Barai." Australian National University Ph.D. dissertation.
92. Payne, John R. 1973. "Sentence Conjunction and Subordination in Russian." You Take the High Node and I'll Take the Low Node. Papers from the Comparative Syntax Festival. 305-325. Chicago: Chicago Linguistic Society.
93. Petofi, Janos S., and Emel Sozer (eds.). 1983. Micro and Macro Connexity of Texts. Hamburg: Helmut Buske Verlag.
94. Pike, Kenneth, and Evelyn Pike. 1983. Text and Tagmeme. Norwood, N.J.: Ablex.
95. Polanyi, Livia (ed.) To appear. Discourse Structure. Norwood, N.J.: Ablex.
96. Posner, Roland. 1972. Theorie des Kommentierens. Frankfurt: Athenaum.
97. Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech, and Jan Svartvik. 1985. A Comprehensive Grammar of the English Language. London and New York: Longman.
98. Rappaport, Gilbert. 1979. "Detachment and Adverbial Participle Clauses in Russian." University of California at Los Angeles Ph.D. dissertation.
99. Reinhart, Tanya. To appear. "Principles of Gestalt Perception in the Temporal Organization of Narrative Texts." Linguistics.
100. Robins, R. H. 1966. The development of the word class system of the European grammatical tradition.
101. Rutherford, William. 1970. "Some Observations Concerning Subordinate Clauses in English." Language 46:97-115.
102. Schiffrin, Deborah (ed.). 1985a. Meaning, Form, and Use in Context: Linguistic Applications. Proceedings of the 1984 Georgetown University Roundtable on Linguistics. Georgetown: Georgetown University Press.
103. Schiffrin, Deborah. 1985b. "Multiple Constraints on Discourse Options: Quantitative Analysis of Causal Sequences." Discourse Processes 8.3: 281-303.

104. Schuetze-Coburn, Stephan. 1984. "On the Borders of Subordination: Signaling Relative Clauses in Spoken German." Proceedings from the Tenth Annual Meeting of the Berkeley Linguistics Society. 650-659. Berkeley: Berkeley Linguistics Society.
105. Scott, F. S., C. C. Bowley, C. S. Bocket, J. G. Brown, and P. R. Goddard. 1968. English Grammar: A Linguistic Study of its Classes and Structures. London: Heineman Educational Books.
106. Shopen, Timothy (ed.). 1985. Language Typology and Syntactic Description. Cambridge: Cambridge University Press.
107. Smaby, Richard. 1974. "Subordinate Clauses and Asymmetry in English." Journal of Linguistics 10.235-269.
108. Sopher, H. 1974. "Coordinate and Subordinate Clauses -- A Formal Analysis of the Traditional Classification." English Language Teaching Journal 28.3.202-213.
109. Talmy, Leonard. 1978a. "Figure and Ground in Complex Sentences." In Greenberg, et al. 1978. 625-649.
110. Talmy, Leonard. 1978b. "Relation Between Subordination and Coordination." In Greenberg, et al. 1978. 487-513.
111. Tannen, Deborah. 1982. Coherence in Spoken and Written Discourse. Norwood, N.J.: Ablex.
112. Thompson, Sandra A. 1985a. "'Subordination' in Formal and Informal Discourse." In Schiffrin 1985a, 85-94.
113. Thompson, Sandra A. 1985b. "Grammar and Written Discourse: Initial vs. Final Purpose Clauses in English." Text 5.1/2.55-84.
114. Thompson, Sandra A. To appear. "'Subordination' and Narrative Event Structure." In Tomlin, to appear.
115. Tomlin, Russell. 1985. "Foreground-Background Information and the Syntax of Subordination." Text 5.1/2.85-122.
116. Tomlin, Russell (ed.). To appear. Coherence and Grounding in Discourse. Amsterdam: Benjamins.
117. Townshend, David J., and Thomas Bever. 1977. "Main and Subordinate Clauses: A Study in Figure and Ground." Bloomington: Indiana University Linguistics Club.

118. Traugott, Elizabeth, Charles Ferguson, Judy Reilly, and Alice ter Meulen (eds.). To appear. On Conditionals. Cambridge: Cambridge University Press.
119. Van Valin, Robert. 1984. "A Typology of Syntactic Relations in Clause Linkage." Proceedings of the Tenth Annual Meeting of the Berkeley Linguistics Society. 542-558. Berkeley: Berkeley Linguistics Society.
120. Wellander, Erik. 1947. Riktig svenska. Stockholm: Almqvist & Wiksell.
121. Wirth, Jessica (ed.). 1985. Beyond the Sentence: Discourse and Sentential Form. Ann Arbor: Karoma.
122. Winter, Eugene. 1982. Towards a Contextual Grammar of English. London: George Allen and Unwin.
123. Young, David J. 1980. The Structure of English Clauses. New York: St. Martin's.

SOURCES OF DATA

1. Anderson, Sherwood. 1958. Winesburg, Ohio. New York: The Viking Press.
2. Carlson, L. 1978. The Traveler's Guide to Mexico City. Chicago: Upland Press.
3. Farrell, J. G. 1973. The Siege of Krishnapur. London: Penguin Books.
4. Kernighan, B. 1978. UNIX For Beginners. 2nd edition. Bell Laboratories.
5. Munro, H. H. 1977. The Best of Saki. Edited by Graham Greene. London: Penguin Books.
6. Williams, Tennessee. 1975. Memoirs. Doubleday.

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