

SYNTACTIC STRUCTURE AND  
PHONOLOGICAL PHRASING  
IN ENGLISH

by

BRUCE THEODORE DOWNING, B.A., M.A.

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APPROVED BY SUPERVISORY COMMITTEE:

Charles E. Cairn  
Emmet F. Haden  
Emmet B. B.  
Stanley Peters  
Robert D. K.

## PREFACE

This study has been undertaken as the first part of a proposed investigation of the rules governing the assignment of syntactically determined intonation in the grammar of English. It has seemed necessary, and feasible, to attempt to determine the principles that set the scope of pitch contours before proceeding to the analysis of the pitch contours themselves and the factors which select among them. Even with this limitation of the immediate goals, the results obtained cannot be considered complete or final. Yet it is hoped that the conception of phrasing developed here will be of service in the continued investigation not only of phrasing and intonation but also of syntactic rules and syntactic structure.

I would like to express my appreciation to Professor Archibald A. Hill for first arousing my interest in the intonation of English. Among my other teachers I am especially grateful to Emmon Bach and Stanley Peters for their stimulating teaching and thoughtful counsel. Charles E. Cairns, as chairman of my dissertation committee, deserves my warm thanks for making himself available for discussion at all times, and for guiding this work to completion.

I owe a great deal to a number of people who have read and offered their criticism of portions of this study or who through

discussion have helped me avoid greater error. Among these are Leroy Baker, Masa Muraki, Gerald A. Sanders, and James Tai, in addition to members of my committee. My wife Sylvianne has helped with typing and in many other ways.

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Supervising Professor: Charles E. Cairns

The phonological phrase is a unit in the perceived phonological structure of sentences, delimited by occurrences of perceived pause and delimiting the minimal intonation contour. In a generative grammar of English, pauses are predicted by occurrences of phonological phrase boundaries (PB's) which are defined in terms of the universal system of distinctive phonetic features. In order to discover the principles governing the assignment of PB's, it is necessary to distinguish between obligatory PB's, which generally occur at sentence termini and are determined entirely by the syntax, and the additional PB's which may appear through the application of rules that refer to phonological and stylistic as well as syntactic factors. This study is concerned with specifying the relationship between obligatory PB's and syntactic structure. A hypothesis concerning this relationship is stated in the form of the Obligatory Boundary Insertion (CBI) convention.

The OBI convention states that PB's are inserted as leftmost and rightmost constituents of all sentences that appear as root sentences in any 'late' (postcyclic) syntactic structure, where 'root sentence' may be defined as any sentence which is not included in a 'predicative sentence,' i.e., a sentence which contains VP as an immediate constituent. The OBI convention predicts that any element which is extraposed from a root sentence will be separated from the root sentence by pause. Likewise, any sentence which is transformationally inserted into a root sentence from outside will be set off by pause. It is predicted that no pause will be introduced as the result of movement of constituents within the confines of a single predicative root sentence. A number of constructions resulting from the application of movement transformations are examined, and it is shown that in the cases examined the phrasing either supports or is at least consistent with the hypothesis. The investigation leads to a reanalysis of several transformational processes, including topicalization, subject-auxiliary inversion, right-dislocation, parenthesization, and secondary conjunction. Some evidence arises which suggests that the OBI convention should be generalized so as to assign PB's not only to root sentences but also to all phrases which in derived structure are not contained within predicative sentences. The principles of phonological phrase boundary insertion investigated here are of significance for the further study of the rules of English stress and intonation. An explicit and testable hypothesis concerning

the relation between syntactic structure and phonological phrasing can also serve as an important criterion for the analysis of derived constituent structure and the rules which generate it.

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# CHAPTER I

## INTRODUCTION

### 1.1. Thesis and Scope.

This dissertation is concerned with determining the general principles and rules by which sentences in English are divided into phonological phrases. The thesis to be developed here is that obligatory phonological phrase boundaries are assigned as the leftmost and rightmost constituents of every sentence which in any postcyclic P-marker appears as a root sentence. For present purposes a root sentence is any sentence that is not commanded (in the sense of Langacker 1969a) by a VP node, i.e., any "highest" or non-embedded coordinate sentence. Internal phonological phrase boundaries determine the perceptual phenomenon sometimes called "comma-pause."

This thesis depends crucially on a distinction between obligatory and variable phrasing. Obligatory pauses, which generally occur at sentence termini,<sup>1</sup> are determined solely by the syntax. Variable pauses may further divide the syntactically determined phonological phrases. I assume that these additional, variable pauses are determined by phrasing rules such as those given by Bierwisch (1966) for German, which depend on phonological and stylistic factors in addition to the syntactic constituent structure. In all of the examples of phrasing given below it must be borne in mind that in addition to the



pauses indicated as occurring obligatorily, other pauses may occur at word boundaries which are major syntactic constituent breaks, depending on the speed and manner of speaking. On the other hand, it is claimed that the omission in performance of "obligatory" pauses results in ungrammatical sentences.

The principal characteristics of phonological phrases and phonological phrase boundaries are discussed briefly in Section 1.4, below.

Chapter II is devoted to motivating the general hypothesis presented above. A number of hypotheses and assumptions concerning the relationship between syntactic structure and phonological phrasing which have appeared in recent linguistic literature are considered and rejected. The hypothesis developed here is based in part on certain observations of Emonds (1969) and depends on a slightly modified version of his notion of root sentence.

In Chapters III - V this hypothesis is tested in connection with proposals concerning the syntactic surface structure of various constructions which require pauses, notably fronting (topicalization) rules (Chapter III), the rules of Direct Quote or Complement Detachment and Matrix Embedding (Chapter IV), and conjunction reduction (Chapter V). The dissertation concludes with a short discussion of some exceptional facts which suggest a slight weakening of the general hypothesis and a summary of the results and some theoretical and methodological implications (Chapter VI).

## 1.2. Assumptions.

This study is intended as a contribution to a generative theory of English in the form of a transformational grammar as developed in the works of Chomsky (1957, 1965), Ross (1967a), Chomsky and Halle (1968), and in related contemporary work. The exposition here assumes familiarity on the part of the reader with the major works of this school of linguistics.

In particular, I assume that a grammar contains generally distinct syntactic and phonological components, but that phonological rules may refer to superficial syntactic structure and that some non-lexical elements of syntactic structure are only interpreted prosodically.

We will not be concerned here with questions relating to the deep syntactic structure or the semantic representation of sentences, except that it will generally be assumed that two sentences containing the same lexical items have the same underlying representation if they are synonymous. It is assumed that transformations do not "change meaning" in any way relevant to the topics discussed here. The term "deep structure" will be used to refer to an abstract representation which is related to one or more phonologically interpretable "surface structures" by a set of explicit partially ordered transformational rules, but which is not necessarily distinct from the semantic representation of the sentence.

Although this dissertation is concerned exclusively with data from English, it is assumed that the general principles of phrasing are universal principles of language structure. There-

fore the discovery that in some language phonological phrase boundaries are associated with all sentences rather than only root sentences, or that parenthetical elements are not set off by pauses, would be taken as evidence against the principles proposed here. On the other hand, it is assumed that some processes, such as adverb preposing, in which there is a great deal of irregularity with regard to phrasing in English, will exhibit cross-linguistic variation.

Chomsky (1965) has argued for the necessity of distinguishing between competence and performance in linguistic study. This distinction is particularly important in the study of phrasing. Actual speech is full of hesitations, lapses, and false starts, so that it would be impossible to predict the phrasing exhibited by an actual random corpus of spontaneous speech. It is possible, on the other hand, to discover principles and rules which predict the phrasing which native speakers will accept as grammatically regular. Speakers of a language have intuitions of grammaticality, ambiguity, etc., even where only questions of phrasing are involved. This is not to say, however, that it is always easy to reach agreement about prosodic phenomena; it is usually easier to decide whether two sentences exhibit the same pattern of grammatical relations, for example, than to decide whether two sentences have the same number of phonological phrases, or whether "pause" is or is not obligatorily present in some construction. I have relied primarily on my own ear and my own intuitions about the data, but I have solicited other opinions at every opportunity so that the judgments I have

expressed represent at least a limited consensus.

### 1.3. Background and Relevance of the Study.

The phonological phrase has long been considered a significant unit of phonological structure. But while considerable attention has been devoted to describing the phonological properties of this unit, such as the intonation contour, sentence stress, and "phonemic" junctures, relatively little effort has been devoted to the task of delimiting the domain of the phonological phrase, i.e., predicting the positions at which phonological phrase boundaries (or junctures) occur. There are a few taxonomic studies of intonation, such as Schubiger (1958), which list and exemplify syntactic constructions which require terminal junctures in positions other than sentence final. In none of these, however, has the attempt been made to discover general principles of phrasing. There have also been some largely unsupported hypotheses concerning the placement of phonological phrase boundaries, some of which will be discussed in Chapter II.

In Chomsky and Halle's The Sound Pattern of English (henceforth SPE) it is claimed that the Nuclear Stress Rule reapplies cyclically to ever-larger constituents until the level of the phonological phrase is reached. Thus it is implicitly claimed that the phonological phrase is a syntactic constituent (or is made into a constituent by "readjustment rules"). But although the concept of the phonological phrase is crucial to the notion of the cycle in SPE, no attempt is made there to characterize it.

In the recent literature of generative syntax, one frequently encounters statements to the effect that the derived syntactic structure must be of one form rather than another because of the intonation pattern, the presence of "comma-pause," etc. In the absence of an explicit hypothesis concerning the relationship of syntactic structure to phonological phrasing, all such claims are vacuous. On the other hand, a general theory of obligatory phrasing such as is proposed here constitutes a criterion which can be used in many cases to decide between alternative surface structure representations which are equally supported in other respects.

#### 1.4. The Phonological Phrase, Phrase Boundaries, and Pause.

In this section we will consider the identifying characteristics of the phonological phrase.

The unit that we are calling the phonological phrase has also been referred to in recent linguistic literature as the "phonemic clause" (Trager and Smith 1957, Chomsky, Halle, and Lukoff 1956) and the "breath group" (Daniel Jones 1956, Lieberman 1967). Bierwisch (1966) uses the term "Phrasierungseinheit" (phrasing unit). The last-mentioned term is the most neutral and thus perhaps the best, since the phonological phrase bears very little resemblance to syntactic clauses or phrases (which allow hierarchical rather than purely linear structure) and has even less to do with the breathing cycle.<sup>2</sup> The term "phonological phrase" is adopted here because it is familiar from its use in SPE and because it serves as a reminder that the unit under

consideration is phonological and not syntactic, although it is largely determined by syntax.

From the point of view of speech production or reception (linguistic performance) every utterance may be divided into a linear, discrete sequence of one or more phonological phrases. Where the utterance contains only short, non-emphatic, and syntactically non-complex sentences, the phonological phrases will in general be co-extensive with the sentences themselves. In no case does the scope of a single phonological phrase extend beyond the limits of a "highest" surface structure sentence, i.e., the maximum scope of a phonological phrase is the terminal string of a single P-marker. Long and complex sentences, especially those involving coordination, apposition, parenthesis, etc., will often consist of more than one phonological phrase, each with its own intonation contour and terminal juncture. In general each phonological phrase receives one and only one primary stress, the so-called "nuclear" or "sentence" stress.

I shall not attempt to characterize the notion of intonation contour here. I assume that each such contour consists of a sequence of significant pitch levels or pitch accents and a terminal "pitch glide" associated with the juncture. By "pitch glide" I mean the rapid drop in fundamental frequency during the final 150-200 milliseconds of phonation, or the absence of such a drop in frequency, which Lieberman (1967:105) claims to be the defining characteristics of the "unmarked breath group" and the "marked breath group," respectively.

The tonal and perhaps durational phenomena which

characterize the terminal portion of every intonation contour, and thus of every phonological phrase, have been referred to variously as "junctures" (Trager and Smith 1957), "clause terminals" (Gleason 1961), and "terminal fundamental frequency contours" (Lieberman 1967). I will refer to the abstract marker of the end (later also of the beginning) of a phonological phrase as a phonological phrase boundary (PB), following SPE (p. 372), and I will refer to the perceptual phenomenon which corresponds to phonological juncture (the end of the phonological phrase) as pause. (This term is not to be taken as implying that actual pause, i.e., cessation of phonation, occurs at the end of every phonological phrase.)<sup>3</sup>

The goal of this study is to show how properly formulated transformational rules can, in conjunction with a general principle of phrasing, predict a PB at all and only those points where the occurrence of a grammatically obligatory pause is perceived.

#### NOTES TO CHAPTER I

1. I use the term sentence terminus to refer to the position immediately preceding the first or following the last formative of a sentence. The purpose of this terminology is to reserve the term boundary for the phonological unit. The sense of the term sentence terminus here differs from that found in the definition of the phonological word in Chomsky and Halle (1968:367).
2. Lieberman (1967) implies by his use of the term "breath group" that phonological phrases have some necessary con-

nection with respiration. He says, in fact (1967:316):

We will define a "breath group" to be the acoustic output that results from the synchronized activity of the chest, abdominal and laryngeal muscles during the course of a single expiration.

On closer examination, however, it becomes apparent that the use of the same term "breath group" for both the phonological phrase and the output resulting from activity during a single expiration is simply an equivocation. Lieberman's experimental data show (p. 65) that the two entities are usually but not always coextensive. For example, twice in one experiment two repetitions of the same sentence were produced on a single expiration, yet each sentence ended with a falling terminal fundamental frequency contour, the defining characteristic of Lieberman's "unmarked breath group."

Stanley Peters has pointed out to me that while pauses (actual or perceived--see footnote 3) are required at sentence termini in saying sentences like This is the cat that chased the rat that ate the malt . . ., it is distinctly unnatural to pause for breath at the same points.

Since pauses can occur without taking a breath, and phonological phrase boundaries may be perceived where no actual pause occurs and are largely predictable on the basis of syntax, the term "breath group" seems to be a quite inappropriate label for the phonological phrase. I would agree with Bierwisch (1966:186, fn.14) when he says:

Die PE [Phrasierungseinheiten] sind weder phonetische noch semantische Einheiten noch solche der Sprachverwendung . . . , sondern sie gehören zur syntaktisch bedingten Lautstruktur der Sprache.



3. The literature of generative syntax, in particular, contains frequent references to "pause," "comma-pause," and the like, in the sense intended here. Harms, in his textbook on generative phonology (1968:111) uses the term "pause boundary" for our PB. Phonological studies generally refer to the abstract "juncture" or "terminal," which is realized phonetically in various ways, including pitch change and duration, and is sometimes accompanied by actual cessation of phonation. According to SPE (p. 75):

junctures (i.e., what we are calling "boundaries") of the sort that are freely used in all phonemic descriptions do not generally have uniquely identifiable direct reflexes in the utterance.

Hill (1958:24) comments as follows on the relation between juncture and pause:

[Terminals] are not true pauses, in that sound does not cease. True pause plays no part in linguistic signalling, though . . . it plays a part in a larger area of the communication situation, that which covers the relationship between sentences. It is the prolongations characteristic of the junctures which are responsible for the identification of them with pauses in our ordinary statements about language.

Similarly, Bever, Fodor, and Weksel (1967:270) state:

Though pauses, stress, . . . etc., are heard as objective features of the flow of speech, it appears that these percepts are, in fact, the result of some elaborate manipulation of the acoustic data. In the case of stress and pauses in English it is clear that they are usually a function of the syntactic structures underlying the speech signal as well as its acoustics.

Schubiger (1958:3, fn. 1) appears to use the term "pause" to refer to both the abstract ("structural") entity and the perceptual phenomenon:

In the structure of a language it [pause] occupies a not unimportant place, symbolized in writing by punctuation marks, especially by the comma. In actual speech, especially quick, informal speech, the pauses tend to disappear. In this case slight differences of intonation, which habitually accompany the interruption of the flow of speech, produce the effect which we mentally perceive as a pause.

As for the occurrence of "true pause," i.e., silence or the cessation of phonation, Harris (1951:174-75) comments that "pause (when it occurs) is an occasionally-occurring free variant of the phonemic juncture." The relationship between the boundary symbols specified by the grammar and the occurrence of actual pause in speech is probably best expressed by Bierwisch (1966:186, fn. 13):

Grenzsymbole determinieren mögliche Pausen, aber die Abwesenheit von Pausen ist kein Indiz für Abwesenheit von Grenzsymbolen: Grenzsymbolen können durch Pausen realisiert werden, müssen aber nicht. Daß umgekehrt bei stockendem Sprechen Pausen auftreten, wo linguistisch keine Grenzen vorausszusagen sind, gehört genauso in den Bereich außerlinguistisch bedingter Abweichungen wie etwa das Auftreten von Anakoluthen in der Syntax oder Ähnliches.

Actual pause may occur for various reasons. There are pauses for breath, which usually occur at points where PB's are predicted by the grammar. There are also the hesitation pauses to which Bierwisch refers. Various studies have shown that these do not usually occur at normal phrase boundaries at all but at points presumably determined by the information content of the following string, e.g., between determiners and nouns (cf. Maclay and Osgood 1967) or after the first word of a clause (cf. Boomer 1968). There are also stylistic pauses which cannot be predicted from the syntax. All these are clearly performance phenomena.

In what follows we will have nothing more to say about "actual pause," but will refer to "perceived pause" as the perceptual correlate of phonological phrase boundaries.

## CHAPTER II

### THE PRINCIPLE OF OBLIGATORY PHRASING

2.0. The goal of this chapter is to characterize the general principles by which phonological phrase boundaries are introduced into surface representations of sentences. I will first argue for the necessity of distinguishing between obligatory and variable occurrences of PB's, governed by different rules. After reviewing several hypotheses which associate PB's with sentence boundaries, I will introduce the Obligatory Boundary Insertion (OBI) convention which accounts for the location of all (or nearly all) obligatory PB's on the basis of a single general principle dependent on derived syntactic structure, as outlined in the first section of Chapter I.

#### 2.1. Obligatory and Variable Phrasing.

One of the popular untested hypotheses concerning the phenomenon of pause states that pause is in general a direct phonological reflection of syntactic surface structure. According to this view, the length of pause is directly proportional to the size of a constituent break. Ross (1967a:276), for example, argues from "the hypothesis that intonation rules should correlate length of pause with size of the constituent break," referring the reader to Bierwisch (1966). But Bierwisch in fact shows that constituent structure is but one factor in a complex formula for the determination of phrasing. Furthermore, this

hypothesis ignores the fact that pauses occur obligatorily in certain syntactic constructions regardless of depth of embedding.

Let us consider the phrasing of the following sentences. Internal pause is indicated by the virgule (/).

- (1) a. The boys you met / are all members / of the same fraternity.
- b. The boys you met / are all members of the same fraternity.
- c. \*The boys you met are all members / of the same fraternity.
- d. The boys you met are all members of the same fraternity.
- (2) a. The boys, / who belong to that fraternity, / have parties five nights a week.
- b. The boys who belong to that fraternity / have parties five nights a week.
- c. \*The boys / who belong to that fraternity have parties five nights a week.
- d. The boys who belong to that fraternity have parties five nights a week.
- (3) a. John, / you've met Marie, / haven't you?
- b. \*John, you've met Marie, / haven't you?
- c. \*John, / you've met Marie, haven't you?
- d. \*John you've met Marie haven't you?

The sentences of (1) exhibit what I have called variable phrasing. The sentences have the same meaning and are equally acceptable regardless of which one of three phrasings is chosen. The unacceptability of (1c) compared to (1b), however, shows that there are rather strict rules governing even variable phrasing. One of these is the principle that in general variable pause occurs at minor constituent breaks only if pause is also

present at all more major constituent breaks (cf. Bierwisch 1966). Since in (1c) there is no pause between subject and predicate, there can be no pause within the predicate.

A phrasing which violates the normal process of enclisis by inserting pauses between unstressed and stressed formatives in the same minimal syntactic phrase, as in (4), results in total unacceptability:

- (4) \*The / boys you / met are / all members of the / same  
fraternity.

Sentence (5), on the other hand, with the same number of (optional) pauses, is acceptable for a certain deliberate style of speaking. (Imagine that the speaker is Jack Benny.)

- (5) The boys / you met / are all members / of the same /  
fraternity.

Let us return now to the sentences of (2). As in (1), three out of four phrasings are acceptable. But sentence (2a) receives a different semantic reading from the others; who belong to that fraternity is here a non-restrictive or appositive relative clause which makes an independent assertion. Since this reading is obtained only with the phrasing shown in (2a), that phrasing must be considered obligatory. Sentence (2b) has an acceptable optional pause which separates the subject from the predicate. In both (2b) and (2d), which has no pause, the relative clause is restrictive. Sentence (2c) is unacceptable because the position of the pause does not respect the principle mentioned above that variable pauses must be present at major constituent breaks if they are present at lesser constituent breaks.

The sentences of (3) contain two separate constructions, the vocative and the question tag, which are obligatorily set off by pause. Since the pauses are obligatory only the phrasing of (3a) is acceptable.

The above examples show clearly that obligatory PB's are not simply "more resistant to deletion" (cf. Bierwisch 1966:117) than variable boundaries, but that they are of a different nature grammatically, if not phonetically, and are governed by different principles.<sup>1</sup>

Bierwisch (1966) presents rules to account for variable phrasing in German. I believe that these rules are essentially correct, and I have shown elsewhere (Downing MS) that the same principles account for variable phrasing in English. Bierwisch demonstrates that the following factors are relevant to the location of non-obligatory pauses:

- a. rank order of syntactic constituent breaks
- b. phonological word boundaries as determined by the process of clitic attachment
- c. number of stressed syllables in a potential phrase
- d. length of a potential phrase in terms of syllables
- e. a non-linguistic factor related to style and rate of speech.

We will not discuss variable phrasing further here; the reader is referred to Bierwisch's article, which deals not only with phrasing but also with the assignment of intonation.<sup>2</sup>

In what follows we will be concerned exclusively with determining the basis of obligatory phrasing, although in some







nation is not that this analysis makes incorrect predictions but that it makes insufficiently general claims. It makes it necessary to account for all other cases of syntactically determined pause (e.g., after initial adverbials, before final adverbials, before and after parentheses) in equally ad hoc ways, with a different explanation for each case.

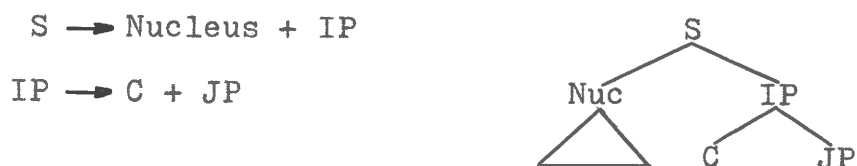
The weakest theory of phrasing that I can imagine is one that claims that PB's are inserted as part of the structural change of a miscellaneous set of transformational rules, such as rules of coordination, topicalization, appositive formation, parenthesization, etc.<sup>3</sup> Since it can be shown that pauses separate sequences of sentences that are not conjoined (do not contain an underlying conjunctive element), and since a more general account of phrasing, subsuming the phrasing of conjoined sentences, can be given, the claim that comma-pause or non-final intonation is associated in a formal way with conjunction must be considered not only inadequate but wrong.<sup>4</sup>

2.2.2. The second phrasing hypothesis we will examine is the following:

- (12) Pauses are determined by syntactic markers attached at the end of every sentence in deep structure. Consequently, the phonological structure contains, in principle, a PB corresponding to the end of every underlying sentence.

This is essentially the position of Stockwell (1960). Stockwell proposes a modification of the phrase structure rules of Chomsky's Syntactic Structures (1957) to allow an Intonation Pattern (IP)

consisting of a Contour (C) and a Juncture Point (JP) to be introduced as the final constituent of every S, thus:



Stockwell defines JP (p. 360) as "an entity set up to locate the end of a morpheme C which is spread throughout the preceding string"; thus it is not the terminal contour or juncture (which is part of C) but a purely abstract marker. The position of C determines the location of the sentence stress, which is normally on the last lexical element of a sentence; an obligatory rule moves C to the left of a non-emphatic final sequence of pronouns and/or prepositions, giving the correct "normal" stress contour for sentences like They gave it to him.

Stockwell assumes that complex sentences are formed by the generalized (two-string) transformations of early transformational theory. Concerning the phrasing of such sentences, he remarks (p. 365):

The inclusion of IP among the constituent structure rules has interesting consequences for the transformations. This is especially true among the two-string transformations, where more and more intonationally marked phrase breaks are introduced as the sentence becomes more and more complex in its derivation from more and more source strings, each with its own IP.

Stockwell finds that a sentence of Chomsky's with five underlying S's is divided into four phonological phrases, as shown in (13).

- (13) This event prompted me / to try to visualize myself / forcing him / to come.

Stockwell hypothesizes that the absence of the expected additional break following try is due to the shortness of the

preceding phrase to try. Stockwell points out that even though some breaks may optionally disappear, the ones that do occur are found at the boundaries of (the surface structure remnants of) deep structure S's. Stockwell even suggests that the correlation of phonological phrases with deep structure S's be considered a criterion in the formulation of generative rules.

Given a decade of subsequent study of English syntax, it is fairly easy to show that Stockwell's claims are too strong. For one thing, the occurrence of the postulated JP in deep structure is not a sufficient condition for the occurrence of pause. For example, compare the two sentences (14) and (15).

(14) Flying planes (/) can be dangerous.

(15) Nuclear bombs (/) can be dangerous.

Both sentences allow optional pause after the subject NP, under apparently identical conditions, although the subject NP in (14) only is derived transformationally from an underlying S.<sup>5</sup> The principles of variable phrasing which account for the pause here (and the pauses in (13) as well) depend (as Bierwisch has shown) on surface constituent structure; whether or not a constituent is derived from an underlying sentence is irrelevant.

In addition, Stockwell's rules fail to predict the obligatory pauses that occur following initial non-sentential elements such as topicalized NP's and exclamations, since these are not sentences:

(16) The price, / they didn't bother to mention.

(17) Well now, / what have you been doing?

More generally, there is simply no evidence that either

obligatory or variable phrasing has any necessary relationship to deep syntactic structure; the presence of a deep structure sentence is neither necessary nor sufficient to predict the occurrence of pause.

2.2.3. The next hypothesis we will consider improves upon the last one by referring to surface structure rather than deep structure:

- (18) Pauses occur at the end of all surface structure sentences only.

This hypothesis can be realized in either of two ways; the boundaries can be assigned to surface structure representations or the boundaries can be assigned to deep structure S nodes and then deleted whenever an underlying S is reduced or deleted.

Kim (1968) sketches a set of generative rules of intonation intended to predict the assignment of Lieberman's prosodic features, [-BG] (for a phonological phrase with a terminal pitch drop) and [+BG] (for a phrase with a non-falling terminal contour).

According to Kim's rules the feature [-BG] is assigned to every S node in deep structure (as a feature of S, apparently, rather than as a formative in the terminal string). Subsequent rules would change [-BG] to [+BG] in yes/no questions and non-final S's, and phonological rules would interpret [-BG] as falling and [+BG] as non-falling pitch. Kim first states that "a complex sentence with two or more S's in the deep structure would have the same number of [BG]'s. . . . The number of [BG]'s would correspond to the number of node S's in the deep phrase marker"

(p. 839). But in a footnote this hypothesis is modified to a form similar to (18) above:

But more strictly, the number of [BG]'s in the derived phrase marker probably corresponds to the number of S's that survived to the surface structure. That is, it seems likely that if a node S in deep structure becomes deleted in the course of a derivation, e.g. by a 'tree-pruning' rule as suggested in Ross 1966 [1969], and is not present at all in the derived phrase marker, then the feature [BG] will also be deleted with it.

Thus, as Kim points out, sentence (20), consisting of a single Breath Group, is derived from the structure underlying (19) (which presumably has two S nodes marked [-BG], both of which predict the single terminal contour). There is no pause after pretty in (20) because the S node dominating pretty has been deleted.

(19) [Don married a girl [who is pretty]].

(20) Don married a pretty girl.

Likewise the conjoined NP's in (22) are not separated by a boundary although the coordinate sentence (21) from which (22) is derived consists of two Breath Groups.

(21) I saw Ralph / and I saw John.

(22) I saw Ralph and John.

The hypothesis expressed in (18), of which Kim's proposal is one possible version, expresses the fact that obligatory pauses are associated only with termini of surface structure sentences. Without explicitly distinguishing between obligatory and variable phrasing, Kim's proposal is at least compatible with the principle that introduces variable pauses at additional constituent boundaries regardless of whether the preceding constituents are reflexes of deep structure sentences.

But this hypothesis still requires further refinement. For one thing, any hypothesis which assigns PB's (or their equivalent) only at the end of sentences will fail to predict the pause preceding an embedded sentence such as an appositive relative clause. Consider sentences (23) and (24).

(23) Those who had already eaten (/) didn't want to  
go out.

(24) The others / who had already eaten / didn't want  
to go out. (= (8))

It is the pause at the end of the relative clause which is predicted by the hypotheses of Stockwell and Kim. They both fail to account for the fact that the pause in (23) is optional while the corresponding pause in (24) is obligatory, and they fail entirely to predict the first pause in (24), since it does not follow (but precedes) a sentence.

2.2.4. The defect just noted is corrected by formulating a hypothesis that places a PB both before and after a sentence, i.e., at both sentence termini:

(25) Phonological phrase boundaries are assigned at both  
the beginning and the end of every (surface structure)  
sentence, so that pauses precede as well as follow  
constituent sentences.

Such a principle is implied in the chapter dealing with coordination reduction in Stockwell et al. (1969:347). Discussing the "special phonological characteristics" of the sentence Nick watered, and Sue weeded, the garden, the authors state, "we would say that whenever there is a constituent break between an S and some constituent other than S, such characteristics may be

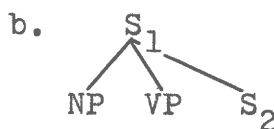
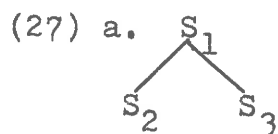
predicted." We will defer consideration of the structure of the sentence in question to Chapter V. But notice that the principle stated here accounts for the phrasing of sentences (16) and (17) above if it is assumed that a sentence begins after the initial phrase (cf. Chapter III). It also predicts the obligatory phrasing of sentence (24), but it does not explain why the restrictive clause in (23) is phrased differently.

A full explanation of the difference in the phrasing of restrictive and appositive clauses must await the analysis of embedding rules in Chapter IV. But there are a number of related differences in phrasing which can be accounted for by making one further modification of the phrasing hypothesis.

2.2.5. The last of the five hypotheses to be considered in this section can be stated roughly as follows:

- (26) Obligatory pauses occur at the termini of only certain surface structure constituent sentences, namely, those clauses which are not embedded or "rankshifted."<sup>6</sup>

We will refine this hypothesis in the course of the following discussion. A version of this hypothesis is used as the basis for certain syntactic arguments by Emonds (1969). Emonds argues for a significant distinction between root and non-root sentences. A root sentence, by his definition, is a "highest" sentence or a sentence immediately dominated by the highest sentence, e.g., any of the sentences in (27).





With regard to phrasing, Emonds (1969:8) comments: "a characteristic of root S's is to be set off by commas." He implies, moreover, that a characteristic of non-root S's is that they are not set off by commas. This observation is the basis for much of the subsequent analysis in this dissertation. The distinction between root and non-root sentences appears to be essential to the description of obligatory phrasing. But we will find it necessary, in the following section, to modify somewhat the notion of "root sentence," and in Chapter IV it will be shown that PB's must sometimes be inserted prior to surface structure.

Let us now consider some evidence supporting the claim made in (26) that pauses occur obligatorily at termini of surface structure root sentences but not at termini of subordinate, embedded, non-root sentences. It must be recalled throughout this discussion that we are concerned only with predicting obligatory pauses. When it is claimed that pause occurs, obligatory pause is intended; wherever pause does not occur obligatorily, it may still be present optionally as a result of the rules of variable phrasing.

To begin with, no obligatory pauses are associated with restrictive relative clauses (28a), predicate complement sentences (28b), sentential subjects (28c), or extraposed complements (28d) and relative clauses (28e).

- (28) a. The car Harry drives is a Plymouth.
- b. I suppose that you've met.
- c. That Ann told you is what surprises me most.
- d. It's a shame you have to leave so soon.

(28) e. The girl called that you met in Vegas last month.

Adverbial clauses that are constituents of a Predicate or VP node are not set off by pause. (The derived structure of final adverbial clauses which are set off by pause will be discussed in Chapter III.)

(29) a. I'll dance if I feel like it.

b. Blackberries are red when they're green.

c. I went because she needed me.

In (29b) the nuclear stress normally falls on a word in the main clause, so that the adverbial clause forms the post-nuclear "cadence" with sustained low pitch. In (29a) and (29c) the nuclear stress falls on a word in the adverbial clause. In all three sentences there is only one assertion, one nuclear stress, and one phonological phrase.

The crucial cases for the hypothesis (26) involve constructions in which, it is claimed, obligatory pause is associated with root sentences but pause is only optionally present if the construction occurs in an embedded sentence, e.g., within complements.

One such case is sentence coordination. Consider the following.

(30) a. Mary will sing / and Bob will play his banjo.

b. \*Mary will sing and Bob will play his banjo.

c. I hope that Mary will sing (/) and Bob will play  
his banjo.

This difference is shown more clearly, perhaps, in pairs of sentences with the same phonological form except for a difference of phrasing that corresponds to a different syntactic surface

structure, as in (31) and (32).

(31) Bill believed [his father was older than his mother  
and his mother was older than his father].

(32) Bill believed [his father was older than his mother], /  
and his mother was older than his father.

Sentence (31) is semantically unacceptable because it claims that Bill believed two contradictory assertions. The sentence requires no internal pause. Sentence (32), in which Bill simply believes something that is false, is a coordination of root sentences separated by an obligatory pause.

Additional evidence that the notion of root sentence is crucial for the prediction of obligatory phrasing will be presented throughout the remainder of this study. For the present, I will consider the cases presented above sufficient to establish (26) as a working hypothesis.

2.2.6. So far in this chapter we have established the following facts about the assignment of phrase boundaries which must be taken into consideration by any adequate general phrasing hypothesis.

- a. A distinction must be made between obligatory pauses, which are determined by syntactic structure alone, and variable (or optional) pauses, which depend in part on phonological and stylistic factors.
- b. Obligatory pauses are associated only (or primarily, at least) with termini of constituent sentences.
- c. Obligatory pauses are not associated with deep structure sentences, but with surface structure sentences.

- d. Obligatory boundaries must be assigned not only at the end of a constituent sentence, but also at the beginning, to separate the sentence phraseologically from preceding constituents.
- e. Obligatory boundaries are not associated with all sentences in a P-marker, but only with those which satisfy the definition of root sentence.

In the next section I will first show why some revisions of Emonds' definition of root sentence are necessary, and then present the obligatory boundary insertion convention in the form in which it will be utilized in the analysis of phrasing in the succeeding chapters.

### 2.3. The Obligatory Boundary Insertion Convention.

#### 2.3.1. Root Sentences.

It was noted above that Emonds (1969) defines a root sentence as a "highest" sentence or a sentence immediately dominated by a highest sentence. This definition is not adequate, because it claims incorrectly that a sentence is a root when it is a constituent of another sentence (as  $S_2$  is a constituent of  $S_1$  in (27b) above), but that it ceases to be a root if the dominating sentence is itself dominated by another S, as in coordination. It also claims incorrectly that in a coordinate structure like (27a), a conjunct (such as  $S_2$ ) will cease to have the characteristics of a root S if some element is Chomsky-adjoined to it.

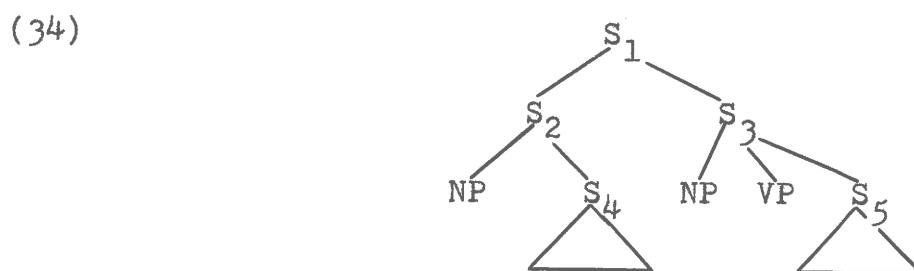
Notice that by Emonds' definition,  $S_2$  in (27b) is a root sentence. If this is the structure resulting from the rule of Extraposition, as is assumed by Ross (1967a), the extraposed clause will be set off as a separate phonological phrase on the basis of principle (26). But, as sentence (28b) shows, it must not be. We therefore must exclude sentences like  $S_2$  in (27b) from the category of root sentences.

To do this we may first define a notion of predicative sentence. A predicative sentence is any sentence in which the S node immediately dominates a VP. (It may also be necessary to stipulate that the VP contains a verb.)

We may now define a root sentence for our purposes as follows:

- (33) A root sentence is any sentence which is not dominated by a predicative sentence.

According to this definition, nodes  $S_1$ ,  $S_2$ ,  $S_3$ , and  $S_4$  in (34) are root sentences, but  $S_5$  is not



This definition meets the objections to Emonds' definition noted above, and at the same time excludes sentences such as extraposed complements or extraposed relative clauses.

A simpler definition of root sentence may be given by referring to Langacker's (1969a) notion of command (cf. Chapter V, fn. 4):

- (35) A root sentence is any sentence that is not commanded by a VP node.

### 2.3.2. The Convention.

We can now state the general phrasing convention governing the occurrence of obligatory phrase boundaries. The motivation for the following two aspects of this formulation of the convention must await Chapter IV. First, we will require that the boundaries be constituents of the sentences with which they are associated. Second, the convention is required to apply not only to surface structures but to all derived structures after a certain point in the derivation. This is because various rules to be discussed in later chapters must apply after boundaries are inserted. Since none of these rules are known to be ordered before any cyclic rules, we can assume that they are postcyclic and that the phrasing convention applies only to postcyclic derived structures.

The convention is as follows:

- (36) Obligatory Boundary Insertion (OBI):

Phonological phrase boundaries (PB's) are inserted as leftmost and rightmost immediate constituents of every root S node that appears in any postcyclic derived P-marker.

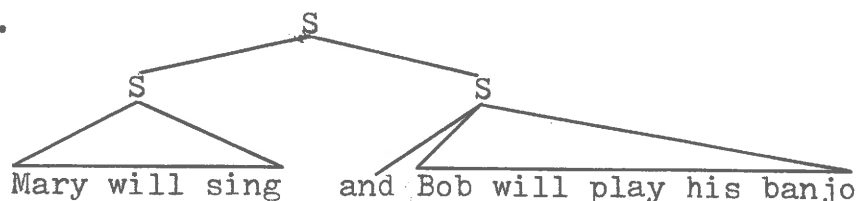
(We will discuss later the conditions under which a root S node may be deleted, along with its PB's.)

### 2.3.3. Obligatory PB's and Pauses.

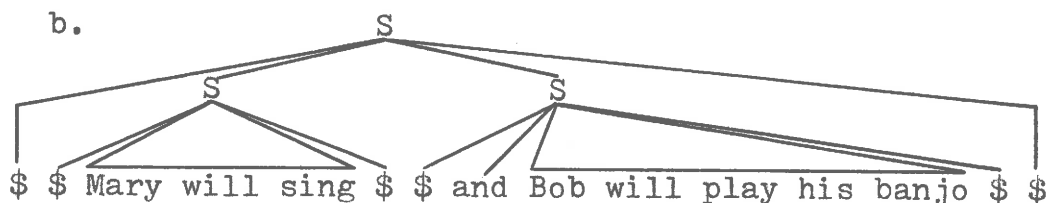
The abstract phonological phrase boundary may be considered a grammatical formative in syntactic representations. In the phonology it is treated as a unit in the system of phonological boundaries, defined in terms of the universal system of distinctive features (cf. SPE, pp. 364-371). I will continue to represent pause in the examples by the virgule (/), but I will represent PB's in syntactic P-markers by the symbol  $\$$ .<sup>7</sup>

The general structure of the coordinate sentence (30a) before and after PB insertion is shown in (37).<sup>8</sup>

(37) a.



b.



It will often be the case, as here, that more than one PB will occur at a boundary. For phonological representation it may be convenient to have a convention such as (38)--a "readjustment rule"--to delete all but one of a series of PB's.

(38) Any string of n PB's is reduced to a single PB.

An additional convention would delete PB's occurring to the left of all formatives in a P-marker, since these have no known phonological effect. The remaining PB's are then interpreted as pauses.

In the following chapters the OBI convention will be

further explicated and tested in connection with a discussion of the transformational rules which produce structures containing obligatory pauses.

## NOTES TO CHAPTER II

1. Notice that in all the above examples, commas occur according to the usual conventions of punctuation at points corresponding to obligatory pauses but not at points where pause is variable.
2. I differ with Bierwisch in one essential respect, that is, concerning the distinction made here between variable and obligatory phrasing. Bierwisch assigns the rank-order zero to all boundaries which occur at sentence termini. According to his rules this makes them highly resistant but not invulnerable to deletion. Bierwisch attempts to account for the phrasing of topicalized elements by a special complex condition on his main phrasing rule, but this attempt is not entirely successful. By his own admission (1966:125), his rules are unable to account for the difference in phrasing between restrictive and appositive relative clauses. I believe that the syntactic principles of obligatory phrasing introduced here are a necessary addition to Bierwisch's rules, which are unaffected except that only obligatory PB's should be assigned rank-order zero, and boundaries of rank-order zero must be insusceptible to deletion under any circumstances except with diminished grammaticality.
3. An example of this kind of ad hoc treatment of phrasing is



the following tentative suggestion by Ross (1967a:31). Discussing the derivation of sentence (39),

- (39) Why, after maintaining that you were sick,  
did you get out of bed?

Ross proposes that adverbials are first preposed from predicate position and that "subsequently, a second adverb movement rule might move the preposed adverbs to the position immediately following the wh-word, and insert pause markers on either side of them" [my emphasis].

It will be shown in Chapter IV that given essentially the same adverb movement rules, the phrasing of (39) follows from the general principle of obligatory phrasing.

4. In Chapter V it will be shown, however, that although the phrasing of conjoined sentences follows from general principles, the separate phrasing of conjuncts in coordinations of more than two NP's, VP's, nouns, adjectives, etc., is not accounted for by the general principles of phrasing but requires that PB's be added by a transformational rule.
5. On one reading; on the other reading only flying derives from an embedded S, so that the predicted phrasing is \*Flying / planes can be dangerous.
6. Cf. Halliday (1967:18):

There is a tendency for the tone group to correspond in extent with the clause; we may take advantage of this tendency by regarding the selection of one complete tone group for one complete clause as the neutral term.

This statement is qualified as follows on page 20:

"Each clause" here means "each clause operating in sentence structure"; for rankshifted clauses the "neutral" is to share a tone group with the rest of the items in the same (non-rankshifted) clause. Then

there are two "marked" possibilities: that the tone group is more than one clause, and that the tone group is less than one clause.

Halliday indicates (p. 21) that restrictive relative clauses are rankshifted, while "additioning" (appositive) clauses are not.

7. The symbol # is traditionally used as a formal marker of sentence boundaries in syntactic representations (cf. Chomsky 1965:66). A pair of such boundaries is "given" along with the "designated initial symbol" S in the categorial rules of the syntactic component of the grammar. Another pair of boundaries is introduced wherever recursion of S is present in the base rules. Sentence boundaries are supposed to perform a "filtering function" in syntactic derivations, in the following manner. Certain transformations such as Relative Clause Formation delete sentence-internal occurrences of sentence boundaries. Any surface structure still containing internal sentence boundaries (because the necessary transformations have not applied for some reason) is rejected as ill-formed. Accordingly, sentence boundaries will always appear as the first and last elements only in all well-formed surface structures.

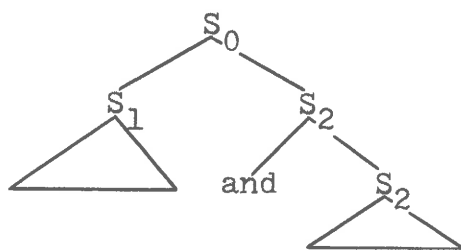
One is tempted to try to identify these syntactic "sentence boundaries" with the obligatory phonological phrase boundaries which are also assigned at the beginning and the end of non-embedded sentences. But notice that the syntactic sentence boundaries are not constituents of the sentences with which they are associated. Internal sentence boundaries

are constituents of the node that dominates the S, and the sentence boundaries that are concatenated with the highest S are not properly part of the sentence represented by the P-marker at all. As noted above, it will be shown later that the obligatory PB's needed to account for the phrasing must be immediate constituents of sentences, and so cannot be identified with the syntactic boundaries.

But even for syntactic purposes, the need for sentence boundaries is questionable. Stanley Peters has pointed out to me that these boundaries are essentially a carry-over from grammars with context-sensitive phrase-structure rules; a context-free base cannot identify initial and final position in a sentence by reference to boundaries and so does not need them. As for the "filtering function," it is becoming increasingly evident that the criteria of well-formedness are essentially semantic rather than syntactic. The blocking of derivations from semantically ill-formed deep structures by the presence of sentence boundaries in derived structures appears to be simply an artifice which cannot be considered explanatory.

8. Conjunctions are often assumed to be "Chomsky-adjoined" (see Chapter III, fn. 1) to the following conjunct, as in (40).

(40)



Since both  $S_2$  nodes satisfy the definition of root sentence,

this structure wrongly predicts a PB following the conjunction, where pause does not occur. It will be seen later that "obligatory" boundaries predicted by the OBI convention following certain similarly unstressed formatives must be deleted. For the present, I leave open the question whether the conjunction is a constituent of the predicative sentence, as in (37), so that no boundary follows, or whether it is Chomsky-adjoined and the following boundary subsequently deleted.

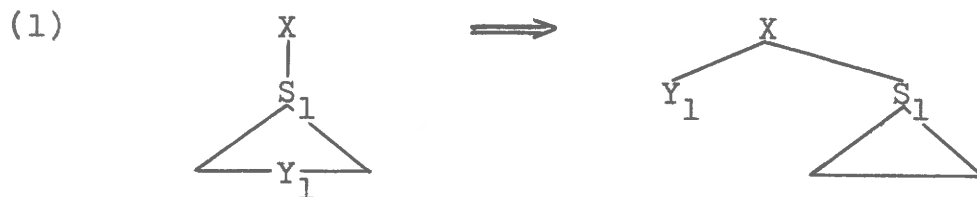
# CHAPTER III

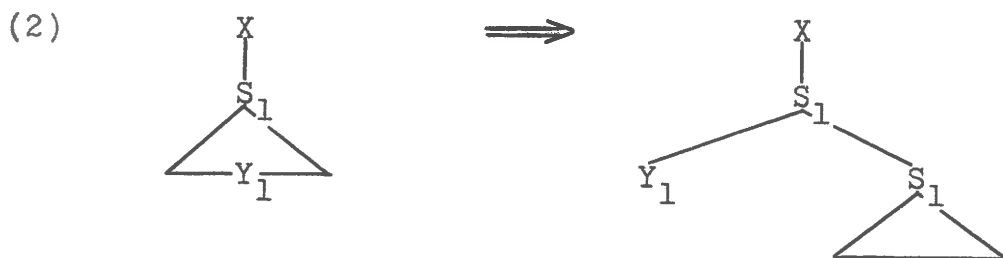
## EXTRAPOSITION, PREPOSING, AND POSTPOSING

### 3.0. Introduction.

In this chapter we will be concerned primarily with processes by which various syntactic constituents are either generated by the base rules outside of a predicative root sentence or moved to that position by transformational rules. It will be shown that all such elements are set off from the source sentence by pause, and that this pause is predicted by the OBI convention. We will refer to any process which produces this result as extraposition (from S). Examples are thematization (or Left Dislocation), Adverb Preposing (in root sentences), the non-transformational generation of vocatives and interjections in initial position, and the right-extraposition of various sentence tags.

The structural change called extraposition from S can be brought about either by sister adjunction to the sentence from which the constituent was moved (as in (1)) or by Chomsky adjunction (as in (2)).<sup>1</sup>





Notice that when  $S_1$  is a root sentence the OBI convention will place a PB between the extraposed phrase and the lexical constituents of  $S_1$ .

Extraposition as defined here contrasts with processes of preposing and postposing within predicative sentences. Preposing and postposing rules, like other movement rules which apply within predicative sentences, do not introduce pause. Examples of preposing rules are WH-movement, and Negated Constituent Preposing. Postposing rules include Complex NP Shift, "It-Extraposition," and "Extraposition from NP."

We will first discuss processes of topicalization (Section 3.1). A distinction will be made, partly on the basis of phrasing, between Theme Topicalization (of which "Left Dislocation" is one result) and Focus Topicalization, which is related to Clefting. In Section 3.2 we will consider the processes by which adverbs and adverbial clauses are generated in sentence-initial position. Section 3.3 deals with other left-extraposed constituents. Section 3.4 is devoted to a discussion of preposing rules and the Verb Second principle, which is supported by the distinction between extraposition from S and preposing within S. Finally, in Section 3.5 we will briefly consider the source and structure of some postposed and end-extraposed phrases. Section 3.6 is a summary.

For the purposes of the discussion in this chapter, we may assume that the OBI convention applies at surface structure only, although nothing undesirable results if the convention is allowed to apply before as well as after the extraposition rules discussed here.

### 3.1. Topicalization.

For the purposes of the following discussion it will be necessary to distinguish the terms "topic," "theme," and "focus," following Muraki (1970: fn. 5, Ch. III). Any sentence-initial noun phrase (including the subject if it is in initial position) will be referred to as the topic of the sentence. Examples are the underlined phrases in (3).

(3) a. The others are all new here.

b. The others, you probably haven't met.

A topicalization rule is any rule that moves an NP into (sentence-initial) topic position; it may involve either left-extraposition from S or preposing within the sentence.

The focus (cf. Chomsky 1968b) is some surface structure constituent containing the sentence stress, which constitutes the new information of the sentence. Thus in sentence (4) the focus could be any of the phrases enclosed in brackets.

(4) [Mary [said [that Bill [has written [a new book  
[about marsupials]]]]]]

The portion of the sentence not included in the focus (called by Chomsky (1968b) the presupposition) is included in a proposition which is "presupposed" by the sentence in question. Thus,

depending on the scope of the focus, sentence (4) "presupposes" either nothing (if the whole sentence is included in the focus) or one of the following:

- (5) a. Mary did something.
- b. Mary said something.
- c. Mary said that Bill did something.
- d. Mary said that Bill has written something.
- e. Mary said that Bill has written a new book  
           (about something).

The theme (if any) of a sentence is a topicalized NP which originates in the "presupposition" rather than the focus. Thus if Bill is not included in the focus in (4) it may become the theme in sentence (6).

- (6) Bill, Mary said that he has written a new book about marsupials.

In this section we will distinguish two processes of topicalization. Theme topicalization as in (6) is a process of extraposition which Chomsky-adjoins the thematic NP to the left of the sentence so that it is followed by a PB. Focus topicalization, which will be illustrated in Section 3.1.2, moves an NP which is the focus of the sentence to initial position within the sentence so that there is no boundary following it.

### 3.1.1. Theme Topicalization.

The basic rule involved in Theme Topicalization is the copying rule which Ross (1967a:422), following Maurice Gross, calls Left Dislocation. This rule Chomsky-adjoins a copy of some NP to the left of the root sentence that dominates it. The

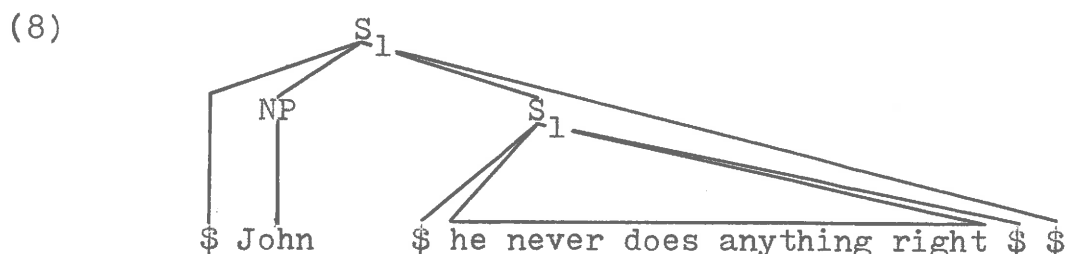


original NP is then pronominalized. Left Dislocation produces sentences such as those in (6) above and (7).

- (7) a. John, / he never does anything right.  
 b. That guy in the orange T-shirt, / do you know his name?  
 c. Me and Albert, / what would you do without us?  
 d. That pain in the left side of my right foot, / it and the swelling in my thumb are gone now.  
 e. Last night at three o'clock, / I was asleep then.

(Sentence (7e) shows that the dislocated phrase may be an adverbial.)

The surface structure of a sentence exhibiting Left Dislocation is roughly as in (8), which represents sentence (7a). Notice that the PB's assigned by the OBI convention correctly predict the phrasing.



The Chomsky-adjunction process, which is required in order to predict the phrasing by the OBI convention, is independently motivated in several ways. First, as Postal (1968:158a) has pointed out, everything after the copied NP is a constituent; what was an S is still an S. Muraki (1970: fn. 7, Ch. II) notes that the assumption of Chomsky adjunction in thematization accounts for the fact that themes in Japanese do not participate in Scrambling. Additional evidence is given by Muraki from considerations involving the scope of quantifiers. Finally,

Sanders and Tai (1970) require Chomsky adjunction in this rule in connection with their hypothesis that the occurrence of certain types of topicalization, conjunction reduction, and relativization in all of one set of languages and their absence in all of another set can be explained on the basis of a single constraint, the Immediate Dominance Condition, which is common to one group but not the other. The success of their hypothesis lends support to the claim that these processes involve Chomsky adjunction.

Every "dislocated" NP can be paraphrased by as for NP; phrasing and intonation remain the same.<sup>2</sup>

(9) As for John, / he never does anything right.  
This paraphrase strongly suggests the semantic function of the dislocated NP, which is to establish the theme of the following, predicative sentence.

It was claimed above that the theme represents a presupposed portion of the sentence; it cannot be the focus of the assertion. Consider the reading of the sentence John writes poetry on which it is presupposed that John writes something and it is asserted that it is poetry that he writes. Then (10) is an acceptable paraphrase of this sentence, but (11) is not.

(10) John, / he writes poetry.

(11) Poetry, / John writes it.

Notice that the dislocated phrase is always heavily stressed, although the portion of a sentence representing the presupposition normally does not receive sentence stress. This apparent paradox is explained as follows: the thematic NP

functions to introduce some NP as the theme in the prior context of the sentence proper, so that within the predicative sentence it may be presupposed and accordingly unstressed and pronominalized.

Under certain circumstances, the original NP is not just pronominalized but deleted, as in (12).

- (12) a. That book / I never managed to finish.  
 b. Some people / you just can't trust.  
 c. That John would hurt anyone / I can hardly believe.

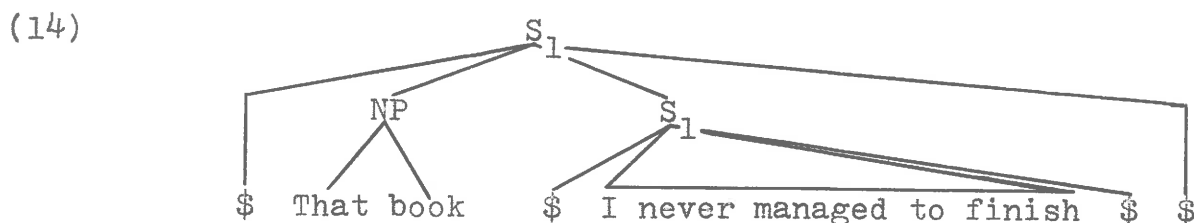
The sentences of (12) have the same phrasing and intonation as those in (7), and the extraposed NP's seem to have the same function of establishing the theme of the sentence.<sup>3</sup>

Despite these similarities, Ross (1967a:209) derives the sentences of (12) by a completely distinct "movement" or "chopping" transformation called Topicalization. Ross shows that the differences between what can be "topicalized" and what can be "dislocated" are due to a set of general constraints on movement rules which do not apply to copying rules such as Left Dislocation. Because of these constraints, which we need not discuss here, none of the sentences of (7) allow the pronominalized NP to be deleted.

Sanders and Tai (1970), however, have argued that the constraints Ross discovered can be considered to be constraints on the deletion of the pronominalized "original" NP in sentences resulting from Left Dislocation, rather than constraints on movement, so that only one rule is needed to extrapose thematic NP's. According to this analysis the stages in the derivation

of (12a) are as shown in (13), and the surface structure is essentially as shown in (14).

- (13) a. I never managed to finish that book.  
 b. (As for) that book, / I never managed to finish it.  
 c. That book, / I never managed to finish.



Whether or not the analysis of Sanders and Tai can be maintained, it is plausible that the extraposed NP's in (7) and (12) are transformationally related, which would account for the identity of function and intonation.

In Section 3.1.2, however, I will show that there are also "topicalized" sentences which cannot be derived by Theme Topicalization, i.e., which are not transformationally related to sentences exhibiting Left Dislocation.

### 3.1.2. Focus Topicalization.

Gerald Sanders has noted (personal communication) that while topicalized sentences with the original NP deleted may have the same intonation as sentences with dislocation, as the analysis of Sanders and Tai (1970) would predict, the range of possible intonations of the two constructions differ. Further, the intonations of topicalized sentences correlate with the questions they answer. Sentences exhibiting left dislocation and topicalized ("chopped") sentences with the same intonation

answer one range of questions; cleft sentences and topicalized sentences intoned like them answer a different range of questions.<sup>4</sup>

This last observation, in particular, suggests the proposal I am making here, that topicalized sentences (in which the original NP is deleted) are derived in two different ways. Some are related to Left Dislocation, as shown above. Other topicalized sentences are derived from cleft sentences.<sup>5</sup> The latter type, which differs in intonation from the first in predictable ways, I will refer to as Focus Topicalization.

We have already noted that the extraposed NP in Left Dislocation cannot be the focus of the sentence. This means that it cannot be the NP requested as the replacement for a WH-word in a preceding question. Thus (15b) cannot occur as the answer to the question (15a).

(15) a. What do you like to eat?

b. \*Fried eels, I like to eat them.

The extraposed NP can, however, repeat an NP mentioned in a preceding question, which becomes the theme of the response.

(16) a. What do you think of fried eels?

b. Fired eels, I like to eat them.

It can also refer to an item not previously mentioned, which is selected as the theme of the response in contrast with some previous or possible theme in the discourse.

(17) a. Do you know anything about snakes?

b. No, but eels, I like to eat them fried.

In each of the acceptable (b) sentences the preposed NP

serves the function of establishing the theme of the sentence, as noted above.

Corresponding to each of (16b) and (17b) there is a sentence ((18a) or (18b), respectively) with the same form (including the same intonation) but with the pronoun omitted.

(18) a. Fried eels, I like to eat.

b. No, but eels, I like to eat, fried.

These are the topicalized sentences resulting from Theme Topicalization. The sentence (18a), like (15b), is unacceptable in the context of (15a) unless its intonation is changed.

Before examining further the intonation of topicalized sentences, let us consider some properties of cleft sentences such as (19).

(19) It is fried eels that I like to eat.

In such a sentence the two elements focus and presupposition are sharply distinguished. The focus (the phrase representing the new information) is placed in predicate position, while the presupposition is represented by the following subordinate clause. The focus is given intonational prominence, while the following clause is pronounced on a sustained low pitch (unless contrasted). There is only one phonological phrase.

Consider now the acceptability of cleft sentences as answers to the questions (15a) - (17a) above.

(20) a. What do you like to eat?

b. It is fried eels that I like to eat.

(21) a. What do you think of fried eels?

b. \*It is fried eels that I like to eat.

(22) a. Do you know anything about snakes?

b. No, it is only eels that I am interested in.

We find, as anticipated, that the cleft sentence is acceptable where the question asks for a specific bit of information to be supplied, as in (20), but not when a comment is requested on some theme, as in (21). ((22) suggests that there is some possibility of overlap in less restricted contexts.) In other words, cleft sentences are acceptable as answers just where sentences with left dislocation (thematized sentences) are not allowed, and vice versa.

When we consider topicalization again, we find that topicalized sentences are acceptable in the same contexts as cleft sentences when the intonation is the same as the corresponding cleft sentence (a single phonological phrase, with sustained low pitch on the clause following the topicalized NP). These sentences, then, exhibit Focus Topicalization and can properly be derived from cleft sentences in the manner suggested by Ross (see footnote 5).

We may now illustrate the two types of topicalization as they occur in the question contexts cited above.

(23) a. What do you like to eat?

b. Fried eels I like to eat. (Focus Topicalization)

(Cf. It is fried eels that I like to eat. / Fried eels.)

(24) a. What do you think of fried eels?

b. Fried eels, I like to eat. (Theme Topicalization)

(Cf. Fried eels, I like to eat them. / I like to eat them.)

If Focus Topicalization is derived from cleft sentences

and Theme Topicalization is derived from sentences with left dislocation, then whatever determines the phrasing and intonation in the original forms will give the same intonation in the derived forms.<sup>6</sup> (There will, of course, be many sentences of both basic types which will not meet the structural descriptions for the relevant transformations and will thus have no "topicalized" paraphrase.) Those sentences exhibiting Focus Topicalization, like the cleft sentences from which they derive, contain only a single phonological phrase, while those with Theme Topicalization will have a PB following the extraposed NP, as predicted by the hypothesis that the theme is outside of the predicative sentence.

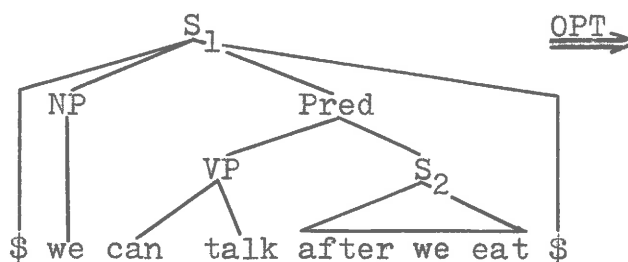
### 3.2. Left-extraposed Adverbials.

It is assumed that the basic, underlying position of an adverbial clause in an English sentence is as a constituent of Pred or VP, to the right of the main verb and its objects, if any. In this position an adverbial clause will not be set off by a PB on the basis of the OBI convention (cf. (21a), below).<sup>7</sup> Sentence-initial adverbial clauses are assumed to be derived by a transformational rule called Adverb Preposing (cf. Ross 1967a: 309). Ross assumes that this rule does not involve Chomsky adjunction, but that the adverbial is sister-adjoined at the front of the sentence. But, as we shall see below, other rules that prepose or postpose any element within the clause do not create structures that receive an obligatory pause. Initial adverbial clauses, on the other hand, are followed by a pause, like the

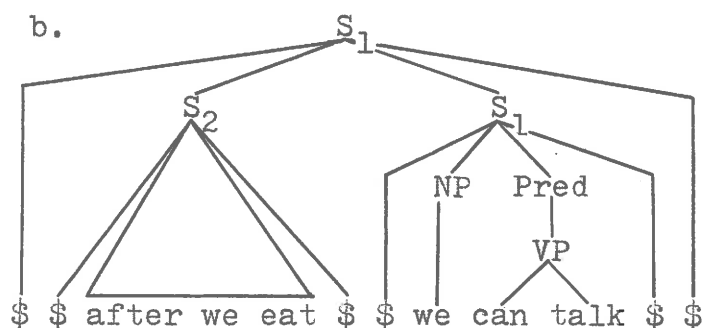


topicalized NP's discussed above.<sup>8</sup> These facts suggest that the adverb-fronting rule Chomsky-adjoins the adverbial to the predicative sentence as shown in (25b). The rule is thus a rule of left extraposition.

(25) a.



b.



Notice that after being Chomsky-adjoined to the predicative sentence the adverbial clause meets the definition of a root sentence, so that it is assigned PB's by the OBI convention. But as with the topicalized NP's discussed above, extraposed adverbials which are not sentences will also be set off by pause, because of the PB at the beginning of the predicative sentence. Thus pauses occur in the following sentences containing initial reduced adverbial clauses, prepositional phrases, and adverbs.<sup>9</sup>

(26) a. While sleeping / I heard the phone ring.

b. When empty / the container weighs 14 ounces.

c. Empty / the container weighs 14 ounces.

d. In the afternoon / everyone went swimming.

e. Tonight / I want to relax at home.

It was noted above that the topicalization rules can also apply to adverbials. For example, (27) may result from Theme Topicalization and (28) may result from Focus Topicalization.

(27) (As for) tonight / I want to relax at home (then).

(28) (It is) tonight (that) I want to relax at home.

Yet the Topicalization and Adverb Fronting rules cannot be collapsed. First of all, Ross (1967a:308) has claimed that the intonation is different in that initial adverbs do not receive strong stress as topics do. More significantly, however, he shows that while Topicalization always moves the topic out of a root sentence, no matter how deeply embedded it was originally, the Adverb Fronting rule is upward bounded, i.e., it does not always move the adverbial out of a root sentence, but only moves it in such a way that it is still dominated by the same next-highest sentence node.<sup>10</sup>

Consider the following two sentences. In (29) the adverbial is topicalized out of the complement sentence. In (30) the same adverbial is moved only to the front of the next highest sentence by the rule of Adverb Fronting.

(29) Tomorrow / I promised that he would be there.

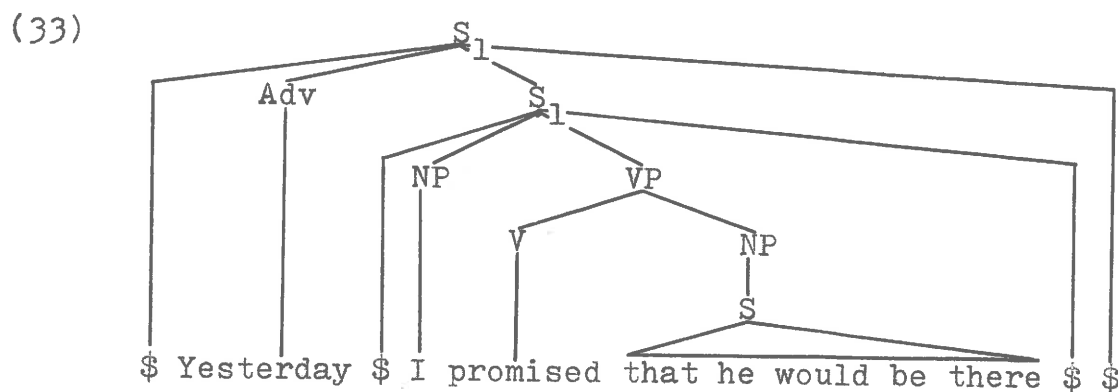
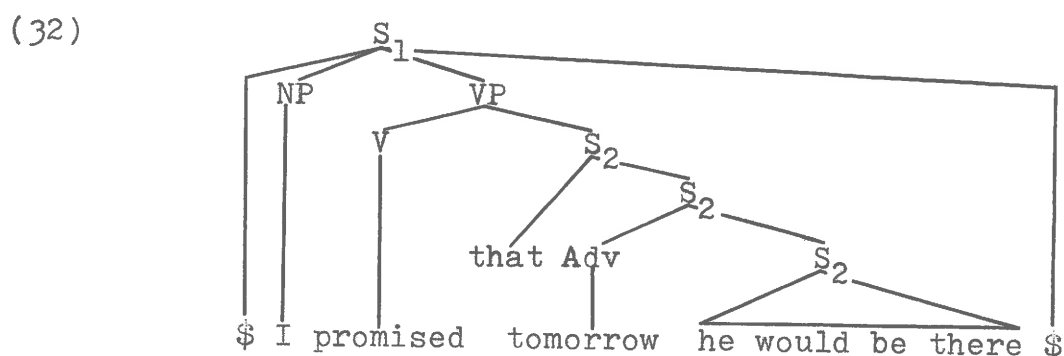
(30) I promised that tomorrow he would be there.

Sentence (25) is unambiguous because tomorrow can only belong to the complement sentence. Sentence (31), like (26e), has two readings, even though in both cases the adverbial comes from the higher sentence. If yesterday has heavy stress, it is the topic; if the intonation is "normal," then the position of yesterday

results from Adverb Fronting.

(31) Yesterday / I promised that he will be there.

Notice that the application of Adverb Fronting in embedded sentences, as in (30), provides evidence for the OBI convention, in that the adverb here is not set off by pause although when the same rule is applied to adverbs in root sentences the adverb forms a separate phonological phrase. The surface structures assigned to (30) and (31), shown in (32) and (33) below respectively, show how the placement of PB's by the OBI convention accounts for this phrasing.



The following pairs show that the same difference in phrasing is found when adverbial clauses occur at the front of root and non-root sentences.

(34) a. If you go to that meeting, / you may be arrested.

b. I wonder if you are aware of the fact that if you go to that meeting you may be arrested.

- (35) a. Because they went to the meeting, / they were arrested.  
 b. If because they went to that meeting they were arrested, / the situation is worse than we thought.

Again, it is irrelevant that pauses may optionally be introduced before and after the embedded adverbial clauses in these examples; the point is that pause is obligatory only in the cases where an adverbial is moved out of a root sentence.

Participial phrases sometimes paraphrase adverbial phrases or clauses, and are presumably derived from the same underlying structure. The phrasing of participials is the same as for adverbials.

- (36) a. When he had finished this task, / he locked up and went home.  
 b. Having finished this task, / he locked up and went home.
- (37) a. In a state of utter exhaustion / he at last sat down.  
 b. Utterly exhausted / he at last sat down.
- (38) a. Since you are an old friend of the family / you have a right to know.  
 b. Being an old friend of the family / you have a right to know.

Some participial phrases, however, do not paraphrase adverbials; instead they appear to be derived by the reduction of one member of a conjunction of sentences:

- (39) a. Then John turned to me / and (he) remarked how hot it was.  
 b. Turning to me / John remarked how hot it was.

Finally, there are a few idiomatic expressions in participial form which cannot be derived from sentences:

- (40) Speaking of robots / have you heard this one?

In the next section, we will discuss some adverbial phrases which, along with some other kinds of initial phrases, are not extraposed from predicative sentences by transformational rules but are derived by reduction of structures generated in initial position by the base rules.

### 3.3. Initial Phrases from Matrix Reduction.

Certain "sentence adverbials," vocative phrases, and interjections of various sorts occur in initial position followed by obligatory pause. In each case the following phonological phrase is a syntactic constituent, a root sentence. I will argue here that all of these initial phrases are generated by the base rules outside of the following predicative sentence.

#### 3.3.1. Sentence Adverbials.

A number of so-called "sentence adverbials" have the function of relating a predicative sentence to some previous sentence in a discourse. Most of these can occur initially, in separate phonological phrases, although they often occur in other positions (as we will note later) as well.

(41) Yes / I believe you are right.

(42) In fact / you seem to have put on some weight.

(43) Nevertheless / they wanted you to know.

It is possible in some cases to find sentential paraphrases for these sentence adverbials (e.g., despite the fact that X for nevertheless). But no regular derivational processes can be shown to relate sentence adverbials as a class to adver-

bial clauses or to independent sentences. Furthermore, whatever the structure of the sentence adverbial may be, there is no evidence that it is derived by extraposition from the following predicative sentence, an independent root sentence.

It seems reasonable to assume on the basis of meaning and intonation that these sentence adverbials are generated as sisters to the following main clause, and that they are present in sentence initial position in the base. Perhaps, as substitutes for sentential predications, they should be assigned their own boundaries, like root sentences, by a modification of the OBI convention. (We will see some evidence for this in the next chapter.) At any rate the initial PB assigned to the following sentence will insure the phraseological independence of sentence adverbials in initial position.<sup>11</sup>

### 3.3.2. Vocative Noun Phrases.

A noun phrase used as a vocative expression is always set off by pause from the rest of the sentence, although in sentence-final position the phrasing may be indistinct because the vocative is included in the cadence following the sentence stress. We are concerned here only with vocatives in initial position, which seems intuitively to be basic--the vocative is an attention-getting device, and a greater variety of intonation is allowed in initial position.

I have argued elsewhere (Downing 1969) that the second-person reference of vocative expressions may be explained by a coreferentiality constraint between the vocative and the indirect

object of a performative verb, which is obligatorily second-person.<sup>12</sup> Since a vocative can occur with any root sentence, this requires that all sentences contain a performative matrix in deep structure, which may be deleted by a late transformational rule. Sentence (44a) contains a vocative following an explicit performative matrix; in (44b) the performative sentence has been deleted.

(44) a. I tell you, / Doris, / I want my ring back.

b. Doris, / I want my ring back.

A vocative NP cannot occur as part of an indirect quotation; when it occurs medially in a sentence it still refers to the 'person spoken to' of the highest sentence.

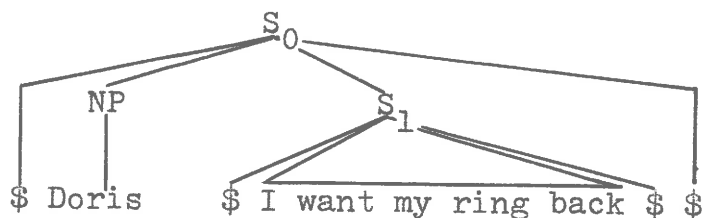
(45) \*I told her, / Doris, / to give my ring back.

(46) I'm telling you for the last time, / you guys, /  
that I don't want you touching my Wham-O.

It appears, therefore, that the vocative NP should be generated by the base rules as a constituent of the performative "highest sentence." The fact that vocatives cannot be related to embedded sentences would then be a result of the general constraint on embedding performative sentences.

If the performative S node dominating the vocative NP and the complement S (which becomes the main clause) is not deleted when the abstract I [performative verb] you is deleted, the resulting structure will be as in (47), so that the phraseological independence of the vocative in initial position is predicted.

(47)



There is no evidence that vocative NP's are derived by reduction of sentences, to which the OBI convention would automatically assign a pair of boundaries. In Chapter IV, however, evidence will be presented indicating that the OBI convention should be extended to assign boundaries as constituents of vocative phrases.

### 3.3.3. Interjections.

Interjections make up a third class of expressions which occur as separate phonological phrases at the beginning of sentences and which do not appear to be generated by movement from within the following predicative sentence.

Interjections share an attention-getting function with vocatives, but they are not referential, and they are seldom NP's. When interjections occur with vocatives and sentence adverbials, the interjection comes first. Since, furthermore, interjections often have separate, terminal intonation and they frequently occur in isolation, it is questionable whether they should be considered part of a following sentence at all. The following examples indicate the phrasing of interjections.

(48) Damn! / I wish I could go with you!

(49) Well / John / tomorrow / the kids are coming back from Grandma's.

(50) Heavens! / It has started to rain.



If the initial phrase structure rule of the grammar includes the option  $S \rightarrow \text{Interjection}$ , then the separate phrasing of interjections, and the fact that they do not occur within predicative sentences, would be explained. The interjection would be an independent root sentence.

However, certain interjections often occur in the same phonological phrase with vocatives.

(51) Oh Henry / come here a minute / will you?

(52) Well John / it's good to see you.

To account for this one might propose a rule that would include interjections as constituents with NP of a Vocative constituent, or one might suggest that a phonological rule deletes the PB following certain interjections (cf. footnote 9 above). Since any solution one might choose would appear to be arbitrary and will not affect the correctness of the OBI convention in its application to other cases, I will not attempt to settle the matter of the surface structure of interjections here.

### 3.4. Preposing Rules, Topicalization, and Verb Second.

#### 3.4.1. Preposing Rules.

It is by no means the case that all elements that are moved to the front of a sentence transformationally are separated by a pause from the rest of the sentence. The following processes do not form separate phrases and thus presumably do not involve Chomsky adjunction.

1. Question formation. Neither the preposed WH-word of

WH-questions, nor the auxiliary moved forward by subject-auxiliary inversion in yes-no questions, forms a separate phonological phrase.

(53) What time do you think they will get here?

(54) Do you think they will get here on time?

Ross (1967a:375) says in a footnote (fn. 8) that he assumes the questioned constituent to be "Chomsky-adjoined to the sentence headed by Q." This assumption is not explicitly motivated, however, and it conflicts with intuitions of constituency as well as with the principle of phrasing proposed here. I will therefore assume, as in most other analyses, that the questioned constituent is sister-adjoined within the S.

2. Negated Constituent Preposing. This is another transformation which, like WH-fronting, triggers subject-auxiliary inversion. Sentences (55) and (56) illustrate this construction.

(55) a. I have never known such a bore.  $\Rightarrow$

b. Never have I known such a bore.

(56) Only rarely will any of them help.

Emonds (1969:9b) contrasts the following two sentences.

(57) a. In not many years will Christmas fall on Sunday.

b. In not many years / Christmas will fall on Sunday.

Sentence (57a) results from Negated Constituent Preposing and subject-auxiliary inversion; (57b) results from the Adverb Fronting rule discussed above. Only the latter rule moves the adverbial out of its S so that when applied to root sentences a PB follows. Negated Constituent Preposing, unlike Adverb Fronting,

applies only in root sentences.

3. There are various other types of inversion, some purely literary. These are best illustrated by a few examples.

(58) Many are the times I've wished I were an anteater.

(59) Gone are the days when my heart was young and gay.

(60) Up went the kite. (Directional Adverb Preposing)

(61) Long live the king!

In each case the rule applies only in root sentences and a verbal element (in (58) and (59) the copula, and in (60) and (61) the finite verb) immediately follows the preposed constituent, without pause.

#### 3.4.2. Root Transformations and Topicalization.

To summarize briefly, we have noted thus far in this chapter two general types of rules that move a constituent leftward to the front of a sentence. The first type extraposes the constituent from the source sentence. When applied to a root sentence a PB follows the extraposed constituent. The second type applies only in root sentences and moves a constituent to the front within a predicative sentence so that no pause follows. In every case this latter type of transformation produces a structure which triggers subject-auxiliary inversion or subject-finite verb inversion, so that a verbal element follows the preposed constituent in the surface structure.

The rules belonging to these two types are as follows.

##### I. Rules involving left-extraposition from S.

###### 1. Focus Topicalization (including Left Dislocation)

2. Adverb Fronting (in root sentences)

II. Preposing rules.

1. WH-fronting

2. Negated Constituent Preposing

3. Directional Adverb Preposing

(The derivation of Focus Topicalization from cleft sentences is not included here, since it does not involve movement.)

All of the transformations listed above fall into the class that Emonds (1969:5) calls root transformations:

A root transformation is one in which any constituents moved are immediately dominated by a root in the derived structure.

Emonds points out (p. 34) that root transformations "are clearly a general preposing device which has in some cases the secondary effect of reordering the subject and the verb which carries TENSE in the surface structure."

In general, as Emonds notes, only one of these transformations may apply in a given sentence. We have defined the topic of the sentence as the first (generally non-verbal) constituent of the sentence. If the root transformations are thought of as alternative processes of topicalization, the fact that only one of them can apply in a given sentence is explained, since each sentence can have only one topic.

Furthermore, assuming that the notion "topic" is defined for predicative root sentences ("main clauses") only, we find an explanation for the fact that root sentences allow preposing, and conversely for the fact that the preposing rules are root transformations.<sup>13</sup> Those sentence-initial constituents which do not

result from movement rules but originate outside of the main predicative sentence--vocatives, interjections, and sentence adverbials--seem intuitively not to be topics; all perform special pragmatic functions in discourse, outside of the conceptual structure of the sentence.

### 3.4.3. The Verb Second Principle.

The division of topicalizing rules into two classes, those that specify Chomsky adjunction and those that do not, which was proposed to account for the phonological phrasing, also suggests a reanalysis of the rule of Subject-Aux Inversion (and Subject-Finite Verb Inversion). The traditional analysis asserts that subject-auxiliary inversion is triggered by the presence before the subject of any of a class of elements which have been called, following Klima (1964), "affectives." As George Lakoff (1969:62) has pointed out, these have no known semantic property in common; what they share is simply their power to trigger Subject-Aux Inversion (and perhaps also the some-any alternation). This class includes WH-words, negative words, only, than, and perhaps a few other formatives. Literary and archaic styles permit a number of other kinds of elements to be preposed which also trigger Subject-Aux Inversion (Many are the times . . . ; Gone are the days . . . ; A wonderful bird is the pelican; Oft have I traveled . . . ). These seem to have no more in common than the fact that they can all be preposed within root sentences, though apparently not all by the same rule.

A more plausible explanation for the fact that they all

cause the tense-bearing auxiliary to move to the position before the subject is the apparent conspiracy to keep the tense-bearing verbal element in second position within the immediately dominating S. The conspiracy is joined by the rules that insert the "expletive" formatives it and there in case the subject is moved to a position following the verb. In general, only those preposed elements which are obligatorily followed by a phonological phrase boundary (and according to the hypothesis developed here are extraposed from the immediate S) do not count in determining the secondary position of the tense-bearing verbal element.

The following sentences illustrates the ordering discussed above.

- (62) a. John will never drink coffee after supper.  
 b. When does John drink coffee?  
 c. Never will John drink coffee after supper.  
 d. Here comes the fellow I was telling you about.  
 e. There is a fellow I know who can't drink coffee after supper.  
 f. It is not unusual for coffee to keep people awake.  
 g. Coffee, / John will never drink (it) after supper.  
 h. After supper, / John will never drink coffee.

What exceptions are there to the principle that the tense-bearing verbal element is the second immediate constituent of its S?

The tense-bearing verb is third in order following a PB when the first constituent is a coordinating or subordinating conjunction (and, but, when, that, etc.). It has often been

suggested that these elements are Chomsky-adjoined to the S node (cf. Ch. II, fn. 8). But unlike other Chomsky-adjoined elements, they are never followed by a PB. To maintain the Verb Second principle in conjoined sentences we would have to accept the proposal that conjunctions are Chomsky-adjoined to conjunct sentences, and then provide a phonological rule to remove the PB following the conjunct. We have already noted that a rule of this kind seems necessary to eliminate PB's following certain other unstressed or weakly-stressed formatives--some adverbs and some interjections. The exclusion of conjunctions from predicative sentences has the result of simplifying the structural descriptions of some transformational rules, in particular the preposing rules. Thus the weight of evidence argues for the analysis which supports the Verb Second principle but requires the deletion of "obligatory" PB's that set off weakly stressed formatives.

The tense-bearing verb also comes in third position within the phonological phrase when the first element is one of the adverbs now, then, later, etc., mentioned above, which are not always set off by a pause. These adverbs are usually unstressed, but when stressed they are phraseologically independent. The simplest analysis then appears to be the one suggested above: to attach all adverbs by Chomsky adjunction, so that a PB is inserted, and then to delete the boundary after unstressed initial formatives. Given this analysis, the verb, though it is the third major category within the phonological phrase, is the second stressed formative.

Finally, the tense-bearing verb comes third within the

predicative sentence when preceded by one of the so-called pre-verbal adverbs. These adverbs normally follow the copula and the first member of the auxiliary, if any; under certain conditions of stress, however, they may precede even the first member of the auxiliary. When there is no auxiliary, the adverb precedes the tense-bearing main verb.

- (63) a. Ann never found her pen.
- b. Ann didn't ever find her pen.
- c. Ann might never have found her pen.
- (64) a. John can usually think of something.
- b. John usually can think of something.
- (65) a. His jokes are sometimes pretty funny.
- b. His jokes can sometimes be pretty funny.
- c. His jokes often are tiresome.

The order of (63a) can be reconciled with the Verb Second principle only if it is assumed that an abstract tense-bearing element dominated by the Aux node is present before the adverb at the time the principle applies, and subsequently deleted (with tense reassigned to the main verb). This element would correspond to the formative do, realized in this position under emphasis and preceding Neg. The word order in the emphatic sentences (64b) and (65c) is perhaps more difficult to explain. To reconcile this ordering with the Verb Second principle, it is necessary to assume that the movement rule placing the adverb before the tense-bearing element is ordered after the Verb Second principle. But this would apparently be the only movement rule that must be ordered after the principle applies, and this ordering is not



independently motivated.

The verb comes first rather than second in yes-no questions and imperatives. It is now well established that yes-no questions contain an initial formative whether at some stage in their derivation (cf. Langacker 1969b), and Whether Deletion can be a very late (postcyclic) rule. To account for yes-no questions, then, it is only necessary to assume that the verb-second principle applies prior to the late rule of Whether Deletion.

Imperative sentences are generally considered to contain a subject you in initial position which is (optionally) deleted. But there are a number of difficulties in justifying verb-second order for imperatives. It has been argued, with some reservations (cf. Downing 1969), that you is deleted from imperatives by the rule of Equi-NP Deletion. This is a cyclic rule and thus not a very late rule like Whether Deletion. Furthermore, negative imperatives containing the subject you exhibit subject-auxiliary inversion (Don't you hit me), although there is no known underlying initial element to trigger it. (Early Modern English also had inversion in non-negative imperatives: Get you home; Do you be here when I return.) In addition, there is the so-called first-person imperative (Let's go) which contains an apparently verbal element in first position. The exceptional nature of imperatives suggests that they be excluded from the verb-second principle altogether.

One instance of verb-initial order is found in sentence-initial adverbial clauses. This is the alternate Had I known, etc., for subjunctive conditionals like If I had known. This

appears to be a special inversion rule with deletion of if, and it again can be a very late rule.

We should also mention here the optional inversion of subject and finite verb when the matrix sentence governing direct quotations is placed in parenthetical and final positions. This inversion has the distinction of occurring in some substandard dialects (sez I) and in literary prose, but not in standard colloquial English. Emonds (1969:12) argues that it follows the general pattern of placing the verb in second position. But he ignores here the principle he explicitly acknowledges elsewhere, namely, that initial constituents that are set off by a comma or pause do not trigger inversion.

This optional inversion is exceptional in another way also; it applies only when the inverted verb is the one governing the quote as complement and when this verb is not itself the complement of another verb. Compare the following sentences:

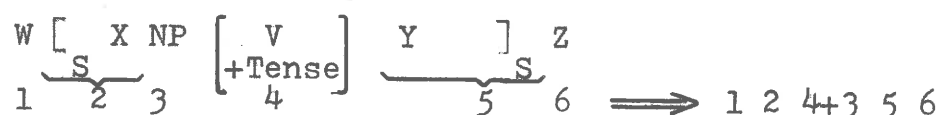
- (66) a. What do you think she said?  
       b. "We could," said she, "take a cab."  
       c. \*"We could," think I she said, "take a cab."  
       d. "We could," I think she said, "take a cab."  
       e. \*"We could," I think said she, "take a cab."

It is obvious that this particular type of inversion cannot be predicted by the rule that applies in other cases. Since it is not a rule of the dialect discussed here, no attempt will be made here to account for it.

Assuming that the evidence has been adequately surveyed, we must conclude that the verb-second principle has very few

exceptions in standard colloquial English, nearly all of which can be handled in a straightforward way. It is possible therefore to replace the rule of Subject-Aux Inversion, with its reference to a disjoint set of triggering elements, by a (near) surface structure ordering principle which refers only to the linear order of constituents:

(67) Verb Second



- Conditions:
- 1) S is a root sentence
  - 2) S immediately dominates NP
  - 3) X is a single constituent immediately dominated by S
  - 4) W, Y, and Z may be null

The constituent designated as [V, +Tense] above must be [+Aux] in most environments (What did he do?, etc.), but [-Aux] in others (Here comes the bus). The latter environments, however, are just those in which Aux is not permitted by the preposing rule (The bus can come here  $\implies$  \*Here can come the bus, \*Here the bus can come, \*Here can the bus come). Thus the distinction between Subject-Aux Inversion and Subject-Finite Verb Inversion need not be stated in the Verb Second principle.<sup>14</sup>

The claim that some fronting or topicalization rules involve Chomsky adjunction, while others do not, provides a natural explanation for the phrasing. We have noted above that at least in the case of Left Dislocation this claim receives independent syntactic support. The considerations in this section

show that this claim makes possible the formulation of the Verb Second principle. Thus we find that the OBI convention and the Verb Second principle are mutually supporting.

### 3.5. Postposing Rules and End-extraposed Elements.

In this section we will first consider three upward-bounded rules which postpose constituents within the next higher sentence. We will then briefly note a number of constructions in which sentence-final elements attached to root sentences occur as separate phonological phrases. It will be shown that the phrasing in all these cases is at least consistent, given the OBI convention, with what is known of their syntactic surface structure.

#### 3.5.1. Postposing Rules.

There are at least three rules that postpose NP's or embedded S's to the end of the next higher sentence. As predicted by the OBI convention, none of the postposed elements are separate phonological phrases. The three rules of this type that I am aware of are It-Extraposition, Extraposition from NP, and (Complex) NP Shift, all of which are discussed in Ross (1967a). The approximate input and output of these rules is indicated by (68) to (70).

(68) a. (It) that the country is in trouble is obvious.

b. It is obvious that the country is in trouble.

(69) a. The man who wants to buy the Merc called again.

b. The man called again who wants to buy the Merc.

(70) a. I put only the papers you never refer to in the trunk.

b. I put in the trunk only the papers you never refer to.  
Each of these rules is upward bounded (cf. Ross 1967a:268ff.),  
i.e., in each case the element moved is reattached within the  
next higher S. This can be shown in sentences where the rule  
applies within embedded S's.

(71) a. I remarked [that (it) that the country is in trouble  
is obvious] yesterday.

b. \*I remarked that it is obvious yesterday that the  
country is in trouble.

c. I remarked that it is obvious that the country is  
in trouble yesterday.

(72) a. The fact [that the man who wants to buy the Merc  
called again] is hard to understand.

b. \*The fact that the man called again is hard to  
understand who wants to buy the Merc.

c. The fact that the man called again who wants to buy  
the Merc is hard to understand.

(73) a. I hope the fact [that I put only the papers you  
never refer to in the trunk] will please you.

b. \*I hope the fact that I put in the trunk will please  
you only the papers you never refer to.

c. I hope the fact that I put in the trunk only the  
papers you never refer to will please you.

The common assumption (cf. Ross 1967a) that the elements moved  
are adjoined as daughters of S or VP, rather than Chomsky-adjoined  
to S, is consistent with the assumptions here about phrasing, i.e.,  
if Chomsky-adjoined to a root S the moved element would receive  
separate phrasing.<sup>15</sup>

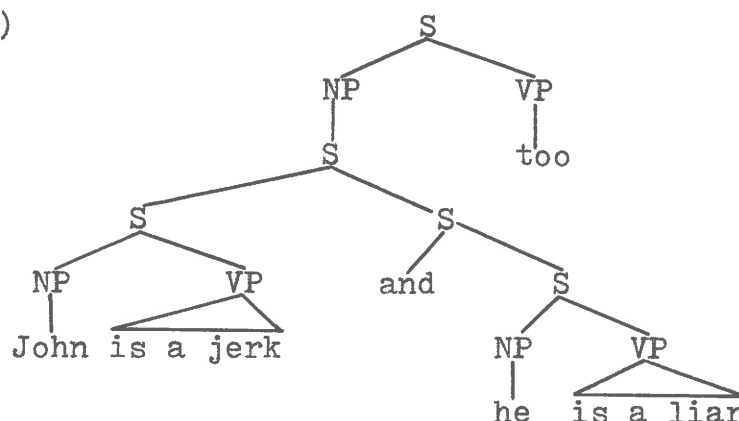
### 3.5.2. End-extraposed Elements.

### 3.5.2.1. Conjunction Tags: Too, Either, and Also.

In the only study of the syntax of too and either of which I am aware, Green (1968) argues that these formatives represent deep structure predicates with a reading like 'reciprocally relevant' which take an "emphatic coordinate conjunction" as their arguments. She assigns the sentence (74) the surface structure (75), in which too also appears as a predicate.

(74) John is a jerk, / and he is a liar, / too.

(75)



Green comments (1968:23-24):

The status of too and either as predicates in the derived constituent structure [(75)] accounts for the fact that they receive a clause intonation separate from that of the preceding clause.

Apart from the fact that one would expect clauses rather than VP's to receive clause intonation, the analysis of too as a surface predicate presents many problems. For example, one would expect either inflection for agreement, if too is a verb, or the appearance of a copula, if it is not. Intuitively, too appears to be an adverbial, and this feeling is supported by the fact that too resembles a number of other adverbials in meaning and in phrasing. I consider the following sentences to be para-

phrases.

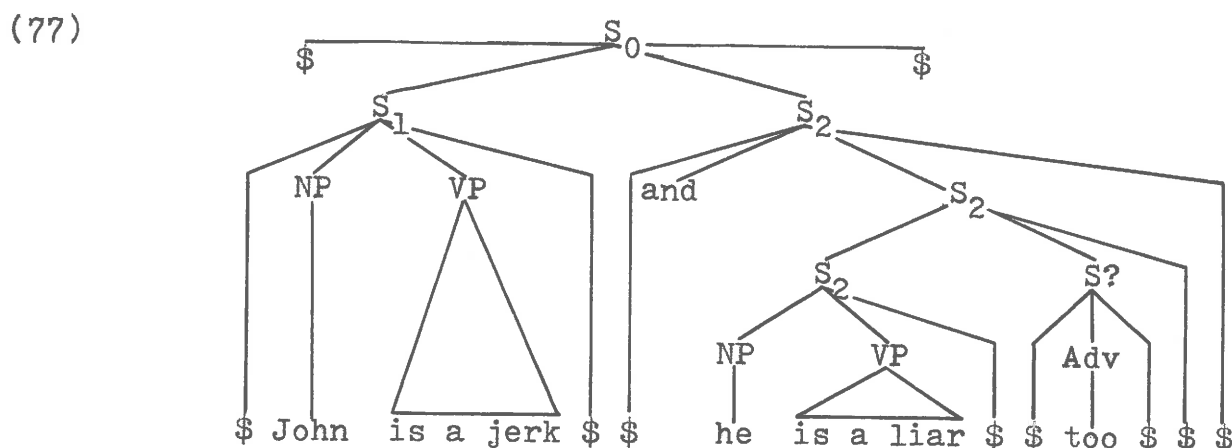
(76) a. ?John is a jerk, and just as John is a jerk,  
Tom is a jerk.

b. John is a jerk, and  $\left\{ \begin{array}{l} \text{just like John,} \\ \text{?just so,} \\ \text{likewise,} \\ \text{similarly,} \end{array} \right\}$  Tom is a jerk.

c. John is a jerk, and Tom is a jerk,  $\left\{ \begin{array}{l} \text{just as John is} \\ \text{just like John} \\ \text{likewise} \\ \text{as well} \end{array} \right\}$ .

d. John is a jerk, and Tom (is a jerk),  $\left\{ \begin{array}{l} \text{also} \\ \text{too} \end{array} \right\}$ .

Sentences like (76a) are redundant; reduction of the adverbial clause is obligatory if the proposition it expresses is already present in a previous sentence. The final adverbial clause just as John is in (76c) is set off by a pause, and thus presumably Chomsky-adjoined to the predicative sentence. If the tags too, also, and either are derived as pro-forms of extraposed adverbial clauses, then the fact that they receive "clause intonation" is a natural consequence.<sup>16</sup> (We will see evidence below that S nodes dominating reduced sentences are not "pruned" if they dominate PB's. But even if there is no S node above the adverb too, its extraposed position will predict the correct phrasing.) I would suggest, then, that the derived structure of (74) is approximately as shown in (77).



As predicted by the present phrasing hypothesis, no pause occurs before too when it is attached to embedded, non-root sentences:

- (78) The fact that Tom is a jerk too (/) doesn't make him a liar.

### 3.5.2.2. Conjunction Tags: Respectively.

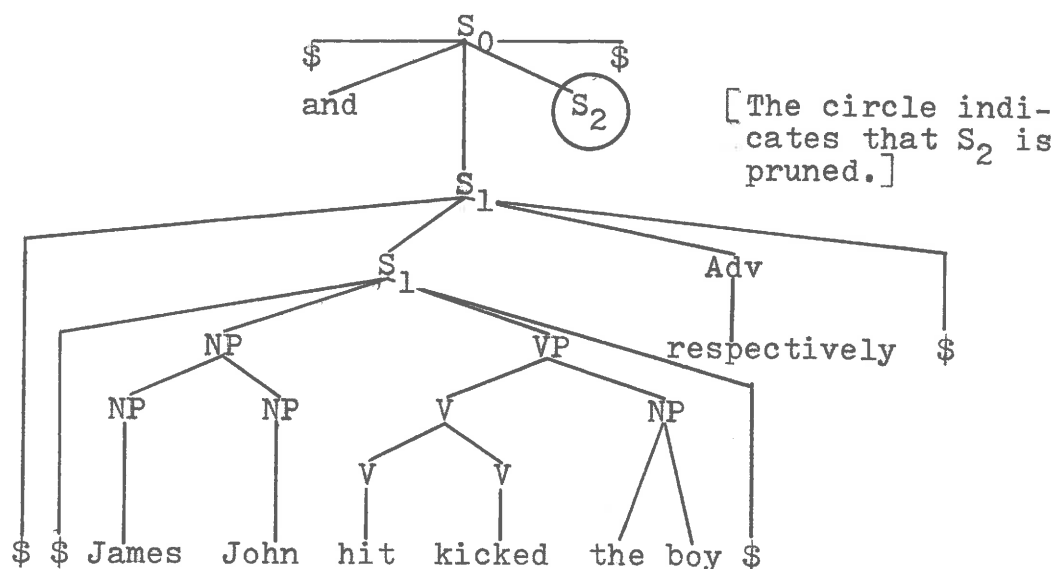
Respectively is a "sentence adverb" added to a reduced conjunction in case the process of conjunction reduction (see Chapter V) has removed all constituents of the second (and later) conjuncts, and the rule of Regrouping has applied to at least two pairs of corresponding constituents. There is no reason to believe that respectively is represented in any way in deep structure; its function is clearly to prevent ambiguity in surface structures derived by multiple applications of coordination reduction.

We can assume that respectively is attached to the remaining sentence conjunct by Chomsky adjunction, like other extraposed adverbials, so that the derived structure of (79) is approximately as in (80), prior to Conjunction Spreading.

- (79) James and John hit and kicked the boy / respectively.



(80)



If respectively has the same position in derived structure as other "detached" sentence adverbials, then it can be moved to the other positions in which it occurs (as Preverbal Adverb, adverbial modifier in an NP, and prenominal adjective) by rules that are required anyway to account for the distribution of other adverbs.

The structure assigned in (80) is supported by intuitions of constituency. Respectively cannot be a constituent of the preceding NP or VP; it is related to the whole of S<sub>1</sub>. Yet the predicative sentence must be considered a sentence constituent independent of respectively. A surface structure derived by Chomsky adjunction conforms to these intuitions.

### 3.5.2.3. Interrogative Tags.

Tag questions are reduced alternative (yes-no) questions appended to root sentences that are statements or requests. The tag on a statement commonly requests confirmation of the truth of the assertion,<sup>17</sup> and the tag on a request asks for confirmation

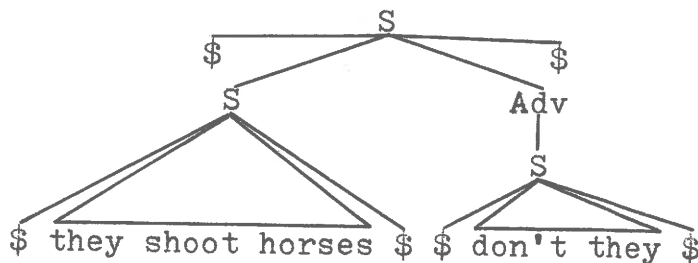
that the request will be carried out (although the action itself may substitute for a verbal reply). Tags on statements have opposite polarity from that of the statement; tags on requests are normally affirmative, and are more polite when negative.

- (81) a. They shoot horses, / don't they?  
       b. You aren't going to leave me, / are you?
- (82) a. Close the door, / will you?  
       b. Don't tell anybody, / will you?  
       c. Do be careful, / won't you?

No thorough and satisfying generative analysis of tag questions is yet available, and limitations of space preclude the attempt to develop one here. Those analyses which have been suggested, however, are all consistent with the claims about phrasing which are our principal concern here.

Stockwell et al. (1968:647-49) suggest two possible analyses for tag questions, one in which tags are generated in the base as alternative questions and a second "copying" analysis. There are difficulties with both analyses, as the authors point out, but either produces the following plausible surface structure.

(83)



### 3.6. Summary.

In this chapter we have examined a number of syntactic processes which move constituents to the beginning or to the end of sentences. In those cases where syntactic evidence indicates that the element moved is extraposed from a root sentence, pause occurs as predicted by the OBI convention. In cases where syntactic evidence indicates that the movement takes place entirely within predicative root sentences, no pause occurs. Where no syntactic evidence is available it is at least possible to assign surface structures that are consistent with the general principles of obligatory phrasing. The distinction between left-extraposition and preposing makes possible the formulation of the Verb Second principle, which says that the tense-bearing verbal element is the second major constituent of all predicative root sentences.

In Chapter IV we will examine a number of processes which move a constituent into a predicative root sentence from outside. To explain the separate phrasing of such parenthetical and appositive constituents, it will be necessary to assign PB's by the OBI convention before the embedding rules apply.

### NOTES TO CHAPTER III

1. "Chomsky adjunction" is the name given by Ross (1967a:260) to the process of adjunction in which a constituent X is adjoined to a constituent Y by creating a new node with the

same label as Y above the original Y and attaching X as a daughter of the new Y node.

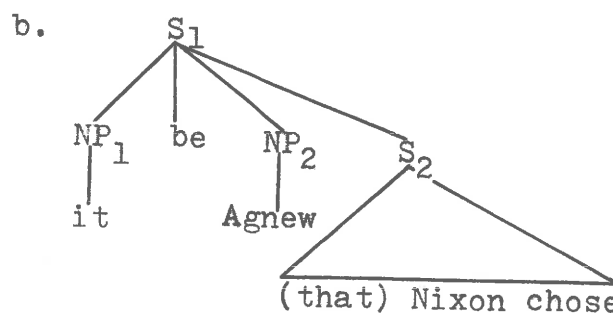
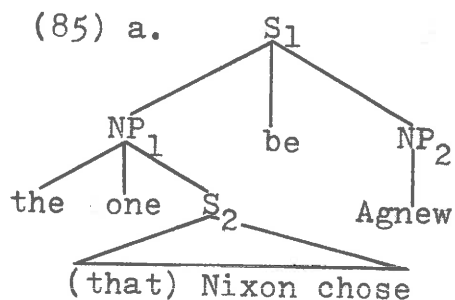
2. In colloquial speech, especially children's speech, the theme is often expressed in the form of a question, thus:

(84) Daddy / you know Bobby Jones? / Well he got kicked out of school today.

3. Halliday (1967:21) makes the following observation with regard to this construction:

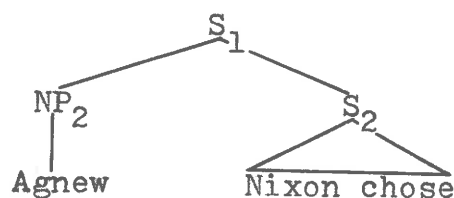
Lexical adjuncts and complements in thematic position are particularly likely to carry a separate tone group: they are already marked by sequence, being away from their neutral position after the predicator, so that with marked tonality [phraseological independence] their thematic status is further reinforced.

4. I am grateful to Jeanette Gundel for pointing this fact out to me. Cf. Gundel (MS).
5. Ross (1967a:311; cf. also p. 394) considers the possibility that all topicalized sentences are derived from cleft sentences (by deletion of it + be . . . that), rather than by the rule of Topicalization which he finally proposes. He discards this possibility for lack of independent motivation.
6. In the most recent published analysis of cleft sentences, Akmajian (1970:149) proposes to derive cleft sentences from pseudo-cleft sentences by an upward-bounded postposing rule which, for example, would convert (85a) into (85b).



The process of Focus Topicalization proposed here would convert (85b) into (85c).

(85) c.



This configuration is identical with that resulting from Chomsky adjunction in Theme Topicalization. Consequently the same phrasing would be predicted for the two types of topicalization under this analysis.

Other analyses of cleft sentences, however, make the final clause a constituent of NP (cf. the review of previous analyses in Stockwell *et al.* (1969:812ff.)). Given this latter structure, a topicalized sentence derived by Focus Topicalization would contain only one root sentence (like the cleft sentence from which it is derived), and thus only one phonological phrase.

To the extent that the present phrasing hypothesis is supported by other grammatical facts, it constitutes an argument against Akmajian's proposed surface structure, although his proposal to derive cleft sentences from pseudo-cleft sentences may be unaffected.

7. However, there are also "detached" adverbial clauses which occur as separate phonological phrases and are not constituents of the preceding root sentence.

Rutherford (1970) discusses a class of "non-restrictive" adverbial clauses, arguing that in the deep structure these adverbial clauses are constituents of a higher abstract

performative sentence (see footnote 12 below).

Consider the following sentences. The (a) sentences contain overt performative matrices. The (b) sentences are paraphrases from which an abstract performative matrix has been deleted.

- (86) a. I say to you [that Oscar has lost weight] because he wears size 36 now.  
       b. Oscar has lost weight, / because he wears size 36 now.
- (87) a. I say to you [that Oscar has lost weight because he wants to appear on TV].  
       b. Oscar has lost weight because he wants to appear on TV.

In (86a) the because-clause is a constituent of the higher, performative sentence. When this sentence is deleted, as in (86b), both its complement and the adverbial clause become root sentences, so that PB's are inserted between the clauses, predicting pause. In sentence (87a) the because-clause is a constituent of the lower sentence. After deletion of the performative sentence the adverbial clause is still subordinate to the main clause. Therefore (87b) contains only one root sentence and only one phonological phrase. These examples show that the OBI convention must apply after Performative Deletion, but they do not show that it cannot also apply before Performative Deletion.

Rutherford extends his analysis to (root) clauses with although and (non-root) clauses with even though, and to other modifiers of the performative verb such as to tell the truth, between you and me, etc. All these constructions are consis-

tent with, and offer independent support for, the OBI convention.

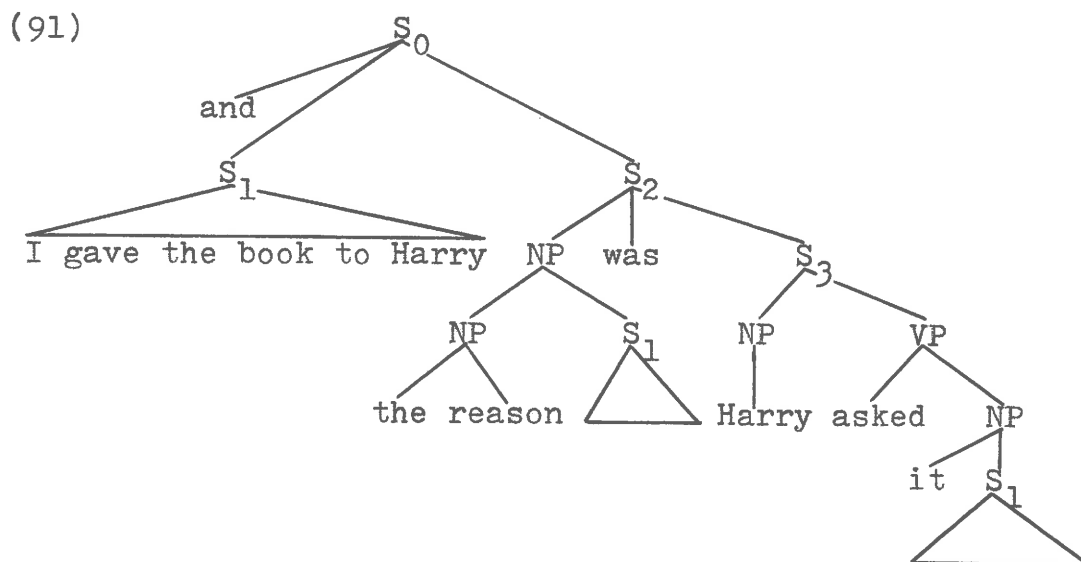
There are also detached adverbial clauses which do not derive from adverbial modifiers of performative verbs, but, I would claim, from reduced second conjuncts. Sentence (88) is not paraphrased by (89), but by (90).

(88) I gave the book to Harry, / because he asked me to.

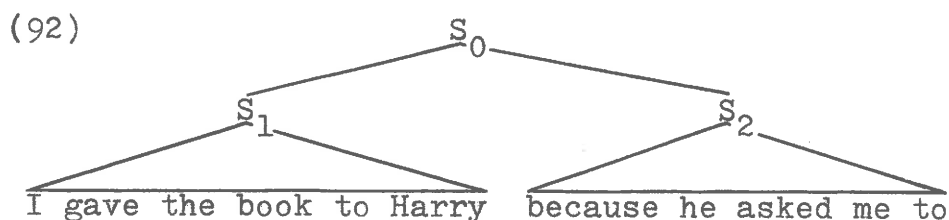
(89) I say to you [that I gave the book to Harry]  
because he asked me to.

(90) I gave the book to Harry, / and the reason I did it  
was  $\left\{ \begin{array}{l} \text{that} \\ \text{because} \end{array} \right\}$  he asked me to.

The paraphrase relationship between (88) and (90) suggests the following common underlying structure (omitting for simplicity the performative matrix):



Ross (1967a:360) has argued that the correct surface structure for (88) is (92), in which each clause is a root sentence, because each makes a separate assertion.



I suggest that (92) is derived from (91) by the stages indicated by the grammatical sentences in (93), through a series of optional transformations, including Identity Deletion and It-extraposition.

- (93) a. I gave the book to Harry, and the reason that I gave him the book was that he asked me to give him the book.
- b. \*I gave the book to Harry, and that I gave it to him was because he asked me to (give him the book).
- c. I gave the book to Harry, and it was because he asked me to (give him the book) that I gave it to him.
- d. \*I gave the book to Harry, which was because he asked me to.
- e. I gave the book to Harry, and it was because he asked me to.
- f. I gave the book to Harry, because he asked me to.  
(=(88))

The ungrammaticality of (93d) shows that relativization is not a step in the derivation of because-clauses from conjoined structures. If the rule (WH- IS Deletion) responsible for relative clause reduction cannot be applied here, it may be necessary to posit a special rule to delete and it Copula. Otherwise, the only new rule needed here is the rule that converts the reason S<sub>1</sub> Copula S<sub>2</sub> into it S<sub>1</sub> Copula because S<sub>2</sub>.

This suggested analysis of "non-restrictive" non-performative because-clauses requires further study, which is beyond



the scope of the present work. It receives support, however, from the fact that remnants of the postulated  $S_2$  (cf. (91)) may remain in surface structure when the conjunction is but rather than and and  $S_2$  is negative.

- (94) a. I gave the book to Harry, but the reason I gave it to him was not that he asked me to (give it to him).  
 b. I gave the book to Harry, but I didn't give it to him because he asked me to.  
 c. I gave the book to Harry, but not because he asked me to.

Sentence (94b) cannot be basic, because it contains a superficial contradiction (I gave the book to Harry, I didn't give it to him). To say that (94c) is the basic structure would require special machinery allowing the adverbial clause to be quantified by not. Only (94a) provides a satisfactory deep structure from which all three superficial sentences can be derived.

The particle for is often classed as a coordinating conjunction. The above analysis suggests that for can replace because just in case because introduces a (surface structure) root sentence.

- (95) a. Oscar has lost weight, / for he wears size 36 now.  
 b. \*Oscar has lost weight for he wants to appear on TV.

The conjunction while may be used to introduce subordinate adverbial clauses of duration (96) or coordinate adversative clauses as in (97) (cf. Schwartz 1969:142).

- (96) The men worked while the sun was shining.

(97) The men worked, /  $\left\{ \begin{array}{l} \text{while} \\ \text{whereas} \\ \text{but} \end{array} \right\}$  the women talked.

8. The obligatory nature of the boundary following initial adverbial clauses is shown by the following sentence, which is ambiguous as written in (98a) without internal punctuation, but is pronounced as either (98b) or (98c):

- (98) a. When John phones the girls talk to him.  
       b. When John phones the girls / talk to him.  
       c. When John phones / the girls talk to him.

It is common, in sentences like (98) with two clauses, for a pitch rise to occur on the primary stressed syllable of each clause. If the adverbial clause represents a presupposition, however, (for example, when (98c) answers the question "What do the girls do when John phones?"), there is no rise in pitch on the stressed syllable. But even with level pitch on the adverbial clause, (98b) and (98c) are distinguished by the position of the pause.

9. There is a small class of adverbs which occur initially without sentence stress or phraseological independence. This class includes such items as now, then, later, soon, and perhaps phrases such as last night, next week, etc. I assume that an ad hoc boundary deletion rule is required to account for this fact.
10. The fact that a rule is upward-bounded does not prevent it from specifying Chomsky adjunction to S, since the element that is moved is not moved into a higher S but is attached to (a copy of) the original next-highest S.

11. In Chapter IV we will consider evidence that other sentence adverbials are derived by the adverbialization of matrix sentences.
12. For the notion of "performative sentence" see Austin (1962). Ross (1970) and Sadock (1969) argue for underlying performative matrices in the deep structure of non-performative sentences. In general, a performative verb is one which, when used in the present tense with a first-person subject and with the indirect object (if any) in the second person, may perform a linguistic act, such as asserting, commanding, requesting, asking, promising, etc.
13. The rule of Adverb Fronting is exceptional in that it is upward bounded and applies to non-root sentences. Focus Topicalization is exceptional in another way: it does not cause a verbal element to be moved into second position within the predicative sentence.
14. The inversion of subject and finite verb, unlike Subject-Aux Inversion, does not apply in case the subject is a pronoun (\*Here come I). Emonds (1969) assumes that in this case (but apparently not when Subject-Aux Inversion is to apply) the pronoun is already attached to the preceding stressed formative as a clitic. But if Emonds is right, the clitic attachment rule must precede at least one transformation and thus must apply within the syntactic component rather than the phonological component. Alternatively, one might propose that the rule simply not apply if the NP is [+Pro] and the V is [-Aux]. But I have no strong arguments for any particular

solution of this problem and so I have not provided for this case in the formulation of (67).

15. I show in Chapter IV that "Right Dislocation," discussed in Ross' dissertation (1967a:428-32), is not a right-extraposition rule nor a copying rule, but results from Identity Deletion and an embedding rule. There is no rule of Right Dislocation.
16. The assumption here that too, either, etc., are somehow represented in deep structure appears to conflict with the assumption in Chapter V that sentences with and without these tags are synonymous and that therefore primary and secondary conjunctions could derive from the same deep structure. It seems to me that the parallelism or "reciprocal relevance" expressed by these tags is implicit in the unmarked coordinations as well. It is reasonable that the marking should be required in reduced coordinations when Regrouping does not apply, but that it is unnecessary when the parallel constituents containing contrasting lexical formatives are conjoined, since in the latter case the conjoining itself indicates the reciprocal relevance of the conjoined elements. This is a difficult semantic question, however, which deserves further inquiry.
17. Different functions are associated with different intonations on the tag. Cf. Palmer and Blandford (1939:265) and Schubi-ger (1958:66-69). The statement preceding a tag is a qualified assertion, which in deep structure may be a complement of the performative matrix I suppose (see R. Lakoff 1969).

CHAPTER IV  
PARENTHESES AND APPOSITIVES

4.0. Phonological Phrase Boundaries Within Predicative Sentences.

In Chapter III it was argued that no PB follows a constituent that is preposed or postposed within a predicative sentence. This principle may now be stated somewhat more generally as follows:

- (1) No element is set off by pause as a consequence of being moved transformationally within a single predicative root sentence.

This principle is a corollary of the OBI convention, since that convention states that PB's are introduced into syntactic structures only at termini of root sentences.

Examples of rules to which principle (1) applies other than those discussed in Chapter III are the passive rule (however stated), Psych-Movement (Postal 1968), and Dative Movement. It should be noted that rules such as It-Replacement, which move an element from a lower sentence to a node already present in the next higher sentence, also do not affect the phrasing; the movement takes place entirely within a single root sentence.

PB's which do occur within predicative sentences result principally from three similar syntactic processes. The first is the parenthetical insertion of a constituent bounded by PB's into a predicative root sentence from outside. The term

parenthesis or parenthetical phrase will be used to refer to any element transformationally introduced into a predicative sentence from elsewhere in the P-marker (not from the lexicon or by being named in the rule) without any condition of identity of reference. The second process is similar but carries the requirement of referential identity between an NP in the inserted constituent and an NP in the receiving sentence. Elements introduced under such a condition of identity will be called appositives. The third source of PB's within predicative sentences is conjunction reduction, which produces conjoined syntactic elements of various kinds by reduction of partially identical conjoined sentences. Parentheses will be discussed in the first part of this chapter. Section 4.6 will be devoted to appositive phrases. In Chapter V we will consider the phrasing that occurs in various reductions of conjoined sentences.

We will begin our discussion of parentheses by considering sentences containing what Urmson (1963) calls "parenthetical verbs." Section 4.1 is devoted to cases in which the complement of the parenthetical verb is a direct quotation, as in (2) below. In Section 4.2 the analysis of direct quote sentences will be extended to other sentences with parenthetical verbs, such as those in (3). It is assumed that the (b) cases are derived transformationally from the structures underlying the (a) cases.

(2) a. Ann announced, / "The girls will make some sandwiches."

b. "The girls," / Ann announced, / "will make some sandwiches."

(3) a. I suppose (that) the girls will make some sandwiches.

b. The girls, / I suppose, / will make some sandwiches.

In Emonds (1969) it is argued that the transformation by which the (b) cases are derived is a rule of left-extra-position (a preposing rule, in Emonds' terms). This rule is supposed to move part (or all) of the complement sentence to the front, adjoining it to the matrix so that the matrix remains a root sentence, as in the other extraposition rules discussed in Chapter III.<sup>1</sup>

I will argue here that instead, as is usually assumed (cf. Urmson 1963, Rardin 1968), sentences such as the (b) examples above contain transformationally embedded parenthetical phrases. More specifically, I will claim that they are derived by a two-part process which permits the embedding of a matrix constituent into the complement. The first step in this process is the "detachment" of the complement and its reattachment higher in the tree, so that it is no longer dominated by the matrix, and both the complement and the matrix are root sentences. The second step involves the embedding of the original matrix sentence in the complement or its movement to a position following the complement. The separate phrasing of the parenthesized matrix is due to the fact that it is already bounded by PB's prior to embedding.

#### 4.1. Direct Quotation.

##### 4.1.1. Quote Detachment.

It is obviously possible to quote any utterance. Direct quotations included in other sentences as complements behave in

many respects as if they were independent root sentences. They differ from other complements (and from indirect quotations in particular) in that the usual rules of pronoun agreement, sequence of tenses, etc., do not apply between matrix sentence and complement. Moreover, the complementizer that is not allowed in direct quote complements, and transformations that apply in general only to root sentences, such as topicalization rules, can also apply in direct quote complements. Compare (4a), in which the complement is a direct quotation, with (4b), which contains an ordinary complement expressing reported speech.

- (4) a. Ann said, / "I'll make you some sandwiches."  
 b. Ann said (that) she would make us some sandwiches.

Direct quotations (but not other complements) may even violate conditions on the coherence of a discourse or be ungrammatical without at all affecting the grammaticality of the sentence as a whole:

- (5) a. Jean said, "Je t'aime."  
 b. \*Jean said that il m'aime.  
 c. Bill mumbled, "Muh thung izz swln."  
 d. "Hum HUM he hum hum," hummed Albert.

These examples suggest that the grammar should contain a special kind of recursive device permitting the complements of certain "quotative" verbs (say, remark, tell (someone), etc.) to be identical with sentences generated independently by the same or a different grammar or even to contain strings generated by some kind of random generating device.<sup>2</sup> This would allow a grammatical quoted sentence to contain, in deep structure, its



own "highest S" and whatever other abstract syntactic properties are common to independent sentences. Thus, if one accepts the arguments of Ross (1970) and Sadock (1969) concerning abstract "performative" sentences or "hypersentences," it must be possible for the complement of any quotative verb to be a performative sentence such as these writers claim appears as the highest sentence in every deep structure.<sup>3</sup> This is necessary because the arguments for abstract performative sentences (in the works cited above) generally apply to direct quotations exactly as they apply to independent "first-person" sentences.

The above considerations suggest that the definition of root sentence should somehow be extended to include direct quotations. This would account for the fact that all the surface structures that are allowed in independent root sentences appear also in direct quote complements, with the same phrasing; compare the sentences of (6).

(6) a. Listen, / John, / I need some money.

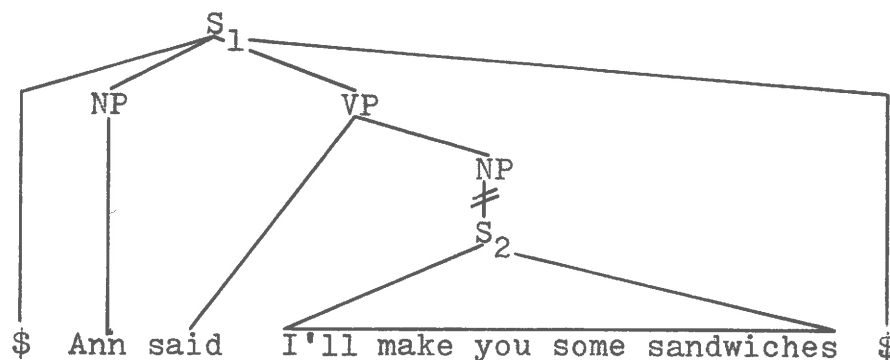
b. Bill said, / "Listen, / John, / I need some money."

If direct quotations were somehow designated as root sentences, the fact that the quotations in the above examples are set off by pause, while other complements are not, would also be accounted for;<sup>4</sup> it would only be necessary that the OBI convention assign PB's to these specially marked root sentences as well as to those which meet the structural description of a root sentence given in Chapter II.

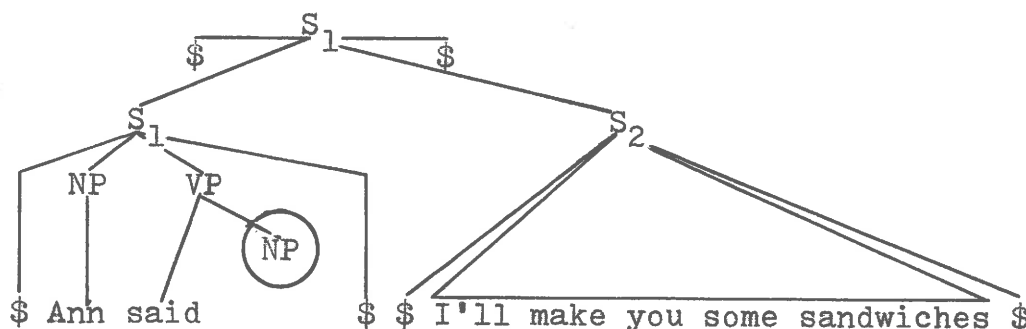
A desirable alternative to extending the definition of root sentence in this way would be to alter the surface structure

of direct quote sentences so that the quotation becomes a root sentence under the present definition. This may be accomplished by a type of readjustment of syntactic structure which would detach direct quotations from the VP which dominates them in the underlying structure and reattach them as sisters of the quotative matrix sentence by Chomsky adjunction. If this process were applied, the quotation would meet the structural description of a root sentence, and the pause between matrix and complement would be predicted by the surface structure. Thus for sentence (4a) the underlying structure (7a) would be converted into (7b). (The symbol  $\times$  indicates the point of attachment of a quoted sentence to its matrix.)

(7) a.



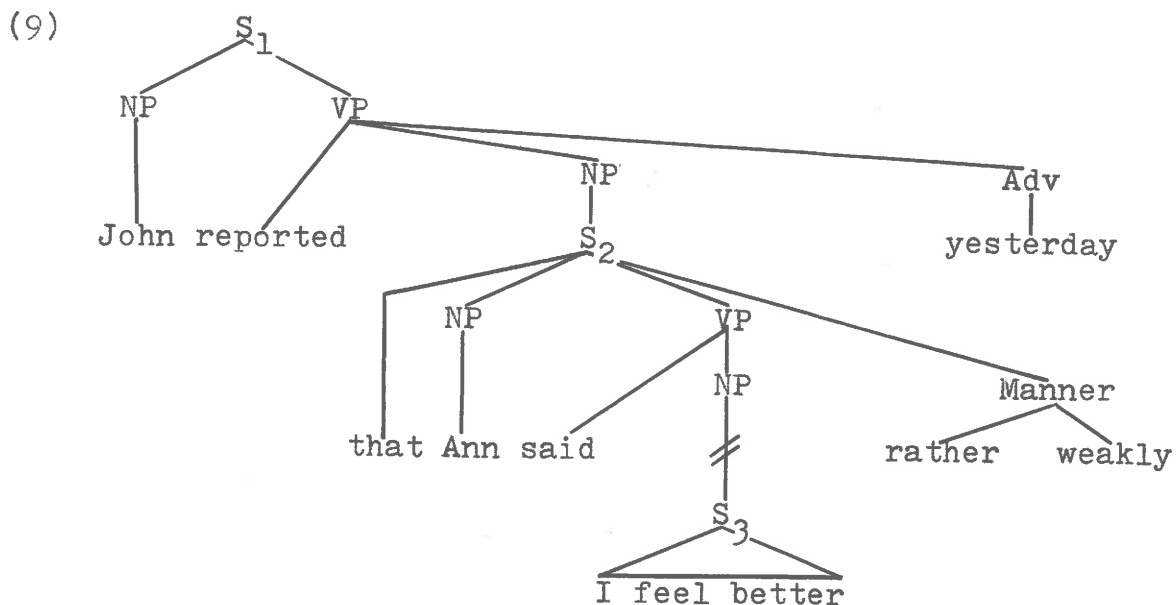
b.



The process illustrated here can only apply, however, in cases like the above in which the quotation is the final element of the VP. Otherwise, the detached complement cannot be attached to the S node as required except by moving it to a position

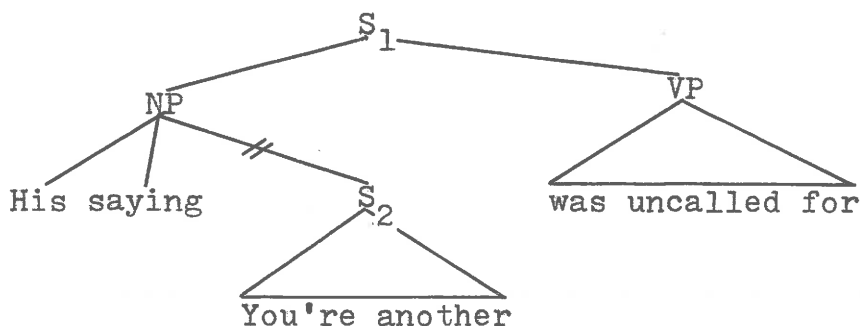
following some node immediately dominated by S. Obviously there are many sentences in which the direct quotation is non-final in the surface structure. Consider, for example, sentence (8), which has approximately the structure indicated in (9).

(8) John reported [that Ann said "I feel better" rather weakly] yesterday.



The direct quote sentence  $S_3$  cannot be Chomsky-adjoined to  $S_1$  in the manner indicated above as long as the order of elements remains unchanged, since it is a medial constituent within a string dominated by a lower node than  $S_1$ . Therefore in sentences like (9) there is no way to make the direct quote complement a root sentence. Even in a structure such as (10), where no S node intervenes between the direct quote complement and the  $S_1$  node, the complement S cannot become a root because the requisite process of Chomsky adjunction is undefined for medial constituents; without Chomsky adjunction  $S_2$  cannot become a root S.

(10)



[His saying "You're another" was uncalled for.]

The restriction we have just noted on the detachability of direct quotations does not at all eliminate the hypothesis that the separate phrasing of quotations is due to a readjustment of structure which makes them root sentences without ad hoc extension of the definition of root sentences. For it appears that those quotations which are non-final and thus cannot be root sentences do not receive separate phrasing. There is, for example, no obligatory internal pause in sentence (8) or in the sentence represented by (10); the quotation cannot be given separate phrasing in a natural performance of the sentence.

Let us consider some additional evidence supporting this observation.

(11) a. At her door, / Sally murmured, / "Goodnight."

b. Sally murmured "Goodnight" at her door.

(12) a. Hilda {said  
asked}, / "Am I pregnant?"

b. Hilda said "Am I pregnant?" in a weak voice.

c. ?Hilda asked "Am I pregnant?" in a weak voice.

d. "Am I pregnant?" Hilda asked (in a weak voice).

In (11a) the quotation is a separate, terminal phonological phrase and it is possible (depending only on the speaker's skill

and inclination) to enunciate it as an imitation not only of what Sally said but also of how she said it, i.e., of the intonation she used. To do this in (11b), however, is quite unnatural. It is for this reason, of course, that writers tend to place quotations in sentence-final position, or in initial position followed only by the postposed matrix, which is uttered with a "cadence" intonation dependent upon the preceding contour. The question in (12a) can have the normal question intonation, but a rising intonation on the question seems highly unnatural in (12b) or (12c). The greater acceptability of the verb said over asked in these sentences seems to reflect the fact that they quote only what was said but not how it was said. Sentence (12d) seems to require rising intonation on the quotation, unless one means to report that Hilda said the sentence with falling intonation.

It is not the case that rising intonation is excluded in (12b) simply because rising intonation occurs only in sentence-final phrases. In alternative questions such as (13), for example, it is possible to have a high rising contour on a nonfinal phrase.

(13) Did Hilda speak confidently,  or in a weak voice? 

Rather it must be the case that this intonation is excluded in (12b) because the quotation in (12b) is not a root sentence.

In the following sentences, again, the quotation can (optionally) be set off as a separate phrase when the quotation is final in the sentence, but it is not phraseologically independent when nonfinal.

(14) a. Max admitted that John said, / "Do I?"

(14) b. Your claim that Max admitted John said "Do I?" is incredible.

(15) a. It is very unlikely that John said, / "Here goes."

b. That John said "Here goes" is very unlikely.

The above examples indicate that a direct quotation can be set off from the matrix sentence as a separate phonological phrase just in case it can be detached from the VP and Chomsky-adjoined directly to a root sentence; that is, just in case it can itself be a root sentence without ad hoc marking.

Thus the phraseological independence (and presumably, in the case of questions at least, the intonation) of direct quotations depends on the position of the quotation within the sentence, which determines whether or not the quotation can be detached from the VP to become a root sentence. Given this detachment transformation, the ad hoc modification of the definition of root sentence suggested above to account for pauses between quotative matrices and quotations is not required.

Within a quotation, however, the separate phrasing of elements such as interjections, vocatives, topicalized NP's, appositive relative clauses, etc., illustrated in (6) above, is unaffected by the position of the quotation within the matrix sentence. Compare (16) with (6b).

(16) Bill said "Listen, / John, / I need some money" in a confidential manner.

This observation suggests the following principle concerning the phrasing of direct quotations:

(17) a. A direct quotation acts as a root sentence with respect to the phrasing of elements within the

quotation.<sup>5</sup>

- b. The quotation as a whole may receive independent phrasing (and intonation) only if a structural readjustment (Quote Detachment) applies to make the quotation a root sentence with respect to the matrix within which it occurs.

The two parts of this principle present a paradox, however. This is because the separate phrasing of topicalized NP's, vocatives, etc., within the quotation (and in fact the application of the transformational rules involved) requires that the quotation be a root sentence, yet the quotation as a whole does not in general receive the separate phrasing characteristic of root sentences.

This paradox can be resolved if the rules involved are assumed to apply in a "cyclic" manner, as follows. The highest sentence of the quotation must be specially marked, as already noted, for syntactic purposes. Root transformations will apply and PB's will be assigned by the OBI convention to this highest S and to any other root sentences it dominates. After all these rules have applied, a final rule of the cycle will delete the outermost PB's. Then the set of root transformations will reapply to the root sentence which dominates the quotation. Since the outer PB's of the highest sentence apparently have no phonetic correlate these may be eliminated also, although it may be convenient to retain them so that they may be referred to in specifying the scope of certain phonological rules. We will return to the details of cyclic application in 4.1.3 below.

Let us now consider the nature of the process that is required to make root sentences of final quotation complements. This process, which I will call Quote Detachment, Chomsky-adjoins to the highest S a complement which is already final. It involves a unique kind of transformation, in that it "moves" a constituent within the syntactic structure, deleting it from one node and adjoining it to another, without changing the linear order of formatives.

This process is reminiscent of the "vacuous extraposition" proposed by Rosenbaum (1967). But that case involved the vacuous application of a rule which applied nonvacuously as a movement rule in other cases to reorder constituents, and the rule has since been found to be unnecessary (Ross 1967a). I know of no other transformational rules of this type which have been argued for on syntactic grounds. Chomsky and Halle (1968), however, have posited a set of "readjustment rules" operating between syntax and phonology, several of which would have just the effect of the rule proposed here: they "simplify" (decrease the height of) surface structure P-markers by detaching certain nodes and reattaching them to a higher (S) node. Quote Detachment differs from these proposed readjustment rules only in that, as will be shown below, it must be ordered prior to certain other transformational rules of the ordinary kind.

As a first approximation, we may state the rule of Quote Detachment as follows:



(18) Quote Detachment

$$\begin{array}{rcl}
 \text{SD: } [S^W [V] X [S] Y]_S & & \\
 \quad \quad \quad 1 \quad \quad 2 \quad \quad 3 \quad \quad 4 \quad \quad 5 & & \\
 \text{SC: } 1 \quad \quad 2 \quad \quad 3 \quad \quad \emptyset \quad \quad 5 \# 4 & \Rightarrow & 
 \end{array}$$

Condition: Y contains only labeled brackets.

(I assume here that the quotation is attached to the highest S, but this is a matter which will require further discussion below.)

In the examples above, I have shown pause occurring before all sentence-final quotations. But it is also possible, and natural, to utter such sentences without separate phrasing for the quotation (and without rising intonation on final quoted questions). This variation in phrasing cannot be explained by variable phrasing rules such as those of Bierwisch (1966). I therefore conclude that Quote Detachment is an optional rule; when it is not applied, separate phrasing (and question intonation) is impossible.

In Section 4.2 it will be shown that this rule must be generalized to apply to certain non-quotative complements. First, however, we will consider the process of parenthesization of quotative matrices, which provides independent motivation for the rule of Quote Detachment.

#### 4.1.2. Matrix Embedding.

In Section 4.0 an outline was given of the process whereby sentences like (2b) are derived from sentences like (2a). These examples are repeated here for convenience of reference.

- (2) a. Ann annouced, / "The girls will make some sandwiches."  
 b. "The girls," / Ann announced, / "will make some sandwiches."

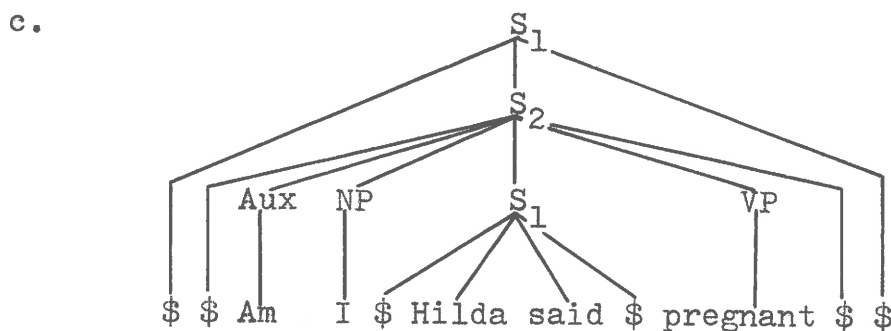
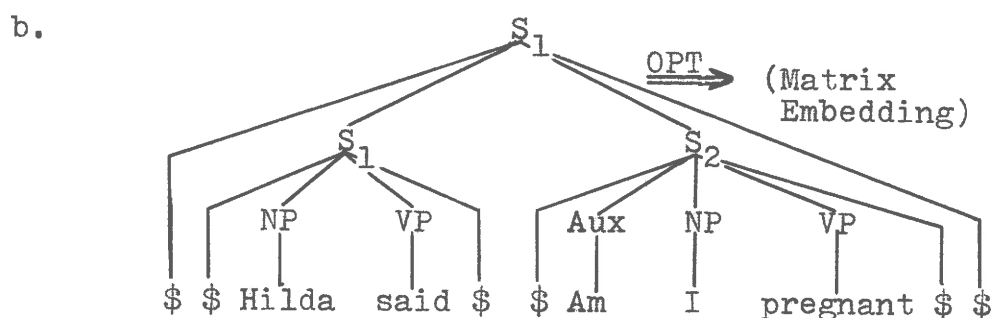
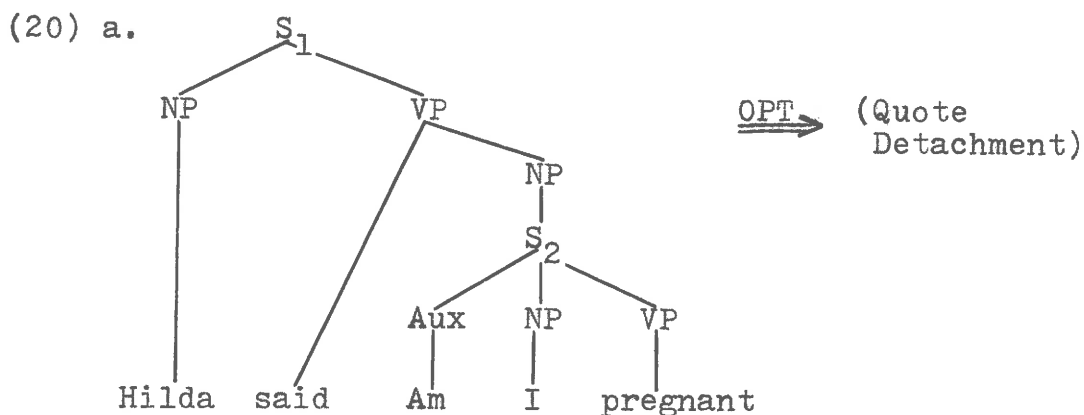
It was proposed there that this derivation consists essentially of the parenthetical insertion of the matrix within the quotation. Notice, however, that subject NP and Verb do not normally constitute a single constituent. Unless the parenthetical element is a constituent the required transformation will be unduly complex.

In the preceding subsection a rule of Quote Detachment was proposed to account for the phrasing of sentences in which the quotation follows the matrix. Now notice that Quote Detachment not only correctly predicts the phrasing of sentences like (2a) but also makes a separate constituent of the matrix, so that the matrix can then be transformationally inserted into the quotation to derive sentences like (2b).

Furthermore, if PB's are already assigned to the structure resulting from Quote Detachment before the application of the parenthesizing rule, the phrasing of sentences like (2b) is accounted for automatically.

To illustrate the proposed derivation we will consider the sentences of (19), which have the respective structures shown in (20). Sentence (b) is derived from (a) by Quote Detachment, and sentence (c) is derived from (b) by the parenthesizing rule which I will refer to as Matrix Embedding.

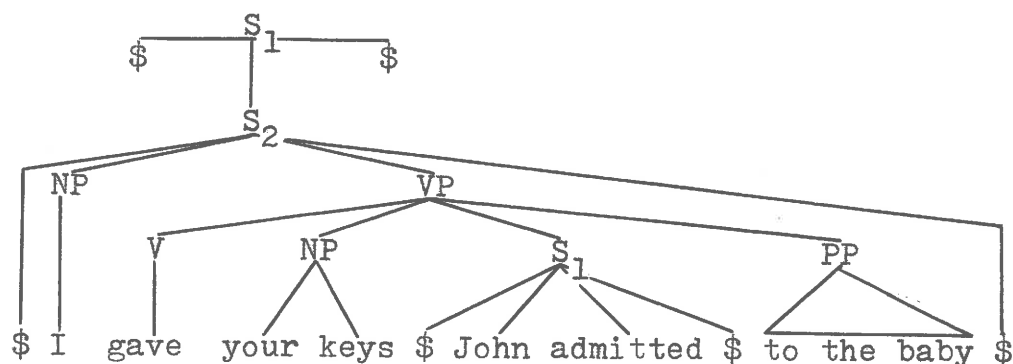
- (19) a. Hilda said "Am I pregnant?"  
 b. Hilda said, / "Am I pregnant?"  
 c. "Am I," / Hilda said, / "pregnant?"



In (20c) the embedded matrix sentence  $S_1$  is no longer a root sentence because it is dominated by a predicative sentence,  $S_2$ . In this example,  $S_1$  is immediately dominated by  $S_2$ . But in other cases it is possible for the parenthesis to occur within the VP, following the verb or between two objects. In such a case the highest node to which the parenthetical sentence can be attached is VP. Such a structure occurs in (21), which, according to this analysis, has approximately the surface structure shown in (22).

(21) "I gave your keys," / John admitted, / "to the baby."

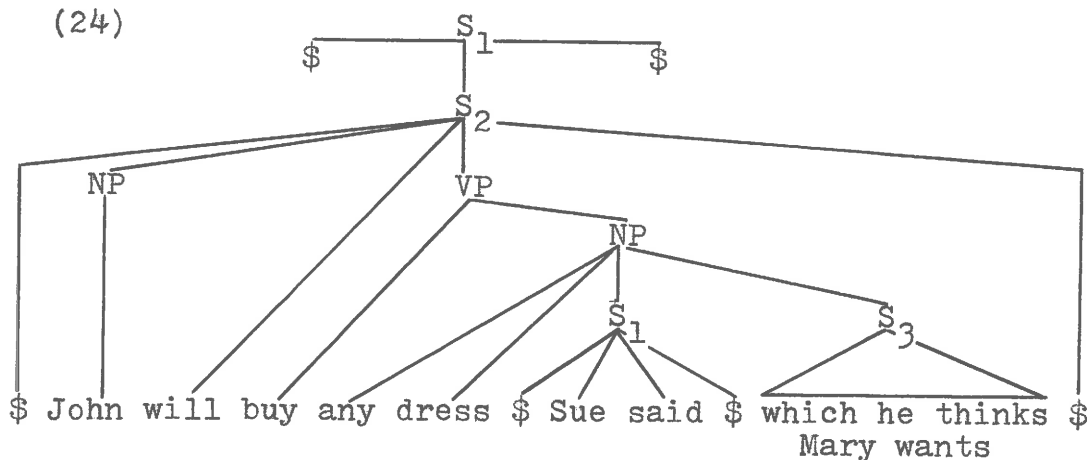
(22)



In other cases the parenthesis can only be attached to some lower node in the quote sentence. In (23), for example, which has the surface structure shown in (24), the highest node to which S<sub>1</sub> can be attached is an NP dominated by VP (the example is due to Emonds).

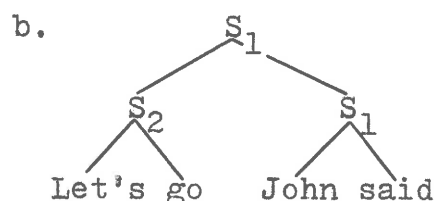
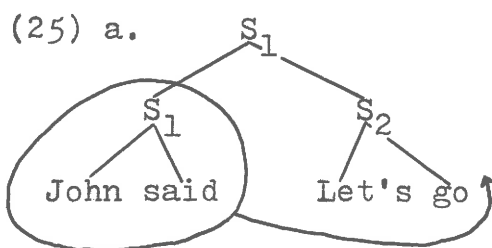
(23) "John will buy any dress," / Sue said, / "which he thinks Mary wants."

(24)



These examples suggest certain conditions on the formulation of the rule of Matrix Embedding. First of all, the structural change of the transformation must be stated so as to allow the matrix to be inserted in any of various positions between major constituents. It is not clear just how this structural change is to be formulated.<sup>6</sup> Secondly, since the parenthesis does not form a constituent with either the preceding or the

following syntactic phrase, and since it cannot in general be attached to any particular type of constituent, it appears that the least ad hoc formulation of Matrix Embedding will require simply that the parenthetical sentence be attached as high as possible.<sup>7</sup> Notice that this same principle of attachment is necessary in the rule of Quote Detachment to ensure that the detached complement is reattached to the highest S--otherwise, it would not be possible to guarantee that the quotation would become a root sentence. The proposed formulation also allows the rule of Matrix Embedding to include as a special case the postposing of the matrix to the position following the quotation. Thus a sentence which after Quote Detachment has the structure (25a) can be converted by Matrix Embedding into (25b), in which the matrix sentence is reattached as the righthand constituent of the (same) highest sentence,  $S_1$ .



All parenthetical sentences are preceded and followed by pauses, yet they are not root sentences as that term is defined above. The examples given above show that this fact cannot be explained by any natural extension of the structural definition of root sentence to parentheses, since parentheses cannot in general be attached even to a predicative sentence, but must sometimes be attached lower in the tree, to VP or NP, etc.

But the above examples also show that the phrasing of

sentences with parenthesized matrices is automatically accounted for if we allow the OBI convention to apply after Quote Detachment but before Matrix Embedding, thus:

1. Quote Detachment
2. Obligatory Boundary Insertion
3. Matrix Embedding

Since the matrix is a root sentence, it will dominate PB's as its leftmost and rightmost constituents. When the matrix is embedded, the PB's will automatically be carried along. These PB's predict the occurrence of pause preceding and following the parenthesis.

Notice that there are no undesirable consequences if we allow the OBI convention to apply not only between Quote Detachment and Matrix Embedding but also before Quote Detachment and after Matrix Embedding as well. Similarly, the OBI convention may apply before as well as after Topicalization and the other rules discussed in Chapter III. The OBI convention is thus a kind of "anywhere rule" which applies nonvacuously each time a new root sentence is formed. It does not, of course, delete boundaries when a sentence ceases to be a root sentence; this is what enables a root sentence inserted into another root sentence parenthetically to continue to be set off by pauses.

There are, however, only a limited number of rules, including Matrix Embedding and others to be discussed below, which must be ordered after the insertion of PB's. All of these are (or may be) postcyclic rules which could perhaps be considered stylistic rules. There may very well be earlier cyclic rules

which embed root sentences without introducing PB's. This is the reason for provisionally restricting the OBI convention in its present formulation to application to all postcyclic structures, where postcyclic will be understood as referring to all rules which are not necessarily applied within the transformational cycle, i.e., which need not be ordered before some cyclic rule.

So far we have ignored the fact noted above that Quote Detachment cannot apply to make root sentences of nonfinal complements. If Quote Detachment cannot apply, then the present analysis would predict that the matrix, since it is not an independent constituent, cannot be parenthesized in such sentences. This in fact turns out to be the case. Thus the following sentences become ungrammatical if the words are arranged in the order that would result if Matrix Embedding had applied.

- (26) a. Hilda said "Am I pregnant" in a weak voice.
- b. \*"Am I," Hilda said, "pregnant" in a weak voice.
- (27) a. Sally said "Goodnight" to Gerald.
- b. \*"Goodnight," / Sally said / to Gerald.

Sentence (27b) would of course be grammatical if there were no pause after said. This grammatical sentence has a source in which the quotation is sentence-final and is set off by pause. Compare the sentences of (28).

- (28) a. ?Hilda said "Am I pregnant" to the doctor.
- b. Hilda said to the doctor, / "Am I pregnant?"<sup>8</sup>
- c. "Am I," / Hilda said to the doctor, / "pregnant?"
- d. "Am I pregnant?" / Hilda said to the doctor.

The ungrammaticality of sentences such as (26b) and (27b) is noted by Emonds (1969:13-14), but it receives no explanation within his analysis. According to the present analysis, however, it follows automatically from the fact that nonfinal quotations cannot be detached. Thus the process of Matrix Embedding provides clear independent motivations for the rule of Quote Detachment.

The rule of Matrix Embedding must apply only to matrices which are root sentences. Otherwise there would be no source for the PB's that set them off after embedding. The following examples are evidence that movement of nonroot matrices in fact produces ungrammatical sentences.

(29) a. Thomas resented the fact that I said, "John cheated."

b. \*Thomas resented the fact that "John," I said,  
"cheated."

(30) a. Did Ralph believe that Ann murmured, "I love you"?

b. \*Did Ralph believe that "I love you," Ann murmured?

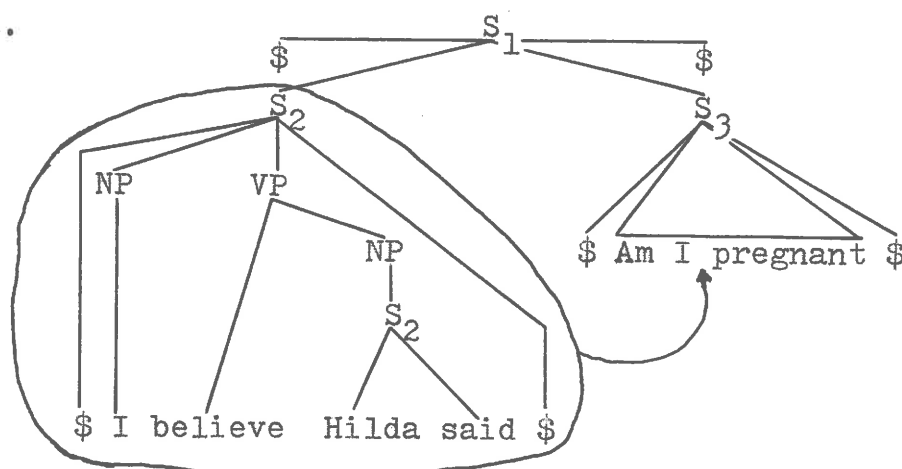
In some cases, but not in (29) and (30), Matrix Embedding can apply when the quotative matrix is not a root sentence if the whole superstructure including the quotative sentence is moved. Since the superstructure as a whole is a root sentence, the parenthesis is set off by PB's. Thus Matrix Embedding derives (31b) from (31a). The structures after Quote Detachment and after Matrix Embedding are shown in (32).

(31) a. I believe Hilda said, / "Am I pregnant?"

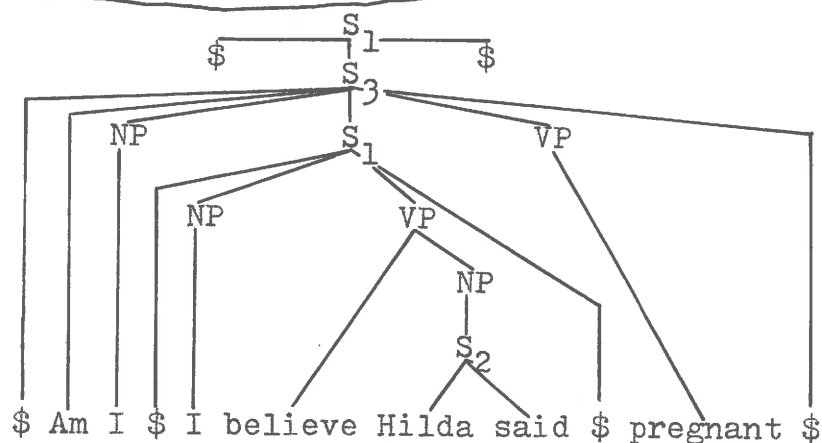
b. "Am I," / I believe Hilda said, / "pregnant?"



(32) a.



b.



Sentences such as (31) provide evidence that the rule of Quote Detachment must attach the quotation to the highest S, since only thus will the entire superstructure be a separate root constituent dominating its own PB's as initial and final constituents. We see now that Matrix Embedding not only must apply to sentences containing quotative verbs and their subjects and modifiers but must in fact apply to complex structures containing any number of matrix sentences of which only the lowest is a quotative sentence. In every case, however, the sentence to which the structural description of the rule refers will be a root sentence which is followed by a (detached) quotation which is also a root sentence.

There are, however, complex and poorly understood con-

straints which prevent the parenthesization of certain matrices. For example, sentences such as (29a), in which the quotative verb occurs in a factive complement<sup>9</sup> and also sentences in which the matrix is a question or command do not allow parenthesization of the matrix. Both (33) and (34) are clearly ungrammatical.

(33) \*"John," Thomas resented the fact that I said, "cheated."

(34) \*"I love you," did Ralph believe that Ann murmured?

Leroy Baker has suggested to me (personal communication) that the constraints involved here are largely semantic, i.e., that they can be accounted for under a semantic rather than a purely syntactic generalization. The formulation of this generalization, however, must await further research into the nature of semantic representation and further study of the category of parenthetical verbs.

In the foregoing discussion we have noted the essential properties of the structural description of Matrix Embedding. So little is known, however, about the proper formulation of the structural change involved (cf. footnote 6 above) that it would be premature to try to state the rule formally at this time.

#### 4.1.3. Quotations Within Quotations: The Pseudo-cycle.

We will now consider the application of the rules of Quote Detachment and Matrix Embedding to complex sentences containing more than one quotation. It will be shown that the rules outlined above assign intuitively satisfying surface structures to such sentences.

It is possible for direct quotations to be embedded

within other direct quotations without theoretical limit. Such sentences are, of course, difficult to produce or to interpret (although in written texts the use of quotation marks aids considerably), and consequently all but the very simplest cases are avoided.<sup>10</sup>

In the speech situation such sentences could arise in the process of passing along a message from one speaker to another along with an accretion of information concerning the source and channel of the message, as in (35).

(35) John: I'm going home.

Ann: John said, "I'm going home."

Bill: Ann said, "John said, 'I'm going home.'"

Since each speaker is free to determine the form and the position of his quotative matrix (although he must not alter the order of elements within a quotation), a number of variant orderings may occur in even so simple a dialogue as that given above. Instead of (35), for example, the chain of utterances might take the form (36).

(36) John: I'm going home.

Ann: "I'm going home," John said.

Bill: Ann said, "'I'm going home,' John said."

The last sentence is perhaps difficult to process when presented orally, since the phrasing gives no indication of the relationship between the three sentential constituents, but there is no reason to doubt its grammaticality. In fact, in addition to the orderings of Bill's sentence shown in (35) and (36), all other possible orderings of the three sentential elements are acceptable:

- (37) a. "John said, 'I'm going home,'" Ann said.  
 b. "'I'm going home,' John said," Ann said.  
 c. "John said," Ann said, "'I'm going home.'"  
 d. "'I'm going home,'" Ann said, "John said."

(In each case what John said is the portion in single quotes and what Ann said is the portion in double quotes.) If Matrix Embedding applies to insert the matrix between elements of the next sentence down, as it may, many other orderings are possible, as shown in (38).

- (38) a. "John," Ann said, "said, 'I'm going home.'"  
 b. "'I,' John said, 'am going home,'" Ann said.  
 c. "'I,' John," Ann said, "said, 'am going home.'"

The number of possible derivations is further increased by the possibility (in some styles) of inverting the elements of an embedded or final matrix sentence, as in (39).

- (39) "'I,' said John, 'am going home,'" said Ann.

The number is increased still further by the fact that Quote Detachment (which affects phrasing but not order of elements) is optional. Only when Quote Detachment has applied wherever possible will each quotation be set off from its matrix by a pause (indicated by the commas in the normal orthography). Let us consider here only those derivations in which Quote Detachment applies to each quotation.

We must now ask what principles of rule ordering are to be followed in the application of Quote Detachment and Matrix Embedding in order to derive such complex sentences. This would appear to be a paradigm case of cyclic application of transforma-

tional rules, since phrasing is assigned to each quotation without regard to the form of the higher sentences, in fact, regardless of whether there is a higher sentence. But the rules actually can be thought of as applying independently to each "root" sentence, i.e., to each quotation and to each structurally defined root sentence which is not a quotation, without affecting either higher or lower sentences and without any necessary cyclic ordering. We will follow a cyclic bottom-to-top order in applying the rules here, but it must be kept in mind that the arguments for a particular ordering are not very strong. In the next section (4.2) some new evidence concerning the order of application of these rules will be presented.

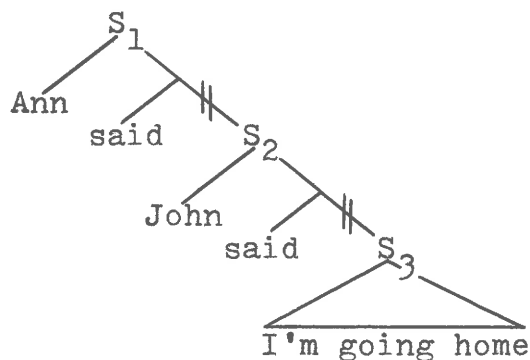
The cyclic principle entails that when Quote Detachment applies to a quotation contained within another quotation the detached complement is adjoined to the "root" S of the containing quotation, not to the highest S of the entire structure.

It will be recalled that the range of application of the OBI convention was specified by making the assumption, for which there is no counter-evidence, that all of the rules which it must precede are postcyclic rules. Therefore, in the following I will assume that the rules in question do not apply as part of the general transformational cycle; instead they apply in a post-cyclic pseudocycle.

Let us now consider the actual derivation according to the proposed rules of sentences of the sort exemplified in (35) - (39) above. The underlying structure which is realized in the surface form of the last sentence of (35) is approximately as

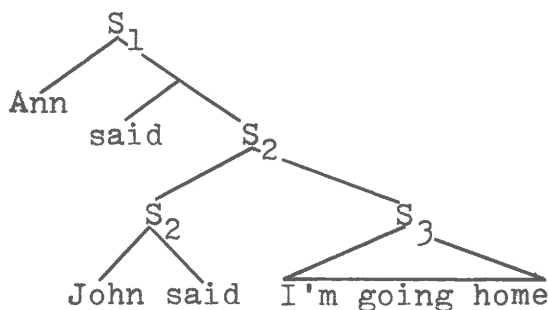
shown in (40).

(40)

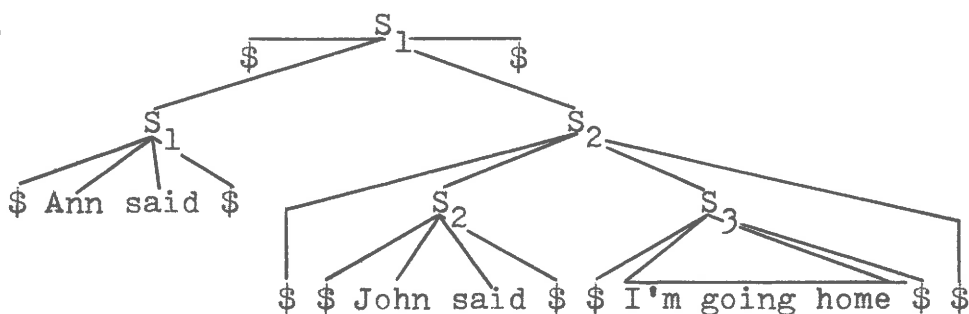


Quote Detachment can apply to  $S_2$  and  $S_1$  without Matrix Embedding, with the results shown in (41a) and (41b).

(41) a.



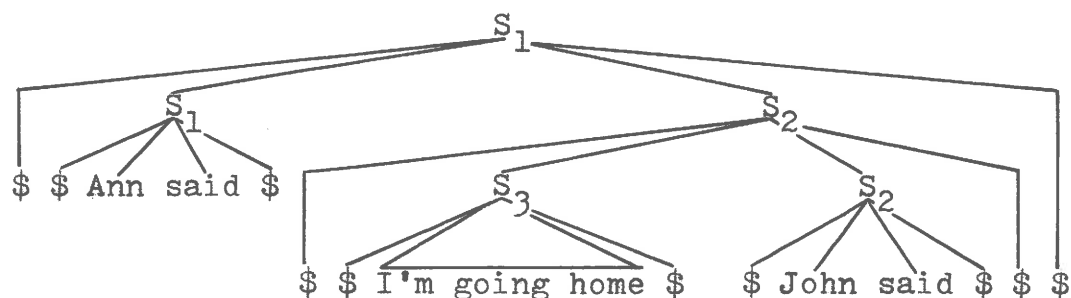
b.



Since all of the S-nodes of (41b) are structurally root sentences with respect to the highest  $S_1$ , the division of the sentence into three phonological phrases is amply accounted for by the OBI convention.

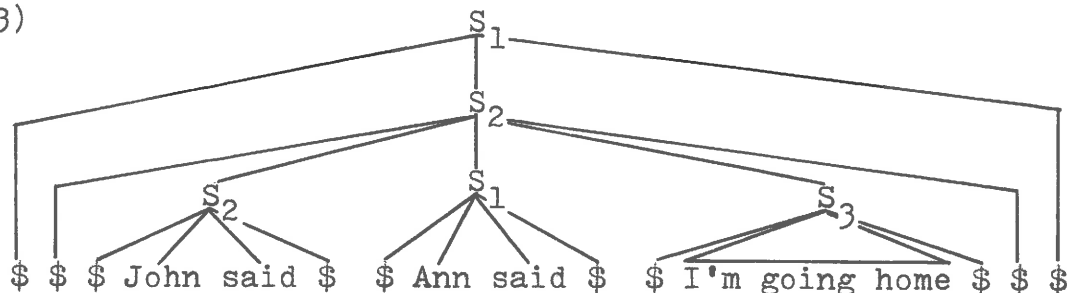
If Matrix Embedding applies on the  $S_2$  cycle, but not  $S_1$ , we obtain the last sentence of (36) (and other sentences, depending on the position of attachment). The surface structure of this sentence is indicated by (42).

(42)



If Matrix Embedding applies on  $S_1$ , but not on  $S_2$ , we obtain (37a) or (37c) or (38a), etc., depending on the point of attachment. The surface structure of (37c) is as shown in (43).

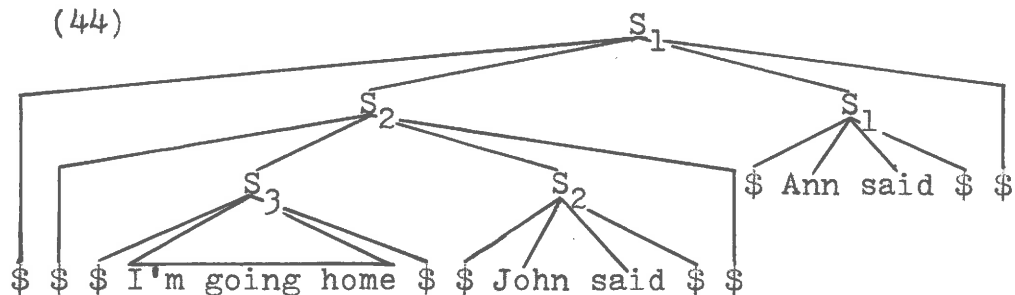
(43)



Notice that in (43) the structure no longer maintains the original hierarchical relationship among the three sentences.

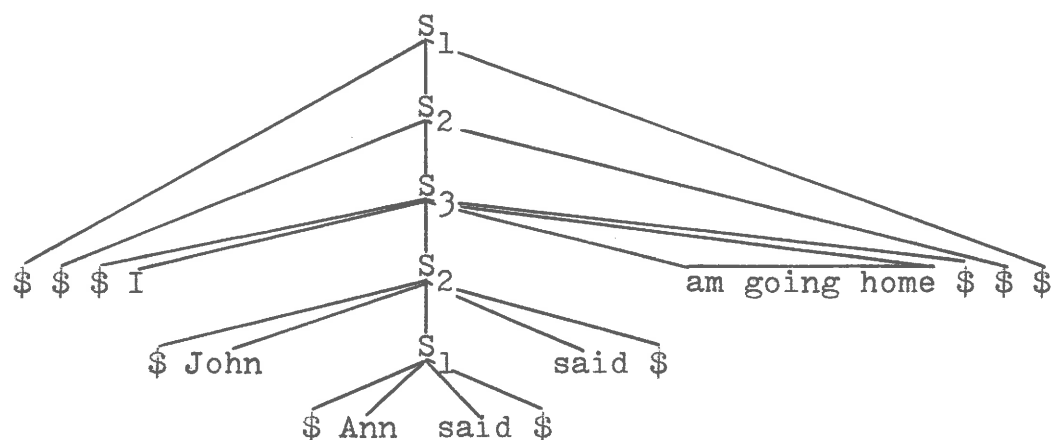
When Matrix Embedding applies on both the  $S_2$  and  $S_1$  cycles, we obtain the remaining possible surface structures. The surface structure of (37b) is (44).

(44)



The surface structure assigned to (38c) is (45).<sup>11</sup>

(45)



The fact that the present rules assign to this sentence the appropriate self-embedded structure is significant evidence for the correctness of this analysis.

#### 4.2. Other Parenthesized Matrices.

##### 4.2.1. Complement Detachment and Matrix Embedding.

If the rules of Quote Detachment and Matrix Embedding provide appropriate surface structures for direct quotation sentences with parenthesized matrices, it is reasonable to expect that the same or very similar rules will handle the case of other sentences containing parenthesized matrices. There are a number of verbs, generally non-factive, which occur as parenthetical verbs with complements other than direct quotations. Quotative verbs, when they govern indirect quotations as complements, belong to this class. Examples of sentences containing such verbs are given in (46) and (47).

- (46) a. I believe (that) John has sold his Mustang.  
       b. John, I believe, has sold his Mustang.  
       c. John has sold his Mustang, I believe.



- (47) a. Bill said that he was going home.  
 b. He, Bill said, was going home.  
 c. Bill was going home, he said.

These sentences differ from the sentences with direct quotations as complements in several ways. First, the complement, with or without that, is not separated from the matrix by a pause as long as the matrix remains in its normal initial position.

- (48) \*I believe / John has sold his Mustang.

A question complement appears as a "direct" (root) question when its matrix S is embedded. For example, the verb wonder, which takes questions as complements, can occur in parenthetical phrases. When it does, but not otherwise, its complement takes the form of a root question:<sup>12</sup>

- (49) a. I wonder whether John prefers to walk.  
 b. ?I wonder, does John prefer to walk?  
 c. \*Whether John, I wonder, prefers to walk.  
 d. Does John, I wonder, prefer to walk?  
 e. \*Whether John prefers to walk, I wonder.<sup>13</sup>  
 f. Does John prefer to walk, I wonder?

(We may assume that if (49b) is grammatical, it results from the application of the detachment rule without matrix embedding. We will consider this and similar sentences below.)

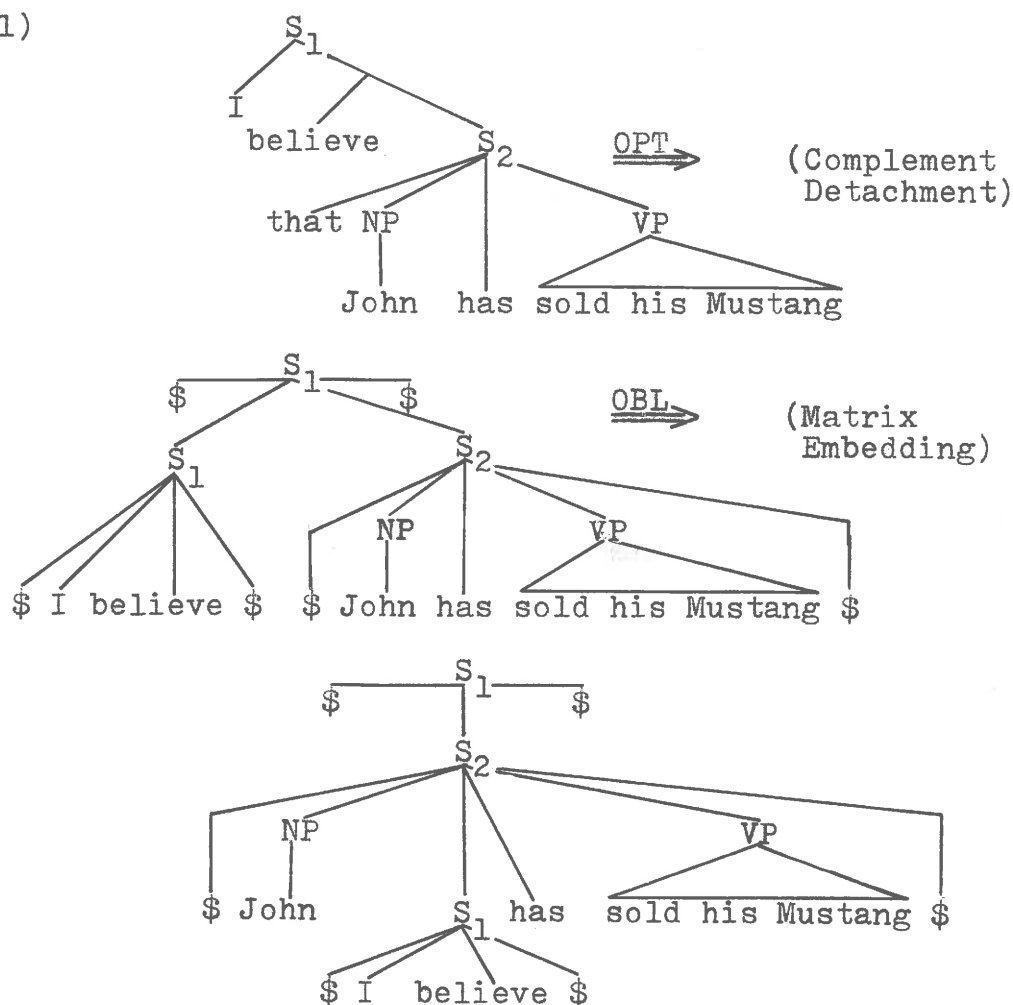
A second difference between sentences containing direct quotations and these others is that in the latter the matrix never undergoes inversion.

- (50) a. \*John, believe I, has sold his Mustang.  
 b. \*Bill was going home, said he.

Despite these differences, and others we will note as we proceed, all these sentences can be derived by the same rules we have established for quotative sentences. To explain the absence of a pause following the matrix in sentences like (46a) we need only specify that while Quote Detachment (which we can now generalize as Complement Detachment) is optional, Matrix Embedding is obligatory unless the complement is a direct quotation.

We may illustrate the application of these rules by deriving sentence (46b) above as follows:

(51)

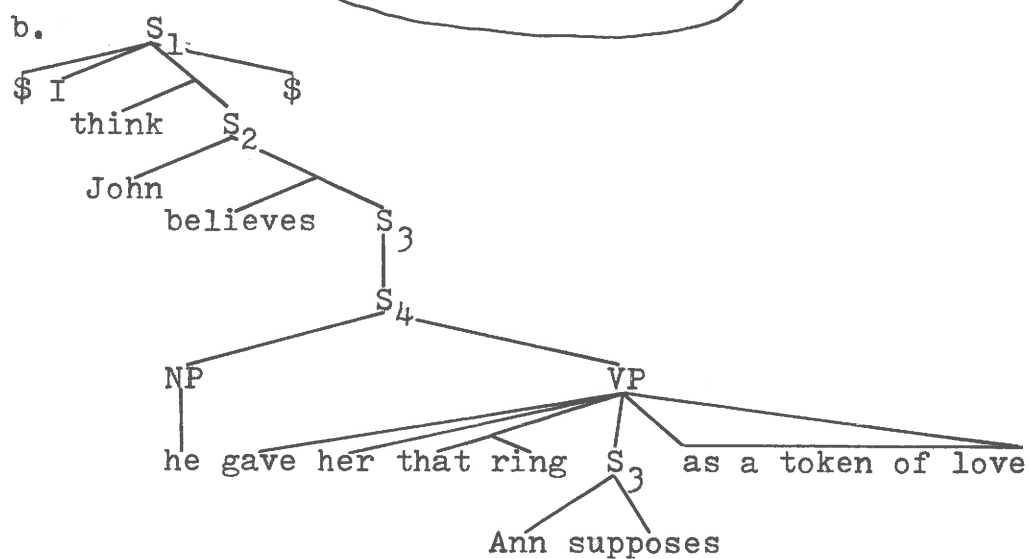
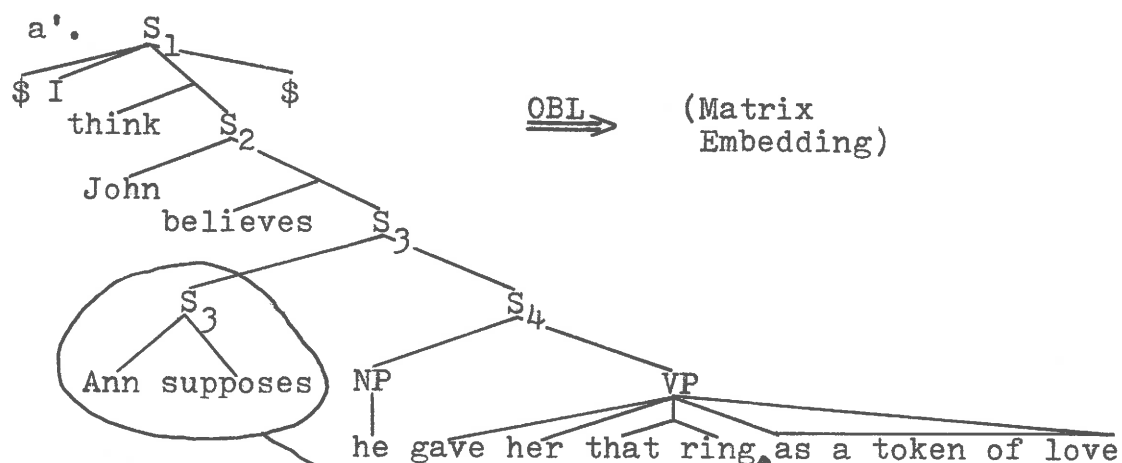
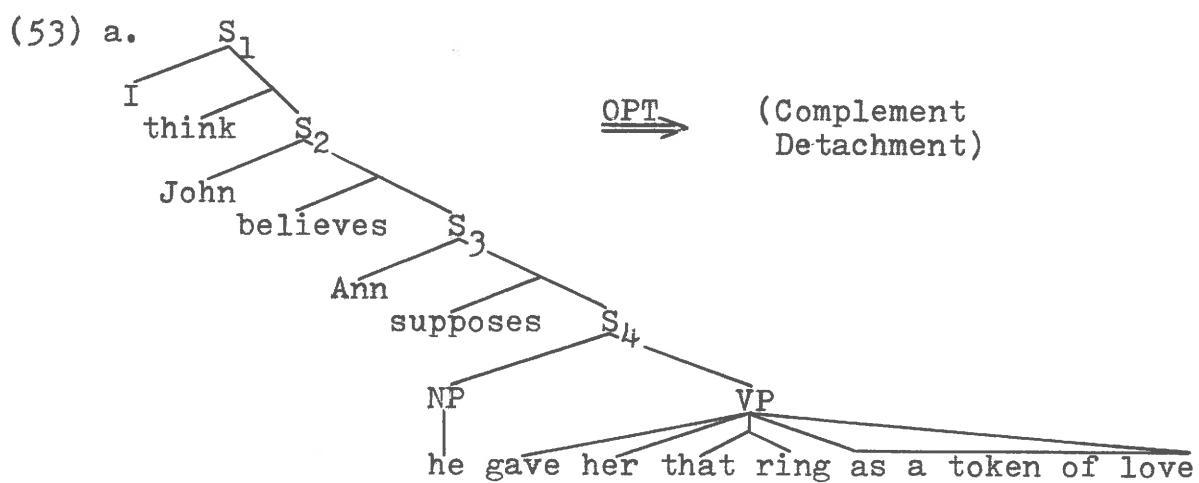


#### 4.2.2. Multiple Embedding.

As with direct quotations, it is possible to apply these rules repeatedly to sentences with a series of non-factive matrices. We have already noted that direct quotations, by their very nature, are "fixed"; the speaker of a sentence cannot change the order of elements within the sentence he is quoting, although he can place "original" parts of his sentence before, after, or parenthetically within the quotation. For each speaker, then, in a conversational chain of quotations, the rules apply only to the matrix sentences above all quotations. In the case of sentences whose complements are not direct quotations, of course, this restriction does not hold. Let us first, however, try applying our two rules in the normal cyclic manner, from lowest to highest sentence, as above in 4.1. Consider the following sentences:

- (52) a. I think (that) John believes (that) Ann supposes  
           (that) he gave her that ring as a token of love.
- b. I believe it is fair to assume that it is very  
           likely that John doesn't love her.

The underlying structure of (52a) is approximately as shown in (53a). A single application of the rules of Complement Detachment and Matrix Embedding on the lowest cycle produces first (53a') and then (53b).



Since Complement Detachment is optional, and Matrix Embedding can apply if Complement Detachment has applied, (53b) should be a possible surface structure. But this sentence (reproduced as (54)) is ungrammatical.

(54) \*I think John believes he gave her that ring, Ann  
supposes, as a token of love.

(This sentence might be taken as a paraphrase of Ann supposes that I think John believes he gave her that ring as a token of love rather than of (52a), but even so it is not fully grammatical because of the Downward Bounding constraint to be discussed below.)

The structure (53b) will result in an acceptable surface structure only if the rules are applied on each succeeding cycle, giving a sentence such as (55). (I am not claiming that this sentence is acceptable in performance, but only that it is grammatical.)

(55) He gave her that ring, Ann, John, I think, believes,  
supposes, as a token of love.

If the rules apply only on the second cycle up ( $S_2$ ) we again obtain a sentence that is ungrammatical (as a paraphrase of (52a)):

(56) \*I think Ann supposes, John believes, that he gave  
her that ring as a token of love.

Again it becomes grammatical only if the rules also are applied on the subsequent cycle:

(57) Ann supposes, John believes, I think, that he gave  
her that ring as a token of love.

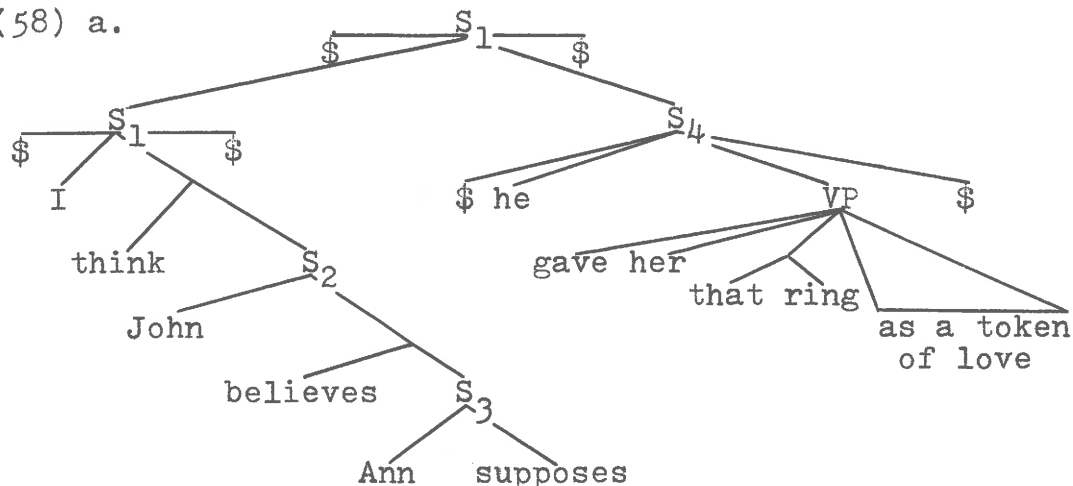
Thus we see that cyclic application will in general result in ungrammatical sentences unless the rules, if applied on one

cycle, are then applied on all subsequent cycles. But if the application of the rules is made obligatory in this way, some grammatical sentences cannot be generated at all. Notice also that cyclic application does not correctly assign boundaries except when it applies on the highest cycle.

Only grammatical sentences will be derived, however, if we abandon the cyclic principle and require that on each application the complement be attached to the highest S. Then if Matrix Embedding is required to move the highest constituent (as before) we can insure that a nonroot matrix cannot be moved by itself. Thus the correct phrasing will be produced in all cases.

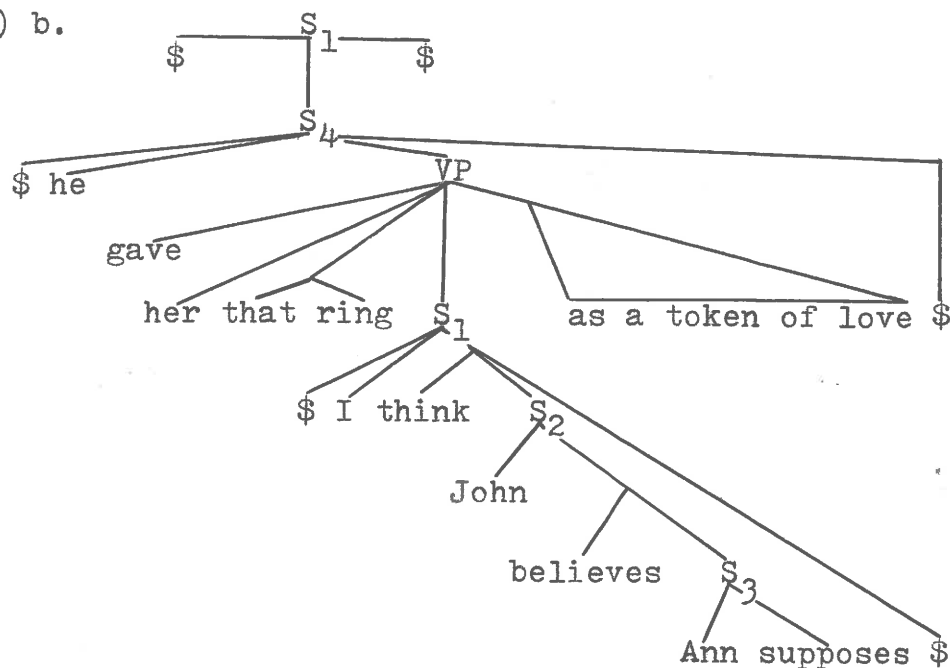
Suppose that Complement Detachment is applied to  $S_4$  in (53a) as above. The result will now be (58a).

(58) a.



Having applied to  $S_4$ , Complement Detachment cannot reapply to  $S_3$  or  $S_2$  because the structural description of the rule is no longer met. Matrix Embedding will now apply to the lefthand constituent  $S_1$  of (58a) to produce (58b).

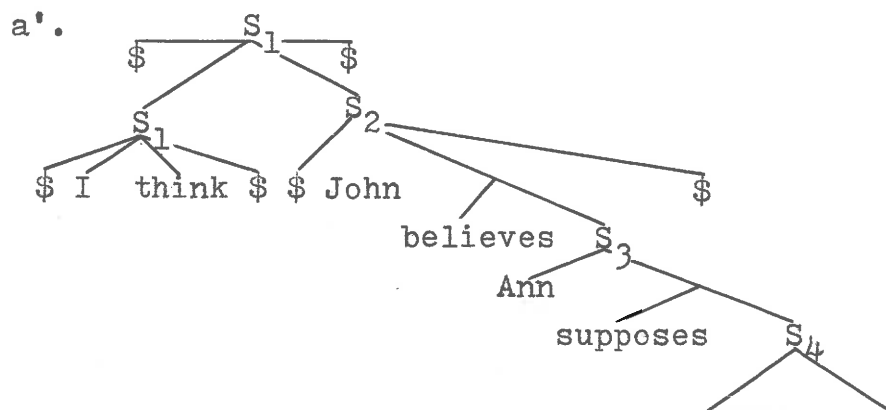
(58) b.



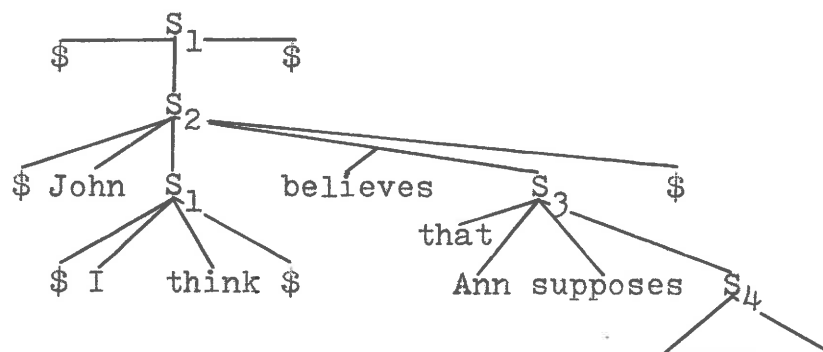
Sentence (55) can be derived by applying both rules to  $S_1$ ,  $S_2$ , and  $S_3$  in turn. Although the rules apply to the highest sentence first and then to lower sentences in turn, it is not actually the case that they apply cyclically downward; at each step Matrix Embedding applies to the highest sentence on the left branch; after each application, the next sentence down becomes the highest sentence.

The derivation of (55) is shown in (59).

(59) a. [Same as (53a).]

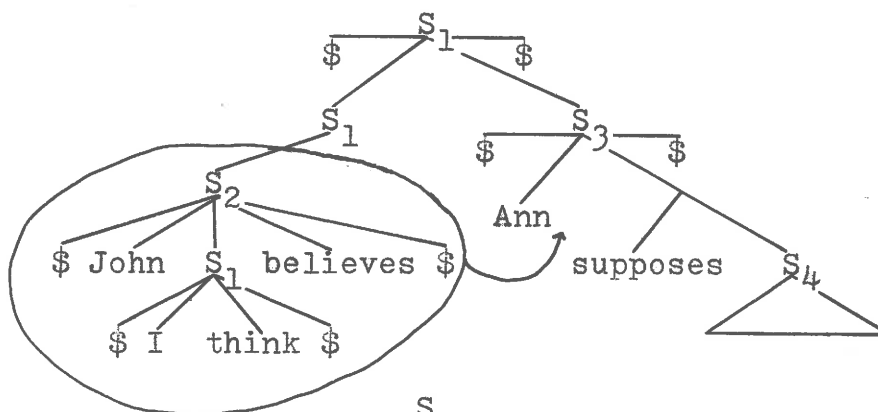


(59) b.

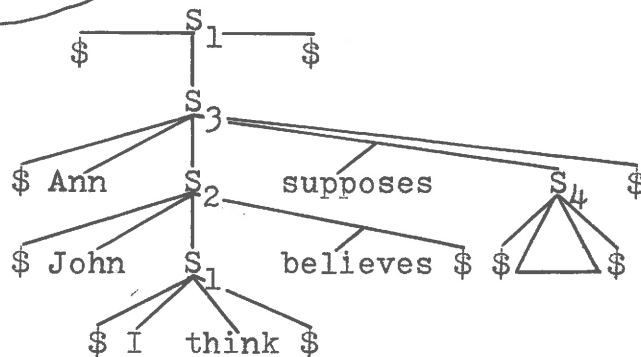


[John, I think, believes that Ann supposes he gave her that ring as a token of love.]

b'.



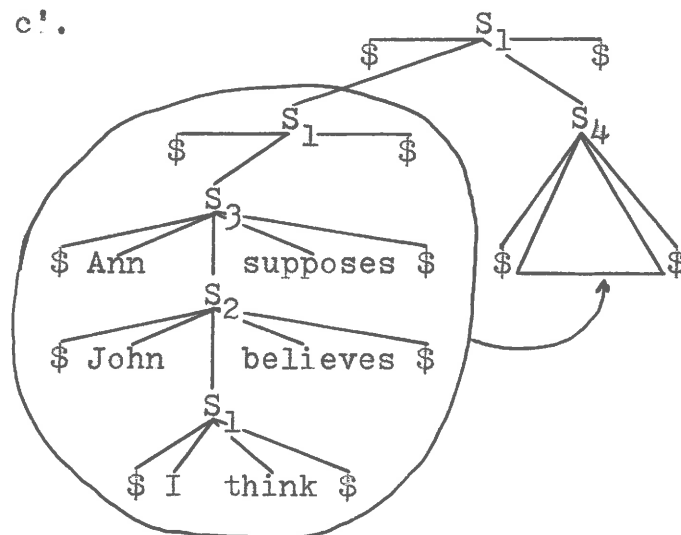
c.



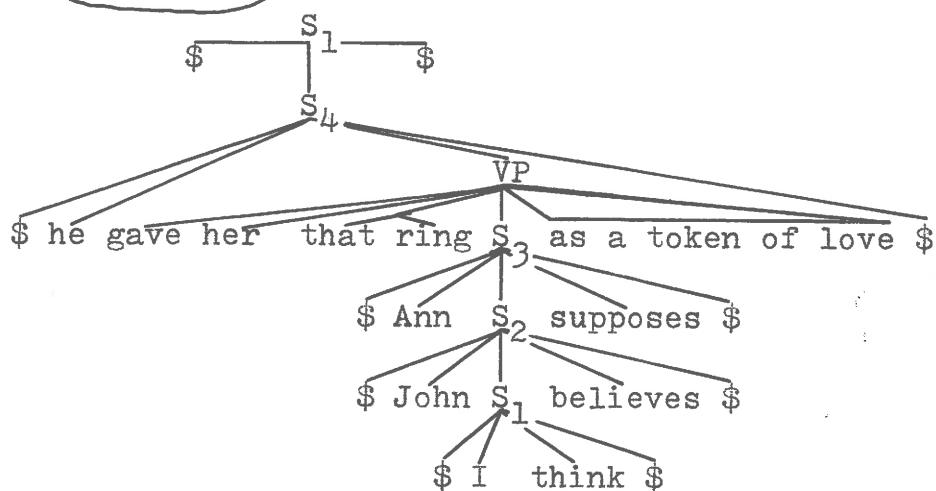
[Ann, John, I think, believes, supposes that he gave her that ring as a token of love.]



(59) c'.



d.



[Equals (55).]

Notice that (59a), (59b), (59c), and (59d) are all predicted to be possible surface structures, since the subsequent re-application of Complement Detachment is optional; this prediction is correct. On the other hand, (a'), (b'), and (c'), which result from Complement Detachment, are not possible surface structures since the structural description of Matrix Embedding, an obligatory rule, is met in each case.

In the derivation of sentence (55), Matrix Embedding applied each time to move the matrix into the "next sentence down" or, more accurately, since the complement has been detached,

into the next sentence to the right, without crossing more than one S boundary. If we allow the rule to move  $S_1$ , for example, into  $S_4$ , the result is unacceptable.

- (60) \*John believes that Ann supposes he gave her that ring,  
I think, as a token of love.

The result is even worse if the rule applies twice, but inserts each matrix into the lowest sentence at a different point.

- (61) a. \*He, I think John believes, gave her that ring, Ann  
supposes, as a token of love.  
b. \*John, I think he believes, gave her that ring, Ann  
supposes, as a token of love.

The sentences of (62), however, are grammatical.

- (62) a. He, Ann, I think John believes, supposes, gave  
her that ring as a token of love.  
b. He gave her that ring, Ann, I think John believes,  
supposes, as a token of love.

One might attempt to account for these facts by imposing a Downward Bounding constraint on Matrix Embedding (cf. Ross 1967a: 334ff.). But as already noted, the complement is not a lower sentence at the time the rule applies. Furthermore, in (62) the rule actually refers to  $S_1$  in moving it, with  $S_2$ , into  $S_3$ , so the conditions of Downward Bounding are not actually met. I have found no simple alternative means of stating this constraint, which must remain therefore as one of the several unsolved problems in the formulation of the structural change portion of the Matrix Embedding transformation. Notice, incidentally, that the same constraint apparently does not hold in the case of multiply-embedded quotations.

In addition to that-clauses, parenthetical verbs may

take question clauses as complements. (For arguments that these clauses do not differ internally in deep structure from "direct questions" see Baker (1970).)

- (63) a. I meant to ask what Alice was doing under the table.  
 b. What, I meant to ask, was Alice doing under the table?  
 c. \*What, I meant to ask, Alice was doing under the table.
- (64) a. I wonder whether our planet is doomed.  
 b. Is our planet doomed, I wonder?  
 c. \*Whether our planet is doomed, I wonder.

(Sentence (64c) is marginally acceptable as a topicalized sentence, in which the constituent moved is the NP dominating the question, so that the question does not become a root sentence.)

The difference in the surface form of the questions in the (a) and (b) sentences above (as well as the obligatory deletion of that in detached that-clause complements) is predicted by our analysis.

In some dialects, sentences with pause between a non-embedded matrix and its complement are grammatical. Some of these, not all of which need be acceptable in any given dialect, are presented in (65).

- (65) a. I wonder, / are we going to get there on time?  
 b. John asked, / were we going to town.  
 c. I believe, / (\*that) he's got the money on him now.  
 d. It used to be, / (\*that) the American housewife  
     had as hard a time doing her job as <sup>the</sup>  
     American businessman has doing his.<sup>14</sup>

All such sentences are explained under our analysis as simply the result of Complement Detachment without the (usually obli-

gatory) subsequent application of Matrix Embedding. Complement Detachment occurs quite commonly in equational sentences of the following sort:

- (66) a. What happened (/) was that Ann spilled juice on her jumper.
- b. What happened was, / Ann spilled juice on her jumper.
- (67) a. What I want to know (/) is how you turn the thing off.
- b. What I want to know is, / how do you turn the thing off?

Again, the absence of that in (66b) and the inversion of subject and auxiliary in (67b) correlate with the occurrence of the pause to indicate that the complements are detached. The existence of such sentences provides independent support for the rule of Complement Detachment.

#### 4.3. Parenthetical Adverbs.

##### 4.3.1. Adverbs from Nonfactive Matrices.

There are a number of adverbs which occur initially and parenthetically and, in some cases, in sentence-final position, like the parenthetical sentences we have discussed above. As Urmson (1963) points out, sentences containing such adverbs are often near-paraphrases of sentences with complement-taking "parenthetical verbs."

Examples of parenthetical adverbs given by Urmson are luckily, happily, unfortunately, consequently, presumably, admittedly, certainly, undoubtedly, probably, possibly.

Examples (68) and (69) illustrate typical paraphrase and near-

paraphrase relationships and some of the possibilities of embedding and of phrasing.

- (68) a. Surely it won't take very long.  
       b. It surely won't take very long.  
       c. I'm sure the operation won't take very long.  
       d. The operation, / I'm sure, / won't take very long.
- (69) a. Unfortunately, / John wasn't there.  
       b. John, / unfortunately, / wasn't there.  
       c. It is unfortunate that John wasn't there.  
       d. \*John, / it is unfortunate, / wasn't there.  
       e. I regret (to say) that John wasn't there.  
       f. John, / I regret to say, / wasn't there.

It is obvious from even these examples that there is a great deal of variation in the behaviour of these parenthetical adverbs. Whereas surely does not form a separate phrase in either initial or embedded position, unfortunately does, in both. There are also adverbs which are separate phrases when they occur initially but not when they are found within the predicative sentence:

- (70) a. Evidently, / this house has termites.  
       b. This house evidently has termites.  
       c. It is evident that this house has termites.  
       d. \*This house, / it is evident, / has termites.

(Some may disagree, however, that the phrasings of (70a) and (70b) are the only ones possible, or that the sentences with different phrasing are paraphrases.) Despite the variations, there are predictable regularities.

If we assume that parenthetical adverbs come from higher

sentences in deep structure, we can account for the paraphrase relationships indicated above and at the same time account for the usual phrasing in the surface structures by the principles and rules already proposed.

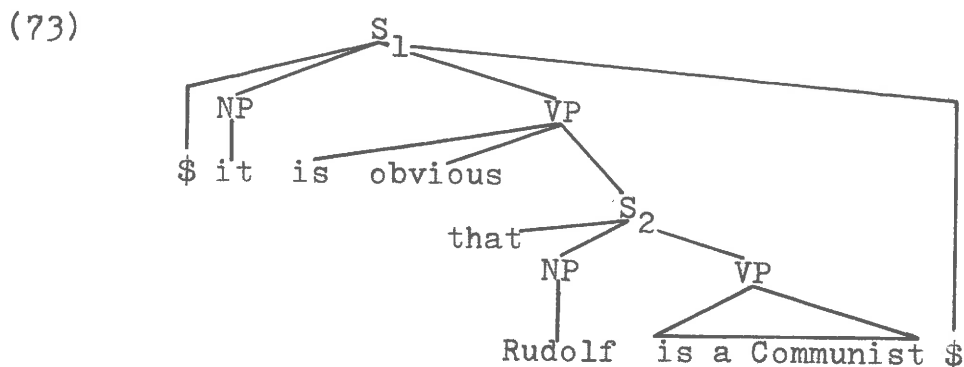
It is not possible within the scope of this work to try to motivate a particular deep structure and transformational derivation for parenthetical adverbs. Instead, I will merely attempt to show that it is possible to conceive a reasonable derivation that is consistent with the assumptions made here concerning the phonological phrase.

Consider the following sentences.

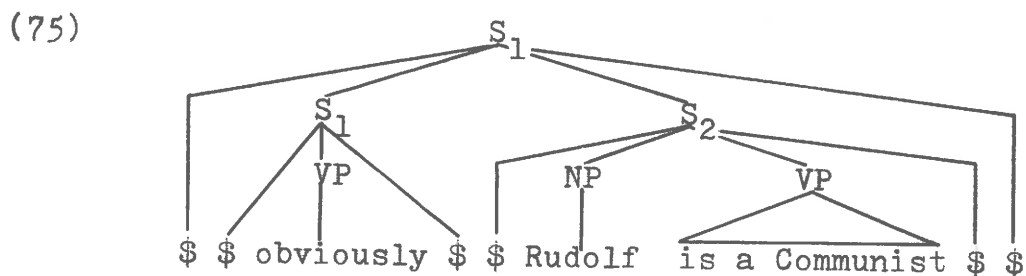
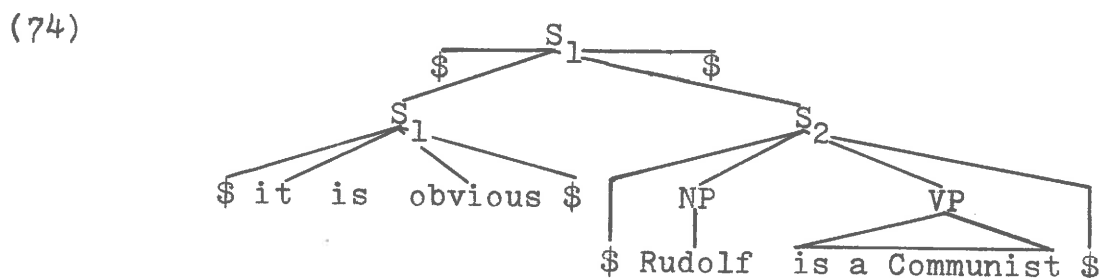
- (71) a. It is obvious that Rudolf is a Communist.
- b. \*It is obvious, / Rudolf is a Communist.
- c. ?\*Rudolf, / it is obvious, / is a Communist.
- d. \*Rudolf is, it is obvious, a Communist.
- (72) a. ?Obviously Rudolf is a Communist.
- b. Obviously, / Rudolf is a Communist.
- c. Rudolf, / obviously, / is a Communist.
- d. Rudolf is obviously a Communist.

The set of sentences in (72) is the complement of (71) in terms of grammaticality; all the sentences appear to be synonymous.

Let us assume that the surface structure of (71a) is approximately as shown in (73).

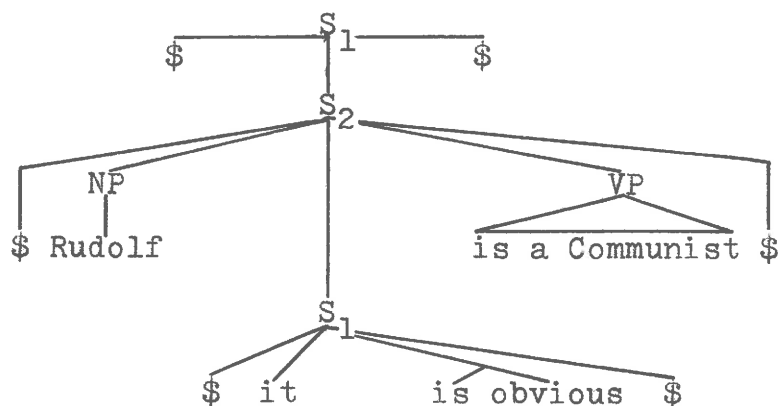


To derive (72b) it is necessary only to apply Complement Detachment to (73) and to specify that the matrix it is obvious becomes obviously when detached (more generally it is Adj \$ S  $\Rightarrow$   $\emptyset \emptyset$  Adj + ly \$ S).<sup>15</sup> This derivation is shown in (74) and (75).

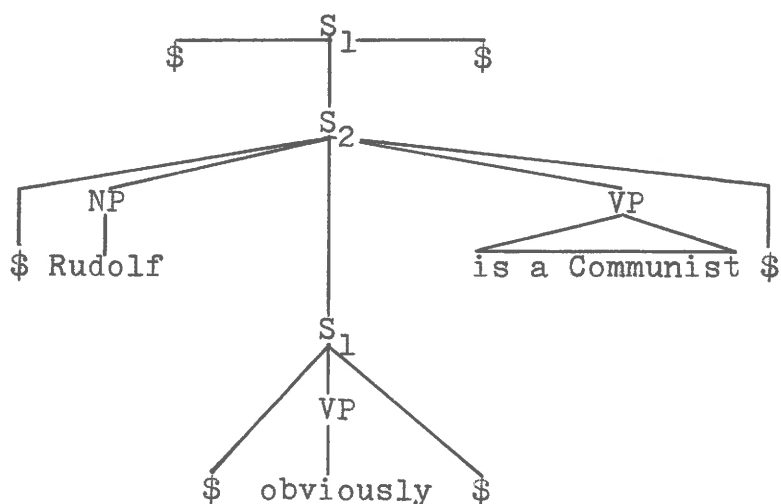


The phrasing of (75) is unaffected if the lower  $S_1$  node is deleted along with its boundaries. But if the PB's are deleted from around the adverb, there is no source for the PB's in (72c), where the adverb is embedded. The structure of (72c) is shown in (77). Since Matrix Embedding applies to move S constituents, it must apply to (74) to give (76), from which (77) is derived by the above-mentioned rule of adverbialization.

(76)



(77)



In (77) the correct phrasing results only if we assume that the  $S_1$  node is not pruned. I know of no independent arguments for this assumption. But it seems a plausible hypothesis that no S can be pruned as long as it dominates PB's and some other constituent. We will return to this matter in 4.6, where we find that reduced nonrestrictive relative clauses (i.e., appositive phrases) require the same analysis.

(Notice that it is not necessary for parenthetical adverbs to have a predicative paraphrase in order for us to assume an S node dominating them. We need only assume that in deep structure the adverbs are predicates of a sentence in which



the surface structure "main clause" is the argument.)

We have not yet accounted for the difference in phrasing between (72c) and (72d). A number of adverbs occur without being set off by boundaries in "Preverbal Adverb" position, that is, following the copula or the first auxiliary but always before "main verbs."

- (78) a. John is already late.  
 b. You have never been there.  
 c. I would certainly have thought of it.  
 d. Ann is also working in the library.

Assuming that adverbs are not generated in this position by the base rules (already, for example, like its counterpart yet, being generated in final position in the underlying structure), a rule is needed which takes adverbs of the special class of Preverbal Adverbs from any other position and moves them to preverbal position. This rule refers to the Adverb node and not the S node which dominates the adverb. When the adverb is moved, the S node, dominating only boundaries, is left behind and subsequently deleted. This analysis thus explains why adverbs in preverbal position as in (72c) and (78) will not have boundaries, while the same adverbs in other positions (72d) will have boundaries.<sup>16</sup> One apparent problem with this solution is that there seems to be no natural way to prevent the Embedding rule from inserting root sentences which reduce to adverbs of this class (such as obviously) in the preverbal position, in the first place. Some adverbs, such as unfortunately, in fact do occur in this position (but before "Preverbal Adverbs") as separate

phrases, presumably as a result of the Embedding rule:

(79) You have, unfortunately, never been there.

The preverbal position can be excluded for most adverbs, however, in a proper formulation of the structural change schema for matrix embedding.

Various ad hoc boundary deletions appear to be necessary in connection with particular adverbs and perhaps certain classes of adverbs, as noted in Chapter III. These idiosyncratic characteristics do not affect the validity of the general principles which account for most cases.

#### 4.3.2. Other Parenthetical Adverbials.

In Chapter III we assumed that the underlying position of most adverbs was within the predicate of the main clause, and that initial adverbs were derived by movement transformations. There is evidence, however, that other classes of adverbs besides those discussed in 4.3.1 are derived from higher sentences by processes of matrix embedding. For example, compare (80a) with (80b), which repeats example (65d).

(80) a. Formerly, / the American housewife had as hard a  
time doing her job as the American businessman  
has doing his.

b. It used to be, / the American housewife had as hard  
a time doing her job as the American businessman  
has doing his.

If the adverb formerly is derived by late lexical insertion from the predicate structure underlying used to be, then its phrasing in initial and embedded positions can be explained by the now-familiar rules of detachment and embedding. Notice that

formerly does not occur in the "normal" adverb position within the predicate (without separate phrasing):

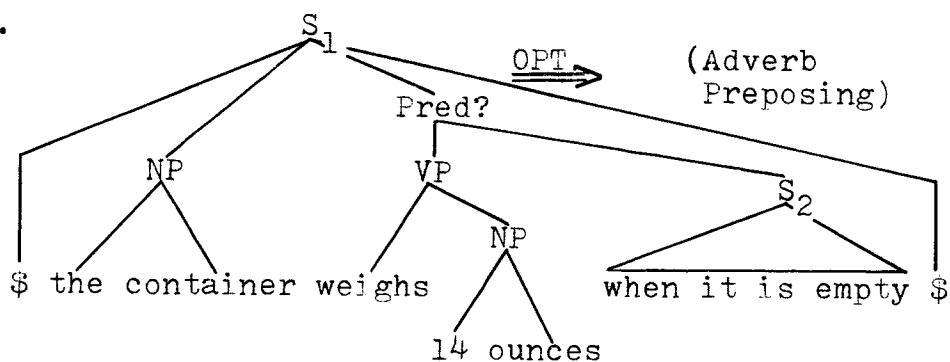
(81) \*Women had to work hard formerly.

Adverbial clauses of various types can, of course, be embedded within the main independent clause with which they are associated. In Chapter III we discussed the derivation of preposed adverbial clauses from an underlying predicate position. The separate phrasing of parenthetical clauses can be accounted for if they are derived by embedding of the preposed counterparts. The steps of the derivation are indicated by the sequence of examples in the following sets.<sup>17</sup>

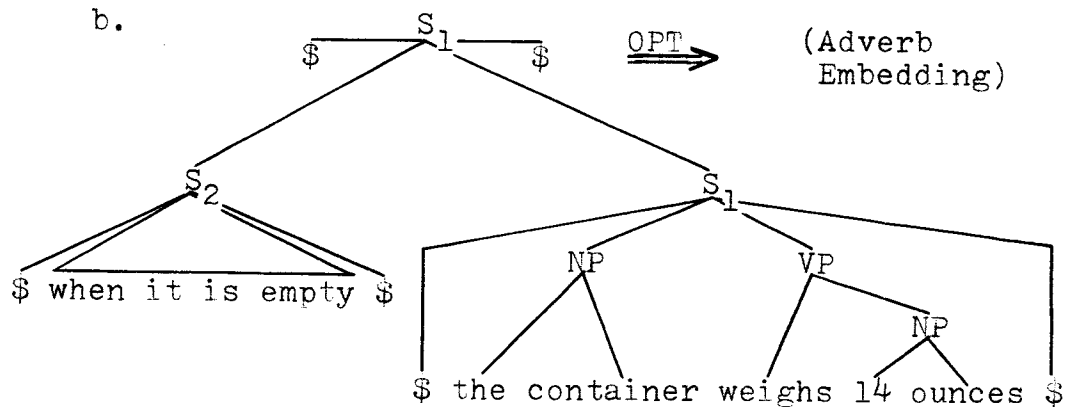
- (82) a. The container weighs 14 ounces when it is empty.  
       b. When it is empty, / the container weighs 14 ounces.  
       c. The container, / when it is empty, / weighs 14 ounces.  
       d. The container, / empty, / weighs 14 ounces.
- (83) a. The boys can finish this tomorrow, / if you'd rather.  
       b. If you'd rather, / the boys can finish this tomorrow.  
       c. The boys can, / if you'd rather, / finish this  
           tomorrow.

Sentence (82d) illustrates the fact that some adverbial clauses can be reduced without losing their phraseological independence, as with other clauses we have discussed. The sentences above can be derived by rules we have already discussed, provided Matrix Embedding is extended to apply to initial adverbial clauses.<sup>18</sup> The successive P-markers in the derivation of (82a-d) are approximately as indicated in (84a-d).

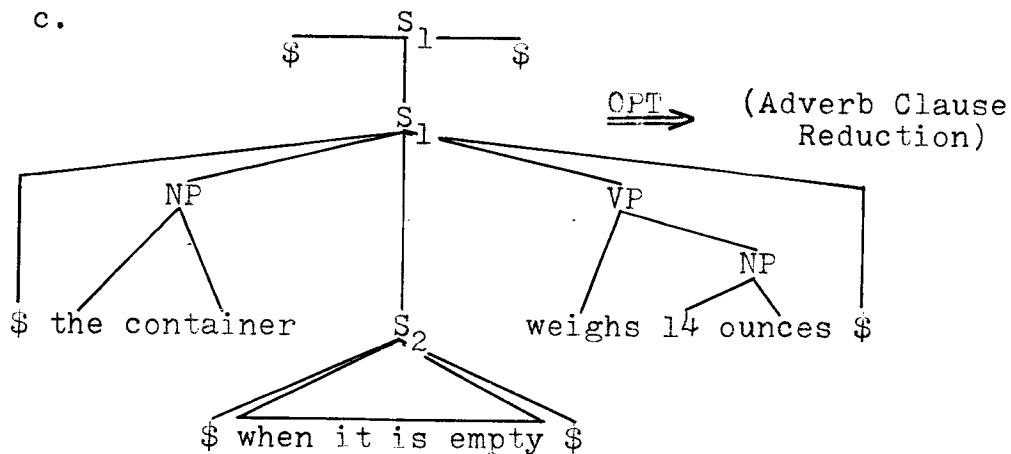
(84) a.



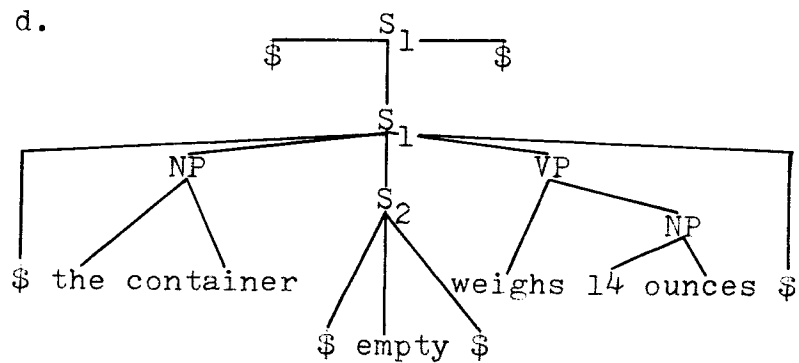
b.



c.



d.



One of the most common forms of reduced adverbial clauses is the participial phrase (or clause). (Compare Section 3.2.)

- (85) a. When he looked back, / John saw her still waving.
- b. (Upon) looking back, / John saw her still waving.
- c. John, / (upon) looking back, / saw her still waving.
- (86) a. When it is completely furnished, / this house rents  
          for three hundred dollars.
- b. Completely furnished, / this house rents for three  
          hundred dollars.
- c. This house rents, / completely furnished, / for three  
          hundred dollars.
- d. This house, / completely furnished, / rents for three  
          hundred dollars.

One of the characteristics of participial phrases is the referential identity of its (underlying) subject with the subject of the main clause. It is thus possible for a participial phrase to be ambiguous between an adverbial and an appositive reading, where the appositive participial is derived from a relative clause and ultimately from a conjunction of sentences (cf. Section 4.6), as indicated in (87).

- (87) a. This house is completely furnished, and it rents for  
          three hundred dollars.
- b. This house, which is completely furnished, rents for  
          three hundred dollars.
- c. This house, / completely furnished, / rents for three  
          hundred dollars. (= (86d))
- d. This completely furnished house rents for three  
          hundred dollars.

Parenthetical prepositional phrases pose a problem under the present formulation of the OBI convention. Although they may be assumed to be derived immediately from preposed (root)

position, they appear to have no dominating root sentence node. Yet they are set off by pauses like other parenthetical elements, as shown in (88).

- (88) a. The others, in the meantime, continued to act as though nothing had happened.
- b. I learned, to my dismay, that the rain had washed out the only bridge.
- c. Bill's shortcut, in short, was rather long.

Very little is known of the underlying structure of such prepositional phrases, and it may be that all come ultimately from sentences. (88b) seems to have a paraphrase with which dismayed me, for example, while in short in (88c) could be derived from a performative clause such as I say in order to shorten the story . . . .

Nevertheless the parenthetical use of ordinary adverbials of time, place, manner, etc., is unexplained by my hypothesis as it stands. The direction in which an explanation may be found seems to lie in a possible broader generalization, namely that any element inserted into a predicative sentence from outside is bounded by PB's whether it is a sentence or not. The attachment of PB's could be accomplished by generalizing the OBI convention so that PB's are assigned to all root constituents (i.e., all constituents not contained in predicative sentences) rather than just to root sentences. We will return to this question below and in Chapter VI.

#### 4.4. Parenthetical Vocative Phrases.

Vocative expressions must refer to the person spoken to

or (a subset of) the group spoken to (cf. Downing 1969). But vocatives, unlike appositives, are not restricted to positions following a coreferential NP. Thus whereas the appositive my friend in (89) is limited to a single position (following a coreferential NP, Bill) the vocative is free to occur in several positions in (90). (Coreferential NP's are underlined.)

(89) Bill, my friend, forgot to tell me you said that you would be late. (Bill is my friend.)

- (90) a. My friend, Bill forgot to tell me you said that you would be late.
- b. Bill, my friend, forgot to tell me you said that you would be late.
- c. Bill forgot, my friend, to tell me you said that you would be late.
- d. Bill forgot to tell me, my friend, that you said that you would be late.
- e. Bill forgot to tell me that you, my friend, said that you would be late.
- f. Bill forgot to tell me that you said, my friend, that you would be late.
- g. \*Bill forgot to tell me that you said that, my friend, you would be late.
- h. Bill forgot to tell me that you said that you, my friend, would be late.
- i. Bill forgot to tell me that you said that you would be late, my friend.

Sentences (89) and (90b), which are otherwise identical in surface structure, differ in intonation; appositives have the rise-fall pattern of assertion, while vocatives have a low rising intonation, like most other parentheses. It seems to be the case that vocatives can be inserted at the end of any phonological word (cf. SPE). Sentence (90g) is ungrammatical because the vocative

interrupts the word that you. The vocative in (90g) cannot be a preposed vocative belonging to the indirect quotation you would be late (from a putative My friend, you will be late) because of the constraint noted in 3.3.2 that prevents the reporting of interjections and vocatives in indirect quotation. As (90h) shows, however, a vocative belonging to the performative sentence dominating the highest surface S may be embedded in the indirect quotation. (Of course, with a different intonation, my friend in (90h) could be an appositive to the preceding you.)

As noted in Chapter III, there is no evidence that vocatives are derived, like appositives and parenthetical adverbs, by the reduction of sentences. Like interjections, they apparently are NP constituents which appear in deep structure as constituents of performative sentences only. In 3.3.2 it was shown that the phrasing of initial vocatives follows from the OBI convention in cases where the other elements of the performative sentence have been deleted. That this account is inadequate, however, is shown by the fact that vocatives can occur initially or medially with separate phrasing even when the presumably highest performative sentence has not been deleted, as shown in (91).

- (91) a. Gentlemen, / I say to you that our country must begin  
to face up to these problems.
- b. I say to you, / my friends, / that the time has come  
for action.

Since in all positions vocative NP's constitute separate phrases, we must assume that PB's are somehow assigned as constituents of vocative NP's so that they are carried along whenever a vocative is moved. However, if it is assumed that vocatives



are first generated in or moved to initial position by a left-extrapolation rule, the attachment of PB's can be specified by a generalization of the OBI convention so that PB's are assigned to all root constituents as outlined above. The subsequent positioning of the vocative NP within or following the predicative root sentence could then be accounted for by a slight generalization of the rule of Matrix Embedding or by a separate but similar parenthesization rule. The details of the required rule remain to be investigated.

#### 4.5. Right Dislocation as Leftward Embedding.

A rule of Right Dislocation is proposed in Ross' dissertation (1967a:428-32). Like Left Dislocation, which was discussed in Chapter III above, this is supposed to be a copying rule which adjoins a copy of some NP to the next higher sentence containing it and pronominalizes the original NP. As in Left Dislocation, the moved NP is set off by pause. Ross assumes that, again as in Left Dislocation, the moved NP is Chomsky-adjoined to S. The following sentences illustrate the supposed input and output of Right Dislocation.

(92) a. I thought the library was open.

b. I thought it was open, / the library.

The surface structure assigned to (92b) is essentially as shown in (93).



there appears to be counter-evidence to Ross' claim that the constraint on movement is due to Upward Bounding. Consider for example the sentences of (96), where the dislocated NP is not moved out of an embedded sentence as it is in the examples above.

- (96) a. The manager said you are fired.  
       b. He said, the manager, that you are fired.  
       c. \*He said that you are fired, the manager.

Such sentences suggest that the copied phrase is not always placed to the right of the sentence which immediately dominates it, as Ross' constraint would predict, but is located at the first "major" constituent break following the word containing the "original" (pronominalized) NP.

Right Dislocation, unlike Left Dislocation, does not permit paraphrase with as for NP, nor can the right-dislocated NP be a pronoun.

- (97) a. \*I thought it was open, as for the library.  
       b. \*What he said, as for the manager, was that you are fired.

- (98) a. \*I thought it was open, it.  
       b. \*I thought the library was open, it.

The occurrence of a "full lexical NP" in the right-dislocated phrase following a coreferential pronoun is an apparent violation of the principles governing directionality in pronominalization. Ross accounts for the facts by stipulating that the copying rule of Right Dislocation insert the required pronoun. But this is done at the expense of full generality in the explanation of pronominalization.

Thus far I have been accepting Ross' implicit claim that

sentences exhibiting right dislocation are grammatical. But it must be admitted that many people find all instances of right dislocation to be of questionable grammaticality, especially those in which the copied phrase is embedded rather than moved to the end of the root sentence as it is in (92b). If we seek an intuitive explanation for the phenomenon of right dislocation, it appears quite reasonable to consider right-dislocated NP's as a kind of amplificatory parentheses, added in the performance of sentences in order to clarify the intended reference of a preceding pronoun. The closest sentential paraphrase of a right-dislocated NP is "I mean NP." These considerations suggest that both the pronoun and the full lexical NP are present in the underlying structure, in the same order, before the application of "Right Dislocation," and that the required rule(s) involve sentence reduction and (leftward) parenthesization. The parenthesis is inserted not according to the constraint of Upward Bounding, but at the first "major" constituent break (provided it is a word boundary) following the coreferential pronoun.

If we wish to formulate a transformational derivation for what I believe is best considered a performance phenomenon (because native speakers react to it as a form of correction or explication, rather than as a grammatical construction), I suggest that the steps of the process are as indicated in the following sets of equivalent sentences.

- (99) a. I thought it was open. I mean I thought the library  
was open.
- b. I thought it was open--I mean the library.
- c. I thought it was open, the library.

- (100) a. What he said was that you are fired. I mean what the manager said was that you are fired.
- b. What he said was that you are fired. I mean (what) the manager (said).
- c. What he said--I mean what the manager said--was that you are fired.
- d. What he said--I mean the manager--was that you are fired.
- e. What he said, the manager, was that you are fired.

If Ross' upward-bounded Right Dislocation rule were the source of inserted phrases such as the manager in (100e), the phrasing would require some special ad hoc explanation and would in fact constitute a strong counter-example to the principles of phrasing that are hypothesized here. Given the derivation illustrated in (99) and (100), the phrasing of sentences exhibiting "right dislocation" follows from the Obligatory Boundary Insertion convention in the same way as with other instances of parenthesization discussed here.

#### 4.6. Appositive Clauses and Appositive Phrases.

In this section we will consider a type of embedding transformation which is somewhat less complex than the parenthesization processes just described. The rule of appositive formation moves only sentences which are members of root-level conjunctions, and it inserts the embedded sentence only at a point immediately following a coreferential NP. The principles of phrasing, however, apply to appositive clauses just as they do to the parenthetical constructions discussed above.

Here and in Chapter V we will make use of the following

terminology. Two nodes A and B are said to be coordinate when (1) they are nodes of the same category, and (2) they are both immediately dominated by a node C of the same category, which dominates only nodes of that category, except that C also, prior to surface structure, dominates a conjunction. A formative is a conjunction if it signifies a type of coordination: conjunction (and), disjunction (or), and others (but, for, because).

The term conjunction has been used here to specify two distinct entities: it is the name of a categorial node and the name of a type of coordination. We will use the term in its third traditional sense as well: as the name of a structure consisting of two or more coordinate nodes. The members (A, B, etc.) of such a conjunction are called conjuncts.

#### 4.6.1. Conjunct Embedding.

There are synonymous pairs of sentences in English, one of which contains a simple conjunction of two sentences while the other has one of the conjuncts embedded within the other in the manner shown in (101b).

- (101) a. Ralph failed the exam, and he's always been a good student.  
           b. Ralph, and he's always been a good student, failed the exam.

We may assume a rule of Conjunct Embedding which creates (101b) from the structure underlying (101a). One condition on Conjunct Embedding (there may be others) is that both conjoined clauses must contain coreferential NP's, and the embedded clause must be positioned immediately following the coreferential NP of the

receiving clause.

(102) a. Ralph failed the exam, and Mary went swimming.

b. \*Ralph, and Mary went swimming, failed the exam.

(103) a. Ralph told Mary that he failed the exam, and he's  
always been a good student.

b. \*Ralph told Mary, and he's always been a good student,  
that he failed the exam.

It is not necessary that either coreferential NP be the subject of (or otherwise occur in initial position within) its sentence.

(104) a. They told John that he would have to leave, and  
everyone had expected him to make friends there.

b. They told John, and everyone had expected him to  
make friends there, that he would have to leave.

(Some speakers of English find sentences such as (104b) less than fully acceptable. We will account for this below by making the application of further transformations obligatory for such speakers.)

In the examples above it is the righthand conjunct which is embedded in the one on the left. This seems to be the general rule; sentences with the first conjunct embedded in the second tend to be less acceptable.<sup>19</sup> Compare (105) with (101b).

(105) ?Ralph, and he failed the exam, has always been a  
good student.

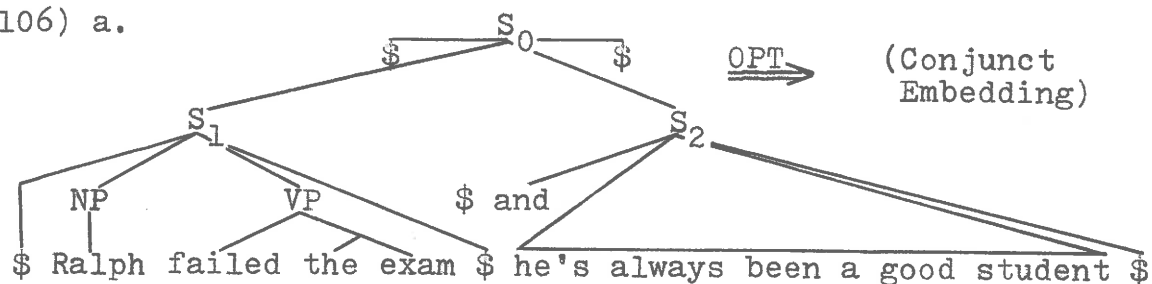
Of course whenever two sentences can be conjoined in either order, either can be embedded in the other (provided only that Conjunct Embedding is applicable at all).

Our basic assumption about phrasing has been that conjoined root sentences dominate PB's as their initial and final constituents. In Section 4.1.2 it was argued that the phrasing of parentheses is best accounted for by ordering the rule of

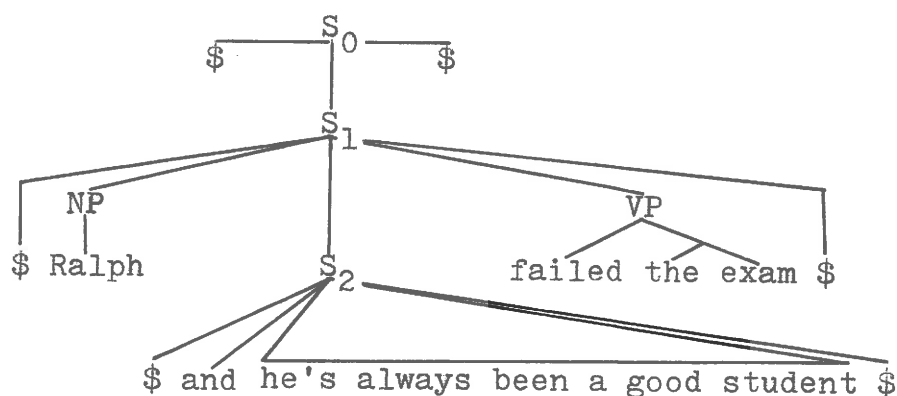
Matrix Embedding after PB insertion. Clearly the phrasing of embedded conjuncts is correctly predicted by similarly ordering Conjunct Embedding after the attachment of PB's.

The derivation of (101b) from the structure underlying (101a) can be illustrated as follows:

(106) a.



b.



As with Matrix Embedding it will not in general be possible for the embedded S to be attached directly to the higher S node. In (104b), for example, it can only be attached to VP. Unlike Matrix Embedding, on the other hand, Conjunct Embedding always adjoins the embedded S to the right of an NP referred to in the rule. It would be possible therefore for the embedded S always to be attached to the NP node rather than sometimes to S, sometimes to VP, etc.

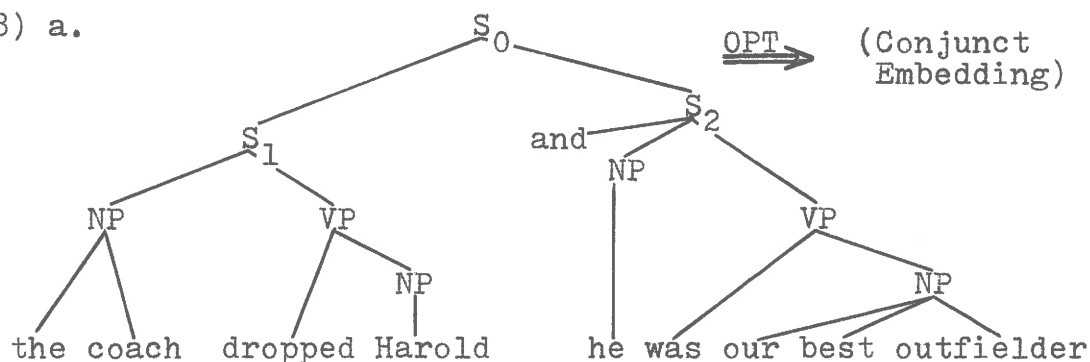
I reject this latter possibility on the following grounds. First, it seems reasonable that the two similar rules of Matrix Embedding and Conjunct Embedding should call for the same type



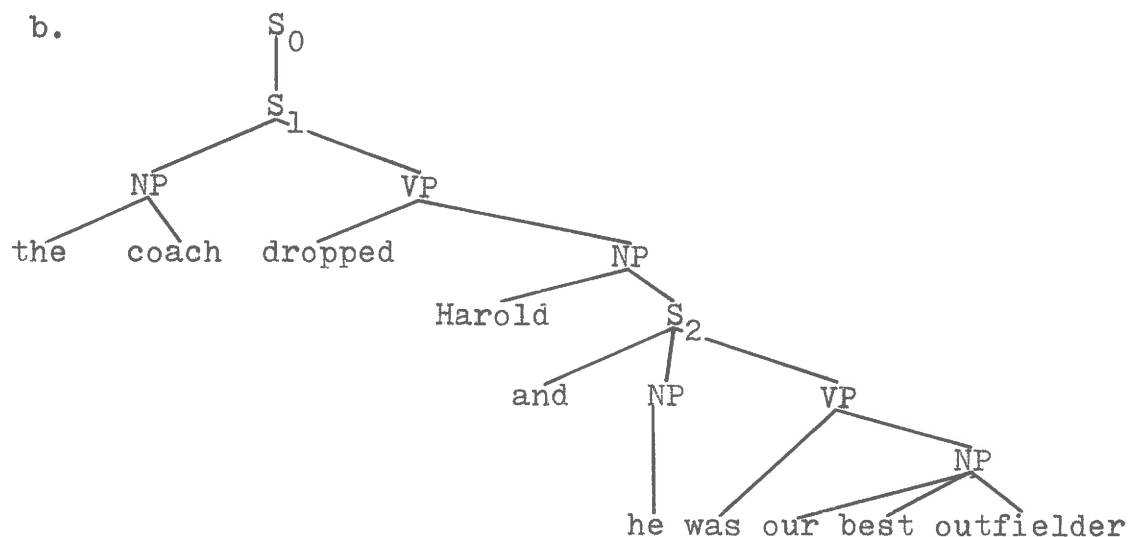
of attachment. Second, there is no evidence that the embedded sentence is a constituent of the preceding NP. (It is true that no movement rule separates the S from the preceding NP, but there is no evidence that any relevant movement rule follows Conjunct Embedding.) Finally, notice that when the coreferential NP of the "receiving" conjunct S is sentence-final, the rule can apply only vacuously:

(107) The coach dropped Harold, and he was our best outfielder. Since Conjunct Embedding is an optional rule, the requirement that the rule attach the embedded S to NP predicts that (107), for example, would have either of the two surface structures indicated in (108).

(108) a.



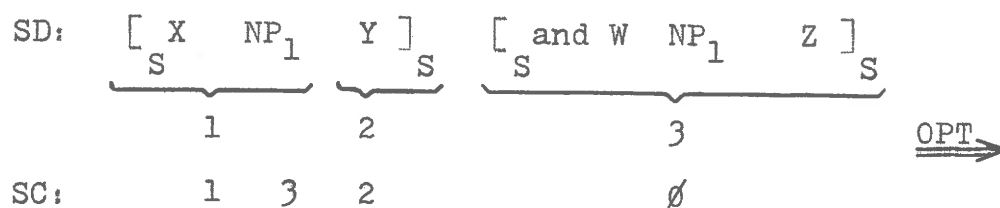
b.



There is no corresponding ambiguity in (107), and the predicted complication is thus unmotivated. (The alternative requirement that  $S_2$  be attached "as high as possible" effects no change in (108a) since  $S_2$  is already attached to the highest node,  $S_0$ .)<sup>20</sup>

The rule of Conjunct Embedding can be stated as follows:

(109) Conjunct Embedding



$W, X, Y,$  and  $Z$  may be null.

(The absence of an adjunction symbol indicates the desired attachment neither to 2 nor 4 but to the highest possible node.)

#### 4.6.2. Appositive Clause Relativization.

The embedded sentences resulting from Conjunct Embedding conform to our definition of appositive above, i.e., they result from an embedding rule which refers to the referential identity of an NP in the embedded sentence with an NP in the receiving sentence.

The same WH-attachment and movement rules which apply optionally to (restrictive) relative clauses with that may also apply to the appositive clauses produced by Conjunct Embedding to derive appositive relative clauses. For those who find sentences like (101b) or (104b) ungrammatical, the rule is obligatory.

I am assuming that restrictive relative clauses, like other subordinate clauses, contain the subordinating conjunction



relative clauses constitute separate phonological phrases while restrictive relative clauses do not is accounted for by deriving only the former from conjoined root S's. Looked at the other way around, our hypothesis concerning phrasing constitutes an argument against the proposal (cf. Annear 1967) that restrictive relative clauses are derived by embedding of (lefthand) conjuncts. It is at least consistent with recent proposals (cf. Bach 1968) that clauses dominated by NP are fundamental units of semantic structure which underlie nouns as well as surface relative clauses.

Our account of the phrasing of appositive relative clauses requires that the source conjunct S be a root sentence, for otherwise there would be no boundaries. Lakoff (1966) has provided a nice argument that, in fact, appositive relative clauses must come from root sentences. (Lakoff argues that relativization must be last-cyclic; but if pronominalization is not a cyclic rule, relativization can be post-cyclic.) Lakoff first points out that both sentences of (114) are bad, for the same (semantic) reason.

(114) a. \*Bogart shot the major, and Bogart shot the major.

b. \*Bogart, who shot the major, shot the major.

Likewise, sentence (115), which contains (114a) as a complement, is unacceptable. But (116) is grammatical.

(115) \*It is not obvious that  $\left[ \begin{array}{c} \text{Bogart shot the major and} \\ \text{Bogart shot the major} \end{array} \right]_S$ .

(116) Bogart shot the major and it is not obvious that  
Bogart shot the major.

The fact that (117) is also grammatical indicates that it is derived from (116), not (115).

- (117) It is not obvious that Bogart, who shot the major, shot the major.

Thus the source of the appositive relative clause must be a root S, not an embedded S.<sup>22</sup>

There are conjoined sentences in which the subject of the righthand conjunct is identical (in deep structure) to the whole lefthand conjunct.

- (118) a. Children cry a lot, and for children to cry a lot is very unpleasant.

- b. Children cry a lot, and it is very unpleasant.

In (118b) the pronoun it refers to the sentence children cry a lot. (Staal (1970:376) points out that pronominalization with it can take place only if the antecedent is an NP, which fact supports the claim that there is an abstract sentence I say (to you) in the underlying structure, of which children cry a lot is the complement.) Relativization rules applied to (118b) give (118c).

- (118) c. Children cry a lot, which is very unpleasant.

There is no corresponding restrictive clause, for what are probably semantic reasons. If restrictive relative clauses were derived from conjunction, there would be no explanation for the absence of a restrictive counterpart to the appositive clause of (118c).

Both restrictive and appositive relative clauses may begin with when or where when the phrases to which they are attached refer to times or places respectively. Appositive clauses of this type are illustrated in (119) and (120).

- (119) a. I want you to come over at three o'clock, and we're going to have a meeting  $\left\{ \begin{smallmatrix} \text{at that time} \\ \text{then} \end{smallmatrix} \right\}$ .
- b. I want you to come over at three o'clock, at which time we're going to have a meeting.
- c. I want you to come over at three o'clock, when we're going to have a meeting.
- (120) a. Seattle is an interesting city, and George used to live  $\left\{ \begin{smallmatrix} \text{in that place} \\ \text{there} \end{smallmatrix} \right\}$ .
- b. Seattle, and George used to live  $\left\{ \begin{smallmatrix} \text{in that place} \\ \text{there} \end{smallmatrix} \right\}$ , is an interesting city.
- c. Seattle, in which place George used to live, is an interesting city.
- d. Seattle, where George used to live, is an interesting city.

These examples show that the derivation of appositive clauses of this type is basically the same as in the case of the clauses discussed above.

Ross (1967a) has pointed out that a difficulty with the derivation of appositive clauses from coordinate sentences is that questions and imperatives may contain appositive relative clauses but cannot be conjoined with statements. Ross offers this example.

- (121) a. Is even Clarence, who is wearing mauve socks, a swinger?
- b. \*Is even Clarence a swinger, and he is wearing mauve socks.
- (122) a. Tell John, who is in the lab, that he is wanted on the phone.
- b. Tell John that he is wanted on the phone,  $\left\{ \begin{smallmatrix} ?\text{and} \\ * \text{but} \end{smallmatrix} \right\}$  he is in the lab.
- c. ?John is in the lab, and tell him that he is wanted on the phone.

Ross suggests that such sentences as (121a) and (122a) can only be derived by double-based transformations, i.e., from pairs of sentences that are unrelated in deep structure.

The possibility that there are paratactic relations between sentences (cf. Annear 1967), intermediate between coordination and complete lack of connection, needs investigation within the framework of generative grammar. Perhaps it can be shown that there is at least such a connection in underlying structure between every appositive relative clause and the sentence which contains it.

In any case, the source of an appositive clause must be a root sentence, and the phrasing of appositive relative clauses is accordingly explained within the present framework.

#### 4.6.3. Appositive Phrases.

Sentences containing appositive NP's such as those in the (a) examples below are synonymous with sentences containing appositive relative clauses in which the subject is coreferential with the antecedent and the predicate is a simple copulative construction.

(123) a. The library, / a large stone and glass building, /  
is on the east side of the campus.

b. The library, / which is a large stone and glass  
building, / is on the east side of the campus.

(124) a. That's Dr. Wilson, / my advisor.

b. That's Dr. Wilson, / who is my advisor.

(125) a. What he loved best in the world, / fishing, / was  
denied to him.

(125) b. What he loved best in the world, / which was fishing, / was denied to him.

c. The thing that he loved best in the world was fishing, / and that was denied to him.

If we assume (cf. Smith 1964) that the (a) sentences above are derived by reduction from the (b) sentences, then the fact that they are set off by pauses is explained. It is only necessary to stipulate, exactly as in the case of reduced adverbial clauses, that embedded S nodes which dominate PB's are not pruned even though they dominate only one syntactic category node (here the appositive NP).

#### 4.6.4. Close Apposition and Appositive Adjectives.

In the foregoing discussion we have been using the term appositive for nonrestrictive or "non-essential" phrases and clauses only. The term "close apposition" is therefore an anomaly in our system because it refers to constructions such as those underlined in (126) in which there is no boundary between two NP's and the second is properly a modifier of the first.

(126) a. The expression "How do you do?" is a little formal.

b. Did you enjoy the movie "High Noon"?

c. The name Smith is very common.

It seems plausible that these appositives should be derived from underlying (restrictive) relative clauses.

(127) The expression [the expression is "How do you do"] is a little formal.

In any case, they cannot be derived from conjunctions of root S's.

(128a) and (128b) differ in meaning from (126a).

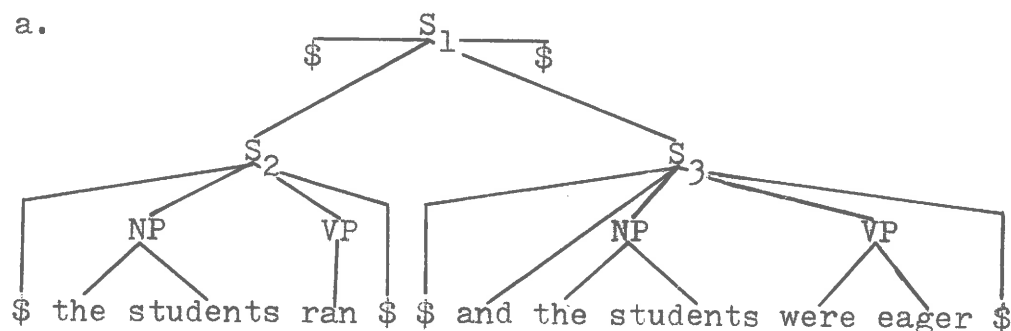


- (128) a. The expression is a little formal, and the expression is "How do you do."  
 b. The expression, (which is) "How do you do," is a little formal.

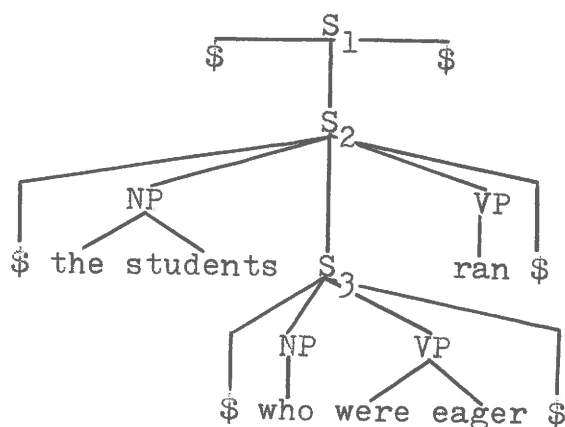
These examples show that the distinction in phrasing between restrictive and appositive found in relative clauses is maintained in reduced forms of these clauses as well.

The same rules of relative clause reduction which produce appositive phrases also apply to relative clauses with predicate adjectives. These adjectives are in most cases obligatorily preposed to a position before the head noun. In the process, appositive adjectives lose their phraseological independence, by being removed from under the PB-dominating S node.<sup>23</sup> (Recall that in Section 4.3.1 we noted a similar loss of boundaries when adverbs were moved into preverbal position.) A typical derivation from conjoined sentence to phrasal adjective is shown in (129).

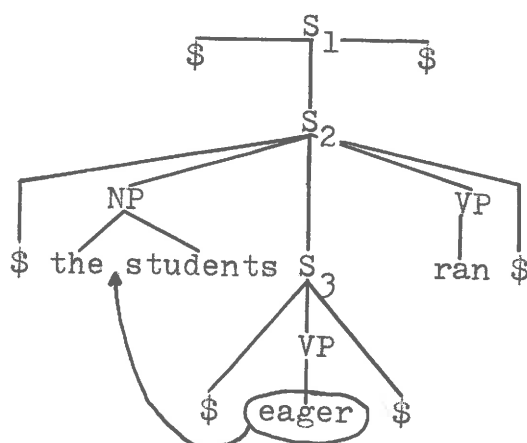
(129) a.



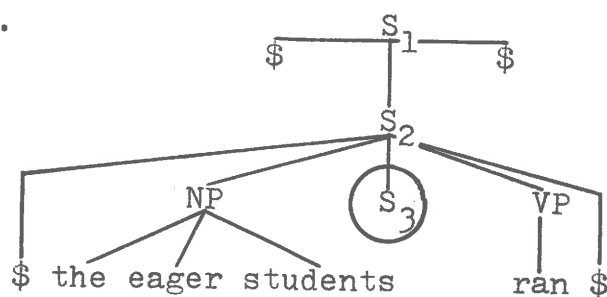
(129) b.



c.



d.



Since phrasal adjectives may derive from restrictive or from appositive clauses, sentences such as (130) are ambiguous.

(130) a. The eager students ran. (All the students were eager.)

b. The eager students ran (but the apathetic ones dawdled.)

(The remaining difference in relative stress is not explained by the syntactic surface structure.)

#### 4.7. Conclusion.

In this chapter I have argued for the necessity of including in the grammar of English the two rules of Complement Detachment and Matrix Embedding. Complement Detachment is a necessary preliminary to Matrix Embedding, but it is independently motivated by the fact that it accounts for the phrasing of sentences in which the latter rule does not apply, such as those containing sentence-final quotations and certain sentences with initial adverbial phrases. Matrix Embedding is proposed as a basic parenthesization transformation which accounts for certain interruptive, parenthetical phrases as insertions into a root sentence from outside. In conjunction with the OBI convention these two rules account for pauses within root sentences in a wide range of cases. Finally it has been shown that the analysis which derives appositive clauses and phrases from conjunctions of sentences also correctly accounts for the separate phrasing of appositives when the requisite rules are applied subsequent to the application of the OBI convention.

In the next chapter we will consider the case of conjoined phrases which result from more complex rules of conjunction reduction.

#### NOTES TO CHAPTER IV

1. As I have seen Emonds' analysis only in a preliminary version, I will not undertake a detailed criticism of it here. Some general objections to any preposing analysis may however be briefly noted. To derive sentences such as "John may,"

she said, "lose his job", such an analysis requires strings of non-constituents (here John and may) to be moved transformationally, and the number of constituents is in principle without limit. Secondly, a preposing rule fails to produce the self-embedded structures required for certain cases of multiple parenthesization discussed in 4.1.2 and 4.2.2 below. Thirdly, ad hoc node-creating or "node-splitting" machinery is required to produce a surface structure which conforms to a general hypothesis concerning phrasing. In addition, such an analysis fails to explain the fact observed by Emonds that parentheticals occur only in quotations which are originally sentence-final (see text below for discussion). It will be shown below that the present analysis avoids these problems and conforms to general principles of transformational embedding and of phrasing. However, whereas Emonds assumes that phrasing is determined by reference to surface structure only, the present analysis requires, as already noted, that some transformations apply after PB's are assigned.

2. Notice, however, that there are particular verbs whose complements are obligatorily nonlinguistic, e.g., Sam went (Bronx cheer), Ludwig whistled, - - - -. There are also nonvocal complements, as in Murph went [thus] with his fist. It must be possible to distinguish grammatical from ungrammatical or nonlinguistic complements, since the former allow parentheses to appear only in a limited number of syntactically determined positions. Sadock (1969:317ff.) draws an important distinction between "significant" and "non-significant" quotations.

The latter occur between quotation marks as complements of verbs such as sing, recite, and (along with significant complements) say. They have no corresponding indirect quotation form.

3. On performatives, cf. 3.3.2 above.
4. An ad hoc marking of direct quotations as [+ROOT] is advocated by Emonds (1969). But Emonds also proposes that other complements of parenthetical verbs be marked as roots in the same way, even though (in English) these are not set off by pause and they do not allow any of the root transformations to apply within them. The present analysis attempts to make the appropriate distinction between the special syntactic marking necessary to account for the "independent" nature of direct quotations and the adjustments of structure needed to account for the phrasing of all sentences containing parentheticals.
5. Apart from the phrasing, quotations must be considered root sentences in order to account for topicalization, subject-auxiliary inversion, etc., within them and to account for the non-application of complementizing rules.
6. There is a process which we may call Clitic Attachment which divides sentences into phonological words by attaching unstressed formatives to either a preceding or following stressed formative, usually (but not always) within the same syntactic constituent. By this process a prepositional phrase such as to the dogs becomes a single phonological word, and John's going to go to Dallas becomes (in one style of speak-

ing) four words: John's, going to, go, to Dallas. See Downing (MS). A likely hypothesis, which however requires further study, is that parentheses may be inserted between but not within phonological words. This would mean that the phonological rule of Clitic Attachment would have to apply before Matrix Embedding. But the above sentence provides at least one counter-example: a quotative matrix such as Ann said may be inserted after John, but not after John's. A rather different approach, which does not involve phonological boundaries, is suggested by Keyser (1968:368) who formulates a principle he calls the Transportability Convention governing the positioning of adverbials. Because the choice between these and other alternatives is not clear, I will not attempt a formalization of the rule of Matrix Embedding here.

7. This type of attachment, between two branches of a tree, might appropriately be referred to as "crotch adjunction."
8. The order of constituents in (28b) is predicted by the Dative Rule in conjunction with the rule of Complex NP Shift (cf. Ross 1967a:56ff.). Other rules may also apply to make the quotation sentence-final before Quote Detachment applies.
9. The term factive is defined and the relevance of the factive - non-factive distinction is discussed in Kiparsky and Kiparsky (1968). In general, a factive complement is one the truth of which is asserted by the speaker, e.g., the complements in I know that S, it is a fact that S, etc.
10. For an amusing literary use of multiply-embedded quotations, see the story "Menelaiad" in John Barth's Lost in the Funhouse

(1969).

11. It is assumed here that nodes that dominate PB's in addition to some other constituent are not deleted by Ross' (1969) principle of tree pruning. This assumption will be of some significance in the analysis of appositives.
12. Baker (1970) has shown that the condition for the application of Subject-Aux Inversion and Whether Deletion in questions is not the presence of a formative Q, or initial position in the sentence, but simply that the question not be embedded.
13. Notice that there are preposed questions which do not have the surface form of root S's.

(131) a. Whether John prefers to walk, I don't know.

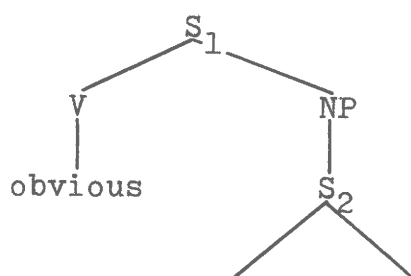
b. I don't know whether John prefers to walk.

Sentence (131a) is derived from the structure underlying (131b) by Theme Topicalization (cf. Chapter III). Since this rule moves NP rather than S, it applies to the NP which dominates the complement S. Thus the complement is still dominated by NP after fronting and so is not a root S. The detachment rule for complements, like the Quote Detachment rule, refers to the node S, leaving the NP node that dominates S behind. This dangling NP is deleted by a universal convention which Emmon Bach has referred to as the "Seatbelt Retractor Principle."

14. This sentence is taken from a magazine advertisement for IBM Corporation.
15. If one accepts the persuasive arguments of McCawley (1970)

(cf. also Muraki 1970) that the verb comes first in deep structure in English, then it is possible that the structure at the point at which the Detachment rule applies is not (73) but rather (132).

(132)



If  $S_2$  is detached (from NP) at this point, then Subject Raising and the subsequent Extraposition need not apply, and the rule of Adverbialization is simplified. In any case, although the structural description for Complement Detachment need not be changed to apply to these structures, the name of the rule is now inappropriate, since  $S_2$  is the subject of the verb rather than a complement.

#### 16. Discussing the sentences

(133) a. He was nevertheless determined to do his best

b. He was determined, nevertheless, to do his best

Roberts (1968:391) says:

In the first of these it would at least be possible to go through the . . . sentence with just one principal stress or pitch rise, on the word best. There is no necessary pause before and after nevertheless. In the second, however, there is a necessary principal stress on determined, another on the less of nevertheless, and a pause before and after nevertheless.

17. Ross (1967a:31) discusses similar derivations in terms of two adverb movement rules.

18. Martin (1968:64-65) discusses an insertion rule which allows



proposed if-clauses (134a) to be repositioned after the subject (134b), after the second member of the auxiliary (134c) or within the verb phrase "after the last member of the mainverb" (134d). The examples are his.

- (134) a. If the president recalls the general, the senator will conduct hearings in Washington.
- b. The senator, if the president recalls the general, will conduct hearings in Washington.
- c. The senator will, if the president recalls the general, conduct hearings in Washington.
- d. The senator will conduct hearings, if the president recalls the general, in Washington.

In addition, if the adverbial clause and the main clause contain coreferential NP's the adverbial clause may be inserted immediately following the coreferential NP's of the main clause.

- (135) The senator will send the president, if he recalls the general, a telegram of sympathy.

This last case is presumably a special case of the appositive-forming rule discussed in 4.6 below.

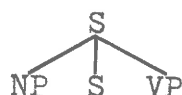
Martin also notes certain marginal sentences in which the rule has reapplied to embed another clause within the embedded adverbial clause.

- (136) a. That soldier, if he, and he must obey them, obeys orders, will fire at random.
- b. That soldier, if the general, if the sergeant demands it, needs a sacrifice, will volunteer.
- c. \*That soldier, if he, if he is ordered, fires, will hit the target.

The last sentence, I would claim, is unacceptable because of self-embedding, but is not ungrammatical.

19. No attempt will be made here to account for the deep structure ordering of conjuncts, but it seems obvious that such ordering is necessary, since many conjoined sentences express sequential relations and are ungrammatical if the order of conjuncts is changed.
20. In the following section we derive appositive relative clauses from the appositive clauses discussed here. The following comment in Jacobs and Rosenbaum (1968:261-62) is therefore relevant.

However, the pronunciation of non-restrictive clauses suggests that such clauses are not embedded inside of noun phrases, but rather are adjoined to noun phrases [sic] as in the following diagram, which illustrates the structure of a sentence after a non-restrictive clause has been adjoined to the subject noun phrase:



Thus it appears that the relative clause transformation must operate on two distinct environments rather than just one.

21. Of course an analysis which forms that-relative clauses without movement of NP prior to deletion requires the reformulation of Ross' (1967a) movement constraints as constraints on deletion. Such a reformulation has been proposed by Sanders and Tai (1970).
22. There appears to be an interesting exception to this claim, however. Sentence (137a), which includes an indirect quotation, allows readings which are synonymous with either (137b) or (137c).

(137) a. Ann told Bill that Tony, who(m) she hardly knew, kissed her.

(137) b. Ann told Bill, "Tony kissed me," and she hardly knew him.

c. Ann told Bill, "Tony kissed me, and I hardly know him."

Ann might, of course, actually have said (137d).

(137) d. "Tony, who(m) I hardly know, kissed me."

It is not surprising that a post-cyclic transformation such as Relativization should apply in a direct quotation, for as noted in Section 4.1, direct quotations must be considered independent sentences even when embedded. The carryover of this characteristic into indirect quotations such as (137a), however, is evidence that at least some indirect quotations must derive from direct quotations (this is the position of Gregory Lee (1970)).

23. The movement of an element out of the unpruned S node does not violate Ross' Complex NP Constraint (Ross 1967a:118ff.) because the S node of appositive relative clauses is not attached to NP. In restrictive relative clauses, violation of this constraint is prevented by the pruning prior to Adjective Preposing of the S node, which when it is part of NP does not dominate PB's.

CHAPTER V  
THE PHRASING OF REDUCED COORDINATIONS

5.0. This chapter is concerned with the processes of conjunction reduction as they affect the phrasing of sentences. It is argued that in cases where a phrase derived by conjunction reduction is phraseologically independent the transformation involved is a parenthesizing rule. This rule is referred to as the rule of Secondary Conjunction. It is claimed here that the rule of Identity Deletion involved in conjunction reduction always deletes the rightmost identical phrase, as predicted by the hypothesis that precedence is a dominance relation.

5.1. Coordinate Sentences and Identity Deletion.

We have already made clear the fact that root-level sentence conjuncts obligatorily dominate PB's. This is true whether or not one of the conjuncts is reduced by pronominalization and/or deletion. Thus in (1)-(3) each conjunct is set off by pause.

- (1) a. John enjoys golf, / and Ken enjoys golf, / too.  
b. John enjoys golf, / and Ken does, / too.  
c. John enjoys golf, / and so does Ken.
- (2) a. John enjoys golf, / and John enjoys tennis, / too.  
b. John enjoys golf, / and tennis, / too.
- (3) a. Are the girls going to bake cookies, / or not?  
b. Is Ann going to bake cookies, / or (is) Carol?  
c. Is Ann going to bake cookies, / or a cake?

Examples (2) and (3) illustrate a process of identity deletion which deletes identical constituents in a second conjunct, under conditions of parallelism. (The remaining constituents of the second conjunct must be "in contrast with" parallel elements of the first conjunct, and receive contrastive stress.) We may assume that the reduced second conjunct retains its boundaries, although the correct phrasing will result in any case, since the first conjunct is followed by a PB. Evidence for the assumption that the S node dominating boundaries is not pruned will be given below. But notice that the situation here is identical to that already noted in reduced appositive clauses: if an S node dominates PB's and at least one category node, it is not pruned.

The structure remaining after identity deletion in second conjuncts contrasts with the structure resulting from regular ("primary") Conjunction Reduction, in which the contrasting identical constituent nodes of the sentence are conjoined. In the following pairs, the (a) example results simply from Identity Deletion, while the (b) example is produced by the regular processes of constituent conjoining.

(4) a. John enjoys golf, / and tennis, / too.

b. John enjoys golf and tennis (\*too).

(5) a. Ann is going to bake (\*either) cookies, / or a cake.

b. Ann is going to bake (either) cookies or a cake.

(6) a. Is Ann going to bake (\*either) cookies, / or a cake?

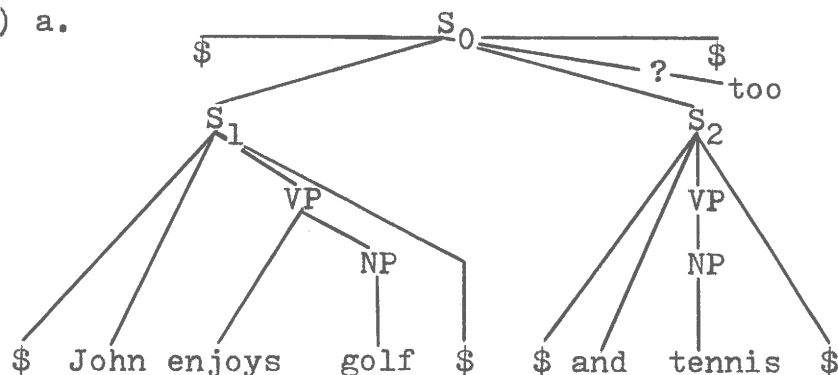
b. Is Ann going to bake (either) cookies or a cake?

Of these pairs, only the last seems clearly to require

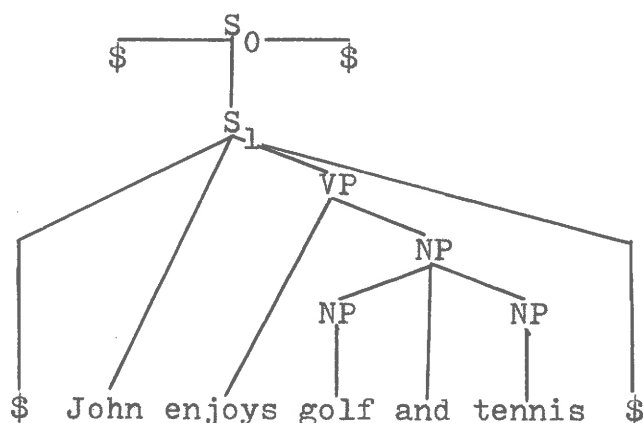
distinct deep structures; in the other pairs the sentences appear to be synonymous. The two sentences of (6) differ semantically in that (6a) is reduced from a single "alternative question," while in (6b) the surface alternatives contrast not with each other but with their negations ("Is Ann going to bake cookies or not and is Ann going to bake a cake or not").<sup>1</sup> There is some question of identity of meaning in the examples of (4) as well, since the expressions too, also, as well (as), in addition, etc., added to a second conjunct seem to indicate not only parallelism, but a kind of subordination of the conjunct so marked. We will tentatively assume here, however, that these particles are merely added optionally to second conjuncts under conditions of parallelism in case the remaining contrasting constituents do not undergo constituent conjoining.

The surface structures assigned to sentences (4a) and (4b) are approximately as in (7a) and (7b) respectively.

(7) a.



(7) b.



If we assume that Identity Deletion applies optionally to delete any repeated major category constituent in second (or later) conjuncts (when the parallelism condition is met), all of the following (b) cases may result.

- (8) a. John hit Bill, and John kicked Mac (too).
- b. John hit Bill, and kicked Mac (too).
- (9) a. John hit Bill, and John hit Mac (too).
- b. John hit Bill, and Mac, too.
- (10) a. John hit Bill, and Mac hit Tom (?too).
- b. John hit Bill, and Mac Tom (?too).
- (11) a. John hit Bill, and Mac hit Bill (too).
- b. John hit Bill, and Mac, too.
- (12) a. John hit Bill, and Mac kicked Bill (?too).
- b. \*John hit Bill, and Mac kicked (too).
- (13) a. John hit Bill, and John kicked Bill (too).
- b. \*John hit Bill, and kicked (too).

Examples may readily be found with other conjunctions, negated second conjuncts, etc.:

- (14) a. John hit Bill, but John didn't hit Mac.
- b. John hit Bill, but not Mac.

- (15) a. John hit Bill, but Mac didn't hit Bill.  
 b. John hit Bill, but not Mac.

The deletions in (8) and (9) produce strings which differ only in phrasing (and the addition of too in (9)) from the derived conjunctions of VP's (hit Bill and kicked Mac) and of object NP's (Bill and Mac). Sentence (9b) is ambiguous, because it is identical with the result of deletion in (11). Likewise (14b) is identical with (15b). Sentence (10b) exhibits the phenomenon that Ross (1967b) has called Gapping. Both of the sentences in which the object but not the verb is deleted are ungrammatical.<sup>2</sup>

Despite the ungrammaticality of (12b) and (13b) (and other sentences produced by a general application of Identity Deletion, such as \*John hit Bill with a hammer, and Mac knocked down with a club), we will not try to restrict the application of the Identity Deletion rule; the ungrammatical sentences will be eliminated by an obligatory further transformation to be discussed in the next section.

Before going on to consider the processes by which elements of second (and following) conjuncts may be moved into first conjuncts, we should note certain properties of coordinate sentences that we have so far ignored.

First, all but the last conjunction (and sometimes the last or only conjunction) in a coordinate sentence is commonly deleted.

- (16) a. John hit Bill, and Bill hit Mac, and Mac hit Fred.  
 b. John hit Bill, Bill Mac, and Mac Fred.



(17) a. I came, and then I saw, and then I conquered.

b. I came, I saw, I conquered.

(18) a. We had to go home, for it was almost two a.m.

b. We had to go home; it was almost two a.m.

Second, in sentences with only two sentence conjuncts, conjoined by and or or, the medial PB's may optionally be deleted, as in (19).

(19) a. I played and Ann sang.

b. Come here and help me.

c. We'll sing or we'll dance.

## 5.2. Conjunction Reduction.

### 5.2.1. Tai's Identity Deletion and Regrouping.

A number of transformational analyses of coordination reduction are now available. The major proposals are reviewed critically in Stockwell et al. (1969) and Tai (1969), and I will not attempt to offer a critique of them all here. Of these proposals, I consider that by Tai the most adequate, for two principal reasons. First, it subsumes a number of processes which were previously thought to be distinct (including Ross' rule of Gapping and Postal's respectively transformation) within a single relatively simple set of rules. Secondly, the rules Tai proposes are relatively straight-forward, consisting for the most part of elementary transformations.

Tai proposes rules that apply to two adjacent conjuncts at a time, rather than schemata generating rules which apply

simultaneously to any number of conjuncts (cf. Stockwell et al. 1969:351). In addition, he establishes the Highest Identical Constituent Condition (p. 34), which requires that the rules apply to delete the highest identical constituents before reapplying to the next highest identical constituents.

There are two main steps in coordination reduction according to Tai's proposal. The first is Identity Deletion, which deletes one of the two highest identical constituents. The second rule, Regrouping, is stated as follows (Tai 1969:61):

Chomsky-adjoin the remaining highest constituents of the reduced conjunct (except the conjunct itself) onto the corresponding constituents of the unreduced conjunct. This process is optional, if the reduced conjunct is no longer branching.

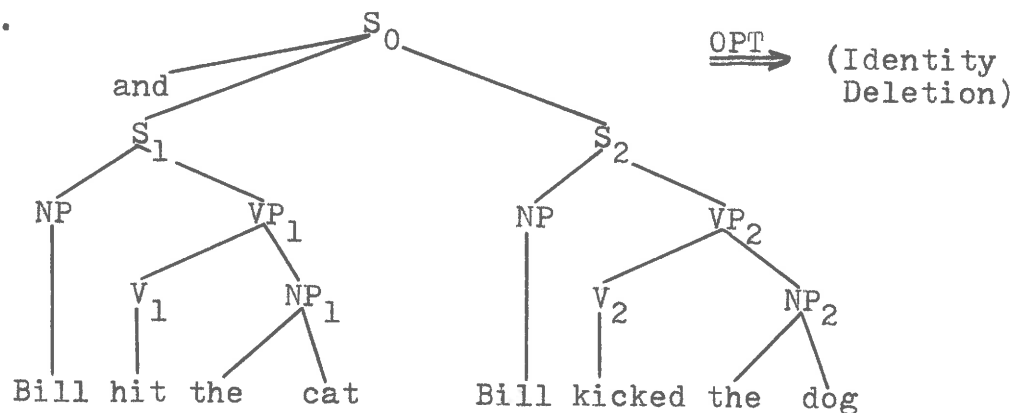
A further rule introduces the morpheme respectively "when Chomsky-adjunction occurs with respect to more than one node" (p. 66).

The derivation of sentence (20b) according to these rules is illustrated in (21).

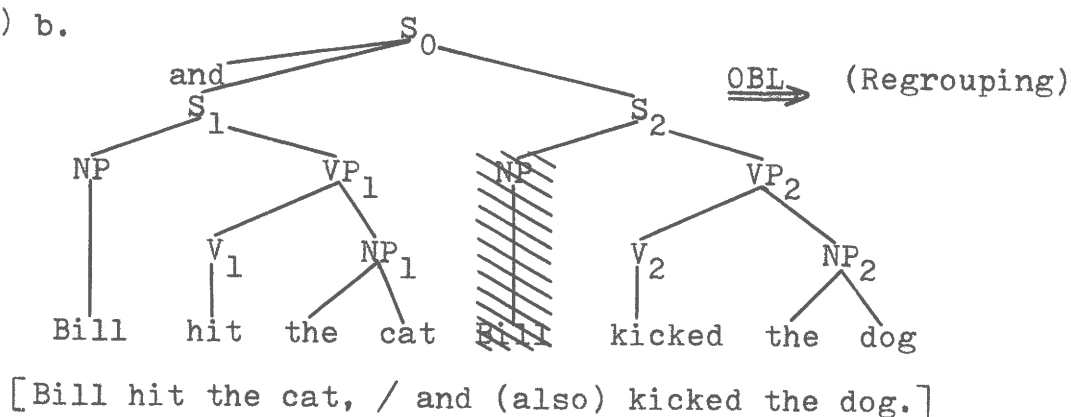
(20) a. Bill hit the cat, and Bill kicked the dog.

b. Bill hit the cat and kicked the dog.

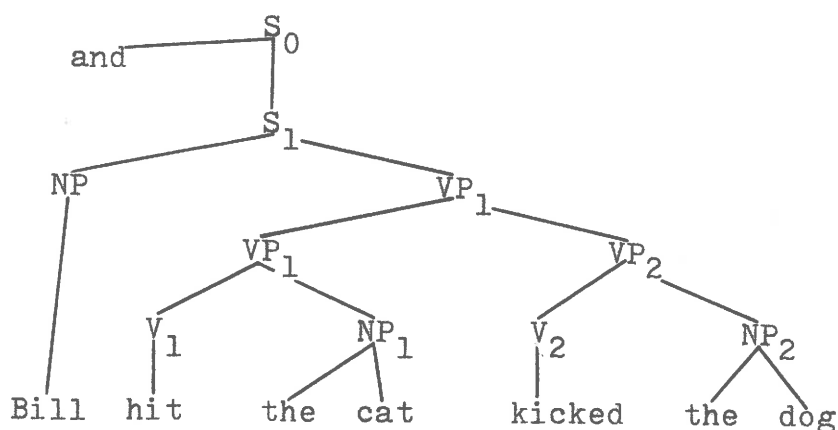
(21) a.



(21) b.



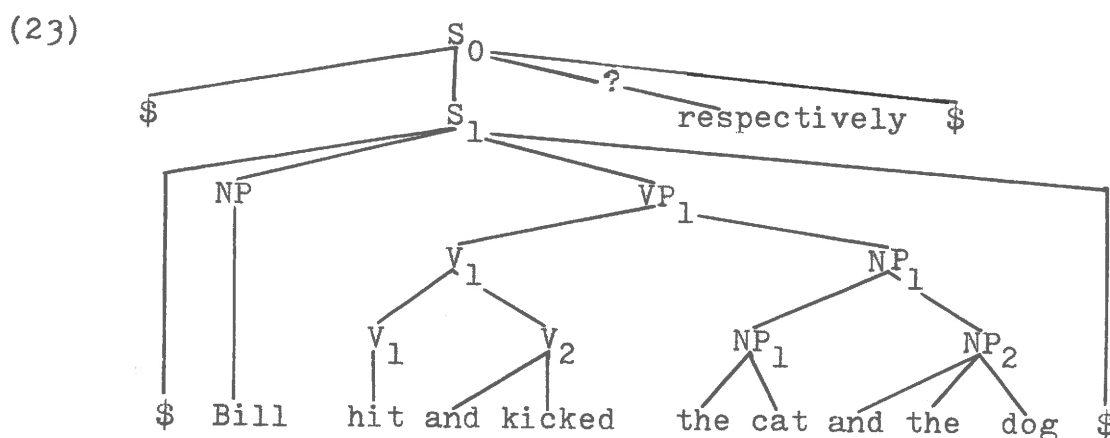
c.



After the further rules of Conjunction Copying and First Conjunction Deletion apply, the result is (20b). Regrouping is obligatory given the P-marker (21b), since the reduced conjunct  $S_2$  is no longer branching.

Although Identity Deletion cannot apply to (21c), Regrouping can now reapply to conjoin the verbs and their objects separately. Since the rule applies to form more than one coordination, respectively must be added. This process produces sentence (22), which has the surface structure (23).

(22) Bill hit and kicked the cat and the dog, respectively.



(Tai assumes that and is Chomsky-adjoined rather than daughter-adjoined to the second conjunct as here.)

#### 5.2.2. The Directionality of Deletion.

In what has been presented so far I am in agreement with Tai's analysis. But for reasons having to do with the phrasing of derived conjoined structures, I am forced to differ in an important way on the manner in which Identity Deletion applies. Whereas I will maintain that the second or rightmost identical element is always the one deleted, Tai (1969:33-34) applies Identity Deletion according to the following principle:

- (24) The order in which identity deletions apply in coordinate structures depends on the order of elements at the time deletion applies; if the identical elements are on left branches, deletion operates forward; if they are on right branches, it operates backward.

The left-to-right principle I am espousing follows from the notion of Primacy Relations developed by Langacker (1969a). Langacker suggests that a sentence element which either precedes or commands<sup>4</sup> another element (or both) has a grammatically significant sort of primacy with respect to the second element. In particular, Langacker shows that an NP A may pronominalize a

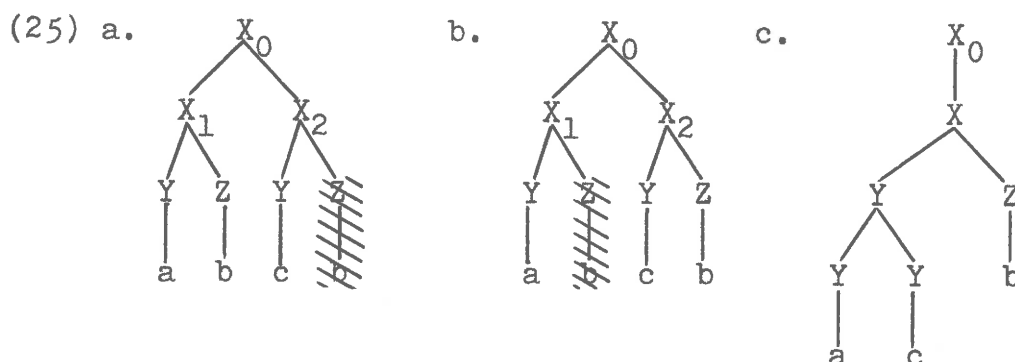
coreferential definite NP B unless B has primacy over A with respect to all relevant primacy relations, i.e., unless B both precedes and commands A, except that in coordination, where command is irrelevant, only the notion of precedence applies. Langacker suggests, but does not demonstrate, that primacy relations are relevant also to identity deletion.<sup>5</sup>

Tai's directionality of deletion principle (24) is a generalization (following Sanders (1969)) of the principle of directionality in Gapping which Ross (1967b) has demonstrated and has shown to have explanatory power.<sup>6</sup> Since Tai incorporates the rule of Gapping into his general system of coordination reduction rules, he is naturally interested in preserving Ross' generalization.

Obviously, Langacker's notion of primacy relations and the Ross-Tai directionality of deletion principle produce conflicting results when applied to Identity Deletion. I will not attempt here to reanalyze the claimed cross-linguistic generalizations deriving from the latter principle but will limit the discussion here to an examination of the consequences of these two conflicting principles with regard to the process of Identity Deletion in coordinate structures in English. I will show that an analysis in which the "preceding" element uniformly causes deletion of the identical "following" element (forward or left-to-right deletion) in coordinate structures has definite advantages.

The two hypotheses are, of course, neutral with respect to Gapping of verbs in English as well as in all other cases in

which the identical items are on left branches. In some cases the directionality of deletion is neutralized by the subsequent application of Regrouping; it is impossible to tell, that is, whether (25c) results from (25a) or (25b):



Thus, for example, although it appears superficially that young and old men danced results from deletion of the first occurrence of men (cf. Tai 1969:33), there is no way to determine that the order was not \*young men and old danced before the obligatory Regrouping.

The crucial cases then are those in which Identity Deletion has applied, but not Regrouping. In (8) - (15) a series of such cases was presented, in all of which the righthand identical element was deleted. Of these, only the sentences in which the object but not the verb was deleted are ungrammatical. Tai's principle of Directionality of Deletion requires the deletion of a leftmost identical constituent, rather than a rightmost, in examples (11), (12), (13), and (15). Because of the Highest Identical Constituent Condition the result of applying Tai's version of Identity Deletion to (11a) would be (26a), because the highest identical node is VP. Regrouping would then apply obligatorily, yielding (26b).

(26) a. \*John, and Mac hit Bill.

b. John and Mac hit Bill.

Sentence (26b) could be derived by the same rule of Regrouping from the grammatical sentence (11b) which is generated by left-to-right deletion rather than from the ungrammatical (26a). But Tai's general rules do not generate (11b) at all. Such sentences could presumably be derived only by the addition of an otherwise unmotivated postposing rule that would apply to strings such as (26b).<sup>7</sup> So the Directionality principle (24) at least requires one more rule to generate the same sentences produced by the two rules of the present analysis.

We have already noted that our sentences (12b) and (13b) are ungrammatical. The corresponding sentences under Tai's analysis, after a single application of Identity Deletion, are (27) and (28a).

(27) \*John hit, and Mac kicked Bill (too).

(28) a. John hit Bill, and kicked Bill (too).

Sentence (28a), according to Tai, obligatorily undergoes Regrouping, which yields (28b).

(28) b. John hit Bill and kicked Bill.

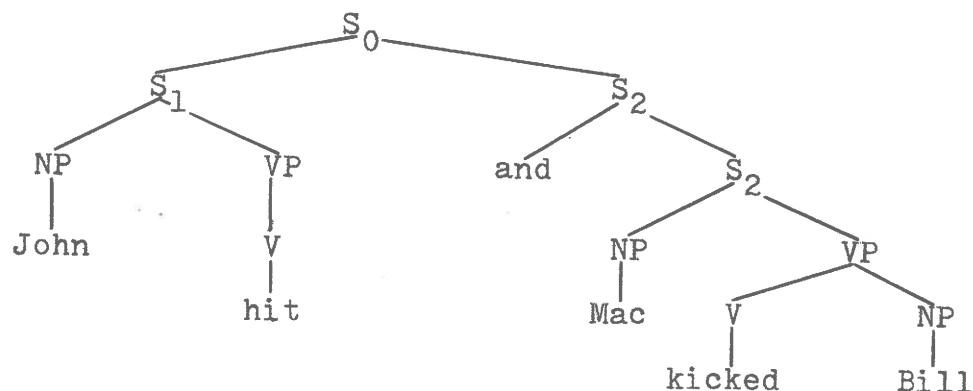
Identity Deletion and Regrouping can reapply to the objects, yielding (28c).

(28) c. John hit and kicked Bill (\*too).

The sentence we are most interested in here is (27). Tai accepts (27), which is assigned the structure shown in (29), as grammatical, but comments in a footnote (Tai 1969:89, fn. 2) on the fact that its surface structure would have to be adjusted

somehow to yield the correct intonation.

(29)



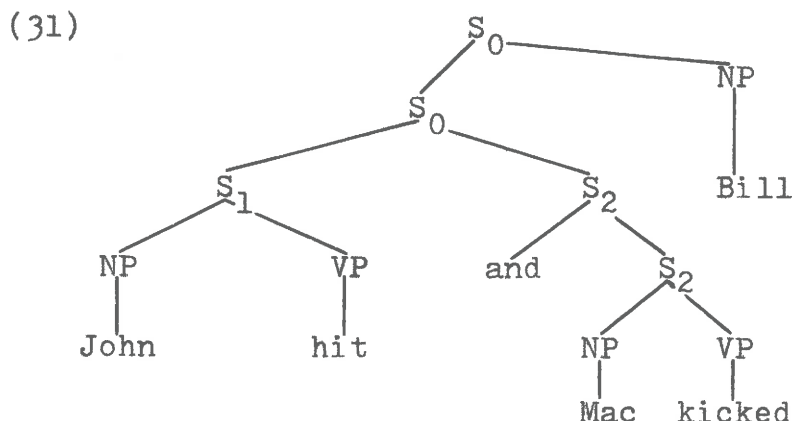
Sentences of this type have been widely discussed in the literature of generative grammar, beginning with Chomsky (1957: 35-36, fn. 2), who noted that the sentence John enjoyed and my friend liked the play could not be generated by a rule that conjoins single constituents. Chomsky suggested that the sentence may for this reason not be fully grammatical. I believe that with appropriate phrasing such sentences are fully grammatical and that they can readily be accounted for by regular grammatical rules. Ross (1967a) and Stockwell et al. (1969) make a special effort to account for the phrasing of such sentences (involving what is called "secondary conjunction") in their formulations of conjunction reduction. Both formulations require a rule of Node Raising, which Chomsky-adjoins a copy of the identical node to S, prior to Identity Deletion. An example of this construction provided by Ross (1967a:175) is (30).

(30) Sally might be, and everyone believes that Sheila  
definitely is, pregnant.

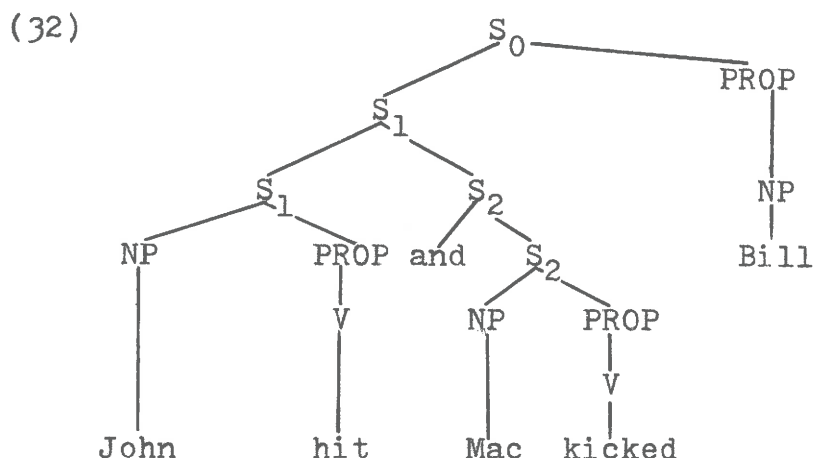
It is generally agreed that an obligatory pause occurs after is in (30). It seems to me that pause after be, although perhaps less distinct, is also obligatory. The structure assign-



ed to sentences like (27) and (30) by Ross' rules is as shown in (31).



Stockwell et al., using similar rules, assign the same sentence approximately the structure shown in (32).<sup>8</sup>



These seem to be close to the correct surface structure. Both would receive the phrasing indicated in (33), which I assume to be correct, by the OBI convention:

(33) John hit / and Mac kicked / the dog.

I reject the analyses of Ross and Stockwell et al. primarily for the following reasons. Their rules are less general than those of Tai. In addition, Ross' Node Raising requires a special relabeling convention; the rules of Stockwell et al. require the violation of strict analyzability noted in footnote 8.

### 5.2.3. A Parenthesizing Rule of Secondary Conjunction.

Let us now return to the analysis proposed here and consider how strings with the phrasing of (33) might be generated. We have seen that if Identity Deletion deletes rightmost identical elements, ungrammatical strings such as (12b), repeated here as (34), are produced.

(34) \*John hit the dog, and Mac kicked.

Now notice that (33), with the correct phrasing, results if the second conjunct of (34) is transformationally embedded immediately following the corresponding constituents of the first conjunct. The required transformation is a parenthesization rule. But in fact the claim that the phrase and Mac kicked in sentence (33) is essentially parenthetical seems to me intuitively correct; and the claim is supported by the acceptability of the alternative punctuation shown in (35).

(35) John hit (and Mac kicked) the dog.

This solution is not at all ad hoc, for the rule suggested above (call it Secondary Conjunction) is required independently to produce a whole set of sentences with parenthetical phrasing of the second of a pair of identical strings. By the same rule, for example, the ungrammatical (13b) (equals (36a)) is transformed into the grammatical (36b).

(36) a. \*John hit Bill, and kicked (too).

b. John hit, and also kicked, Bill.

Secondary Conjunction is obligatory in the cases illustrated above, i.e., when the object but not the verb has been deleted by Identity Deletion.<sup>9</sup> (Of course, Regrouping could apply in-

stead in this case to conjoin the verbs without pause, and without also.) The rule of Secondary Conjunction can also apply optionally to move all other reduced strings resulting from Identity Deletion. If the first identical element is already final in its clause, as in (37), (38), (39), and (41), the application of the rule is vacuous, i.e., no reordering results. The following examples indicate the various results of Secondary Conjunction. (Contrasting elements rather than identical elements are underlined here.)

- (37) John hit Bill, and kicked Mac (too). (= (8b))
- (38) John hit Bill, and Mac (too). (= (9b))
- (39) John hit Bill, and Mac Tom. (= (10b))
- (40) a. John hit Bill, and Mac (too). (= (11b))
- b. John, and also Mac, hit Bill.<sup>10</sup>
- (41) John hit Bill, but not Mac. (= (14b))
- (42) a. John hit Bill, but not Mac. (= (15b))
- b. John, but not Mac, hit Bill.
- (43) a. Sally might be pregnant, and everyone believes that Sheila definitely is.
- b. Sally might be, and everyone believes that Sheila definitely is, pregnant. (= (30))

#### 5.2.4. Comparison of the Alternative Proposals.

Tai (1969:211 ff.) notes the relation between sentences such as the (a) and (b) sentences of (42) above, and cites the following examples:

- (44) a. The citizen had the right, and not the mayor.
- b. The citizen, and not the mayor, had the right.

(45) a. Books lined the walls, and pictures.

b. Books and pictures lined the walls.

Since the (a) examples here cannot be derived by Identity Deletion without violating the Directionality principle (24), Tai proposes that the (b) examples are first derived by Identity Deletion and Regrouping, and then the (a) examples are derived by a rule of Conjunct Postposing, which is essentially the reverse of our rule of Secondary Conjunction. The defects of this analysis are, first, that it does not provide for secondary conjunction as distinct from primary conjunction (the result of Regrouping);<sup>11</sup> second, that it assigns intuitively and phonologically incorrect constituent structures to sentences such as (44b) above (claiming either that and not the mayor had the right is a constituent, if Regrouping has not applied, or that the citizen and not the mayor, which joins more than single constituents, is a primary conjunction, if Regrouping has applied); third, that this analysis requires an extra rule to produce the (a) sentences above which are derived immediately by Identity Deletion if the Directionality convention (24) is dropped.

Perhaps an example of the alternative derivations will make clearer the differences between the alternative analyses. A typical derivation by Tai's rules is illustrated by the sentences of (46).<sup>12</sup>

(46) a. John hit Bill, and Mac hit Bill (too).  $\xrightarrow{\text{OPT}}$  (I.D.)

b. \*John, and Mac hit Bill (too).  $\xrightarrow{\text{OBL}}$  (Regrouping)

c. John and Mac hit Bill.  $\xrightarrow{\text{OPT}}$  (Conjunct Postposing)

d. John hit Bill, and Mac, too.

Not derived:

- (46) e. John, and Mac (too), hit Bill.

By dropping the Directionality of Deletion principle,<sup>13</sup> so that deletion conforms to Langacker's primacy relations, we are able to generate all of the grammatical sentences of (46) with the correct phrasing, and thus presumably the correct surface structure, as follows:

- (47) a. John hit Bill, / and Mac hit Bill (too).  $\xRightarrow{\text{OPT}}$  (I.D.)  
 b. John hit Bill, / and Mac (too).  $\xRightarrow{\text{OPT}}$   
 c. John and Mac hit Bill. (by Regrouping)  
 d. John, / and Mac (too), / hit Bill. (by Sec. Conj.)

For sentences with the supposed "nonconstituent conjunction" (secondary conjunction), Tai's rules give (48).

- (48) a. John hit the dog, / and Mac kicked the dog.  $\xRightarrow{\text{OPT}}$  (I.D.)  
 b. \*John hit, / and Mac kicked the dog.  $\xRightarrow{\text{OPT}}$  (Regrouping)  
 c. John and Mac hit and kicked the dog, respectively.

Not derived:

- (48) d. John hit, / and Mac kicked, the dog.

Applying the same rules used in the derivation of (47) above, we obtain the following:

- (49) a. John hit the dog, / and Mac kicked the dog.  $\xRightarrow{\text{OPT}}$  (I.D.)  
 b. \*John hit the dog, / and Mac kicked.  $\xRightarrow{\text{OBL}}$   
 c. John and Mac hit and kicked the dog, respectively.  
     (by Regrouping)  
 d. John hit, / and (also) Mac kicked, / the dog.<sup>14</sup>  
     (by Secondary Conjunction)

### 5.2.5. Comparison with Conjunct Embedding.

The rule of Secondary Conjunction is similar to the rule of Conjunct Embedding by which appositive constructions were derived in Chapter IV. But the two cannot be combined. Conjunct Embedding inserts a second conjunct immediately following an NP which is identical with some NP in the embedded clause. Secondary Conjunction requires, first of all, the parallelism which is a precondition for Identity Deletion (cf. Tai 1969:105). The rule itself requires that the embedded clause follow a string of (one or more) parallel categories and thus that it immediately precede the "identical" portion of the string.<sup>15</sup>

A further distinction is that while only root sentences can become appositive clauses (cf. Chapter IV), Secondary Conjunction can apparently apply within embedded sentences, as in example (50).

- (50) a. The rule is obligatory when the object has been  
deleted but the verb has not been deleted.
- b. The rule is obligatory when the object but not  
the verb has been deleted.

The application of Secondary Conjunction within nonroot sentences could prove to be an embarrassment for the present theory of phrasing if boundaries are obligatory around the second (embedded) conjunct. But it appears to be possible to assume here, as in other cases of embedded conjoined sentences (cf. Chapter II), that the pauses here are not obligatory, but can be predicted by the rules of variable phrasing.

### 5.2.6. Further Illustration of Secondary Conjunction.

We may close this section with some further examples of the range of applicability of Identity Deletion and Secondary Conjunction.

- (51) a. Are you going to close that door, or do I have to close that door?
- b. Are you going to close that door, or do I have to?
- c. Are you going to, or do I have to, close that door?
- (52) a. I will go to that movie, although everyone advises me not to go to that movie.
- b. I will go to that movie, although everyone advises me not to.
- c. I will, although everyone advises me not to, go to that movie.
- (53) a. I firmly trusted in Mildred's loyalty, whereas George was dubious about Mildred's loyalty.
- b. \*I firmly trusted in Mildred's loyalty, whereas George was dubious about.
- c. I firmly trusted in, whereas, George was dubious about, Mildred's loyalty.<sup>16</sup>
- (54) a. Penelope is intelligent, and Algernon is intelligent, too.
- b. Penelope is intelligent, and Algernon, too.
- c. ?Penelope, and Algernon too,  $\left\{ \begin{smallmatrix} \text{is} \\ \text{are} \end{smallmatrix} \right\}$  intelligent.
- (55) a. Penelope is intelligent, and Penelope is pretty, too.
- b. Penelope is intelligent, and pretty, too.
- (56) a. I wonder whether it is going to rain or it is not going to rain.
- b. I wonder whether it is going to rain or not.
- c. I wonder whether or not it is going to rain.

Notice in particular that the phrasing of (56b-c) is predicted by the fact that the conjunction is embedded.

The rules must, of course, apply to any number of constituents and to coordinations without and. Both of these conditions are illustrated in the derivation of the following familiar quotations from Lincoln's Gettysburg Address.

- (57) a. We cannot dedicate this ground; we cannot consecrate this ground; we cannot hallow this ground.
- b. \*We cannot dedicate this ground; we cannot consecrate; we cannot hallow.
- c. "We cannot dedicate--we cannot consecrate--we cannot hallow--this ground."
- (58) a. The world will little note what we say here, nor will the world long remember what we say here.
- b. \*The world will little note what we say here, nor long remember.
- c. "The world will little note, nor long remember, what we say here."

### 5.3. The Phrasing of Multiple Conjuncts.

One of the best-known facts of phrasing is that whereas two phrasal conjuncts are usually joined together without pause, the pronunciation of a series of three or more coordinate elements frequently requires pauses following each of them.

- (59) a. Dick and Harry are handsome.
- b. Tom, / Dick, / and Harry / are all handsome.

The pause after the word Harry in (59b) is not marked by punctuation, but it is obligatory nevertheless; in many cases the absence of pause would have semantic significance. Thus while (60a) is a normal coordination, (60b) is not, but is an appro-



priate answer to a question like "Who's watching the store?".

(60) a. Tom, / and Dick, / and Harry / went to town.

b. Tom, / and Dick; / and Harry went to town.

No pause separates the first conjunct from a preceding part of the sentence.

(61) a. Did Tom, / (and) Dick, / and Harry / see it?

b. You can borrow one from Tom, / or Dick, / or Harry.

With short conjoined elements it is possible to have three or more conjuncts without pause.

(62) Give the rest of the apples to Tom, Dick, and Harry.

Conjunctions of two or more elements without pause are predicted by our general phrasing hypothesis in connection with the rules of Identity Deletion and Regrouping. There is no way in our analysis to predict PB's in these derived conjunctions, because the conjoined elements are NP's, VP's, N's, V's, etc., not sentences. In fact, there is no known analysis of regularly conjoined phrases which is able to predict the pauses in multiple conjunctions from the general principles of phrasing of root sentences.

Some discussions of coordination have associated the appearance of pauses in multiple conjunctions with the deletion of and or or before nonfinal conjuncts in the same constructions. Thus Stockwell et al. (1969:443):

The Medial-Conjunction Deletion schema operates optionally upon conjoined structures that include three or more conjuncts . . . . The schema operates to delete all but the last conjunction from the structure, and to Chomsky-adjoin a marker of rising intonation . . . to all but the last of the conjuncts.

(Compare also Gleitman (1969:95) and Annear (1964:102).)

This analysis has two obvious defects. First, it ignores the pause following the last conjunct (which normally retains its conjunction). More importantly, it is unsupported by the facts of phrasing, for there is actually no correlation between the phrasing and the presence or absence of the conjunction. All four combinations in (63) are possible.

- (63) a. Where are Tom and Dick and Harry?
- b. Where are Tom, Dick, and Harry?
- c. Where are Tom, / and Dick, / and Harry?
- d. Where are Tom, / Dick, / and Harry?

(The rising intonation mentioned in the quotation above is, incidentally, but one of the several intonations possible for conjoined phrases or enumerations in statements. Compare Schubiger (1958:72-73).) For the reasons given, we must reject any analysis based on the notion that pause is in effect an allomorph of the conjunction and (or or).

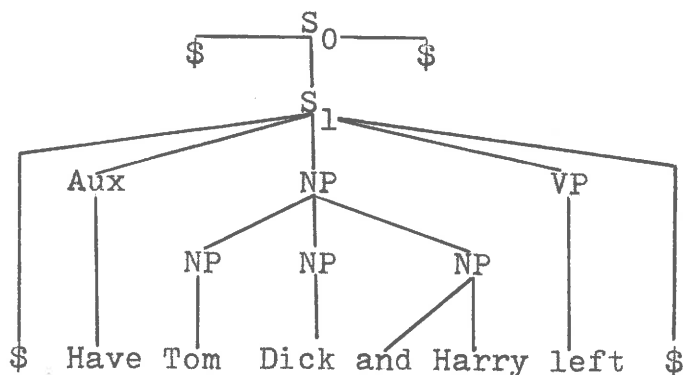
Within the present analysis, it is tempting to try to associate all coordinations of phrases in which the coordinates are set off by pause with the process of Secondary Conjunction (which introduces PB's in a natural way) rather than with primary conjunction by Regrouping, which involves no boundaries. The former analysis would predict the lack of pause before the first coordinate and the occurrence of pause after the last coordinate. Regrouping would be the source only of those coordinations in which no pause occurred. Such an analysis would assign the surface structures shown in (65a) and (65b) to the sentences

(64a) and (64b) respectively.

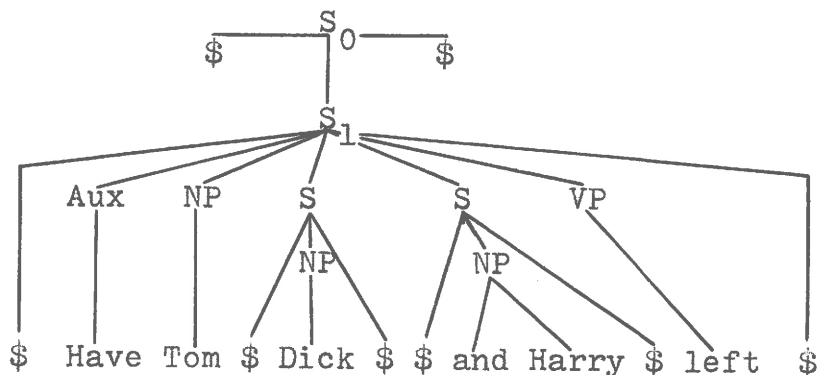
(64) a. Have Tom, Dick, and Harry left?

b. Have Tom, / Dick, / and Harry / left?

(65) a.



b.



Despite the attractiveness of this solution, in that it requires no additional rules and it promises to account for the occurrence of pauses correctly and on the basis of the general principle of Obligatory Boundary Insertion, there are difficulties serious enough to force its rejection.

Notice, first of all, that in all examples of Secondary Conjunction above it is possible, or necessary, to insert also, or too, etc. It is true in general that where these words occur, respectively is impossible.

(66) a. John hit Bill, and Mac also hit Tom.

b. \*John, and also Mac, hit Bill, and also Tom, respectively.

(66) c. John and Mac hit Bill and Tom, respectively.

But it is possible to have multiple conjunctions, with pauses, in respectively sentences.

(67) a. Tom bought a Ford, and Dick bought a Chevy, and Harry bought a Dart.

b. Tom, Dick, and Harry bought a Ford, a Chevy, and a Dart, respectively.

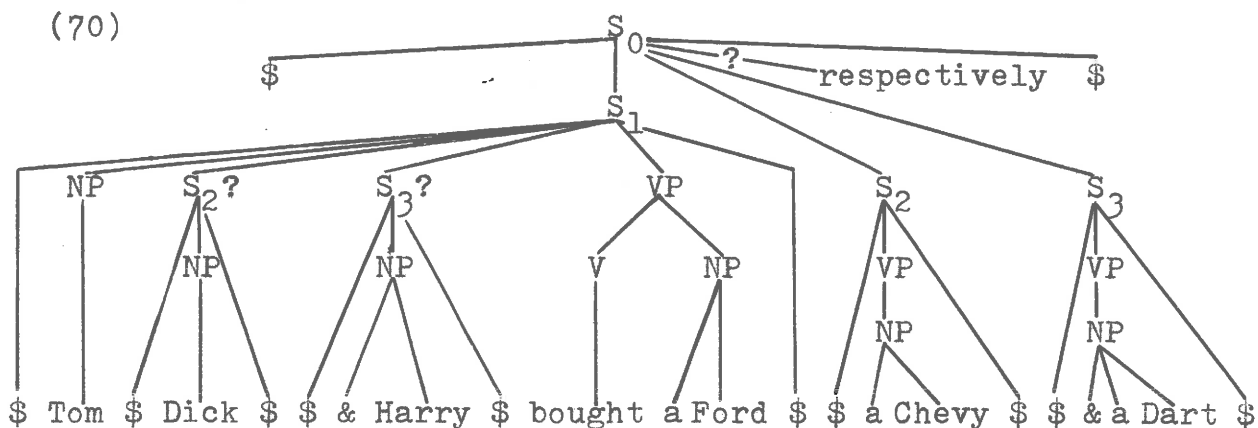
The major difficulty in deriving sentences such as (67b) by Secondary Conjunction becomes apparent when we consider the intermediate step in the derivation of (67b) from (67a). Identity Deletion applies to (67a) in the form of Gapping, yielding (68).

(68) Tom bought a Ford, and Dick a Chevy, and Harry a Dart.

But as noted in the previous section, Secondary Conjunction cannot apply to (68). If it moved the entire second and third conjuncts, the ungrammatical sentence (69) would result.

(69) \*Tom, and Dick a Chevy, and Harry a Dart, bought a Ford.

If only the contrasting subject NP's were moved, it would be impossible to bring along the  $S_2$  and  $S_3$  nodes to produce the derived P-marker (70) which the phrasing requires.



(One of the reasons for rejecting the analysis of Coordination Reduction in Stockwell et al. (1969) was that it required rules to "split" S nodes in the manner shown in the P-marker (70), a violation of the condition of strict analyzability.)

A further difficulty attends any explanation of the phrasing of coordinates which attempts to account for pauses as a consequence of PB's assigned to root sentences. This is the fact that such constructions may receive the same phrasing even in embedded sentences, in which the S nodes dominating the conjuncts cannot be root S's. There appears to me to be no difference in the possible phrasings of the sentences of (71).

- (71) a. What will Tom, / (and) Dick, / and Harry / do?  
       b. I wonder what Tom, / (and) Dick, / and Harry /  
            will do.

Since multiple conjunctions of phrases cannot in general be derived by Secondary Conjunction, there appears to be no alternative left but to assign the required boundaries by an ad hoc rule. Notice, however, that since the boundaries in this construction may be omitted when short phrases are involved, it may be that the PB's result from the rules of Variable Phrasing.

It is possible also that the relation of contrast in parallel structures which exists in deep structure among the members of reduced coordinations is an important factor in their phrasing. There is clearly a correlation between the occurrence of contrastive stress and the occurrence of pause. But the exact nature of the relationship remains cloaked in obscurity.

#### 5.4. The Phrasing of Prenominal Adjectives.

Pairs of coordinate adjectives in predicate position are conjoined by and, or, or but. When there are three or more, the same varieties of phrasing are permitted as with the other coordinations discussed in the preceding section.

- (72) a. My car is powerful and luxurious.  
 b. \*My car is powerful, luxurious.  
 c. Suzy is cute, but not very bright.  
 d. The weather is either too hot, too cold, or too wet.

When more than one adjective occurs in prenominal position, the conjunction may be omitted.

- (73) a. I drive a powerful and luxurious car.  
 b. I drive a powerful, / luxurious car.  
 c. I don't like cold, nasty, wet weather.

The conjunction is obligatory even in prenominal position if the adjectives are semantically incompatible.

- (74) a. I drive a red and white car (i.e., partly red and partly white).  
 b. \*I drive a red, white car.  
 c. I don't like hot, cold, or wet weather.  
 d. \*I don't like hot, cold, wet weather.

In the above examples the adjectives are obligatorily set off by pauses when there is no conjunction or when there are more than two adjectives, and optionally separated by pauses in case there are only two adjectives. The phrasing is thus the same as that discussed in the previous section. Notice in particular that a pause occurs after the last adjective in a series, although it is

not represented by a comma in the orthography.

(75) It was a beautiful, / glorious, / exciting / spectacle.

The phrasing of strings of prenominal adjectives differs from that of other coordinate structures in one important respect. Consider the following sentences.

(76) a. We saw five ugly old wooden trunks.

b. There were several bright green harmless snakes.

The sentences of (76), in contrast with (75), require no pauses between the modifiers. It is obvious that the quantifiers (five and several) belong to a separate category from ordinary adjectives; they always immediately follow the article, if any, and precede other modifiers, and, as sentence (77) shows, they cannot be conjoined with adjectives.

(77) \*The trunks were five and ugly.

But even within the category of Adjectives there are clearly a number of distinct order classes determining the normal order of adjectives in prenominal position. The characteristics of such order classes have been discussed by, among others, Hill (1958:175-90; 230-39) and Annear (1964). Hill points out that the following sequence is pronounced as a single phonological phrase without significant pause.

(78) all the ten fine old stone houses

Hill (1958:175) observes further:

there are rules of order which govern the occurrence of the words of which the phrase is made up. Some of these rules are absolute--that is, the and ten cannot be reversed without producing an unsatisfactory utterance. With fine and old, however, reversal is unusual, but possible. Yet, when reversal occurs, the phonological conditions are markedly and necessar-

ily altered. If the sequence old fine houses is used, then a terminal juncture [a PB] . . . must be used after old, and may well appear after fine as well. That is, fine and old must come in normal order as long as they are in the same phrase. If they are reversed, the phrase is then broken up into smaller phrases. If we now add such a word as gray to the group fine old stone houses, we find that its position is limited, but not completely fixed. Gray must normally follow fine, and precede stone, but it can either precede or follow old. Yet whether it precedes or follows old, old and gray must be separated by a terminal juncture.

I believe that the facts and the explanation for the occurrence of boundaries ("junctures") offered by Hill are essentially correct. Hill (1958:176) states the following criteria for membership in an order class:

Two words belong to the same order class if one can substitute for the other without affecting the [integrity] of the phrase. Two words belong to different order classes either if they occur in a fixed sequence, . . . or if their sequence can be broken only by placing a terminal juncture between them. Finally, two words belong to the same order class if they can occur in the order AB or BA, but require a terminal, A|B or B|A, between them.

Annear (1964:105) argues that the ordering of prenominal modifiers is not a grammatical but rather a stylistic phenomenon. More recent grammatical theory would presumably handle the phenomenon of ordering by means of a surface structure constraint (cf. Perlmutter 1970:235-36) in the form of a filtering device which allows only those sequences of adjectives which conform to the "neutral" ordering to be labeled as fully acceptable.

To account for the phrasing phenomena pointed out by Hill, however, it is necessary either to allow the "filter" to assign PB's as markers of deviant ordering or to insert boundaries optionally and to allow the filter to "pass" deviant sequences



only when boundaries are present. The former alternative is reminiscent of Chomsky's (1957:35-36, fn. 2) remarks concerning sentences containing secondary conjunction:

Such sentences . . . are also, in general, marked by special phonemic features such as extra long pauses . . . , contrastive stress and intonation, failure to reduce vowels and drop final consonants in rapid speech, etc. Such features normally mark the reading of non-grammatical strings.

Chomsky goes on, however, to suggest that rather than treating sequences with special phonological marking as nongrammatical one might consider them grammatical provided they are so marked. This approximates the second alternative suggested above. I have no arguments for one or the other solution. The important point of this discussion is that the relation of phrasing to the ordering of prenominal modifiers is apparently a phenomenon that is entirely distinct from the principle we have been testing, which associates obligatory phrase boundaries with termini of root sentences. It suggests, in fact, that the generalization stated at the outset of Chapter IV, to the effect that the reordering of elements within predicative root sentences does not occasion the introduction of obligatory PB's, is incorrect or at least is too strong. For the phrasing of complex prenominal modifiers suggests that PB's may also be introduced into syntactic structures as markers of violations of the neutral ordering of elements within root sentences.

### 5.5. Summary.

In this chapter we have considered the phrasing of various structures resulting from the transformational reduction

of coordinate sentences. Section 5.1 illustrated the effects of left-to-right Identity Deletion in coordinate sentences. It was shown in Section 5.2 that sentences exhibiting nonconstituent or "secondary" coordination may be derived by the parenthetical insertion of a reduced righthand coordinate sentence into the lefthand sentence, and that this derivation automatically accounts for the phrasing and assigns a satisfactory derived constituent structure without requiring node-relabeling or "node-splitting" transformations.

Sections 5.3 and 5.4, finally, produced some evidence that the OBI convention alone cannot account for all occurrences of obligatory pause. First, it cannot be extended to account for the pauses that appear when more than two phrases or words are conjoined. Second, it appears necessary to recognize that, at least in the case of prenominal modifiers, pause may be introduced obligatorily at points where the normal order of like constituents is violated.

#### NOTES TO CHAPTER V

1. Smith (1969) argues for both phrasal and sentence conjunction on the basis of ambiguous sentences like (79).

(79) John likes ice cream and cake.

There is a reading on which John likes the combination of ice cream and cake (though he may not like to eat either separately), and another which is paraphrased by (80).

(80) John likes ice cream, and John likes cake (too).

Thus (79) and (4b) above may reflect an underlying sentential

as well as a phrasal conjunction. Tai (1969:148ff.) who allows only sentence coordination, suggests that on the "joint object" reading the underlying structure is (81).

- (81) John likes ice cream with cake, and John likes cake with ice cream.

Then (80) is derived by first applying the reciprocal transformation, giving (82), and then deleting with each other.

- (82) John likes ice cream and cake with each other.

2. The single remaining constituent in the second conjunct may be an intransitive verb.

- (83) a. John will sing, and John will (also) dance.

- b. John will sing, and will (also) dance.

- (84) a. John can sing, and John will sing (too).

- b. John can sing, and will (too).

Sentences in which a negative clause precedes an affirmative one have some unexpected properties, which deserve investigation.

- (85) a. John doesn't sing, but John  $\left\{ \begin{array}{l} \text{does dance} \\ \text{dances} \end{array} \right\}$ .

- b. John doesn't sing, but dances.

- c. ~~John~~ doesn't sing, but does dance.

- (86) a. John didn't hit Bill, but John (did) hit Mac.

- b. John didn't hit Bill, but hit Mac.

- c. John didn't hit Bill, but did hit Mac.

- d. John hit not Bill, but Mac.

3. Tai notes, however, (p. 212): "We can assume that in written English, just like in Hungarian, Regrouping is always optional."

4. Command is a relation of dominance. Node A of a phrase marker commands node B if neither node dominates the other, and if node B is dominated by the first node S above A (Ross 1967a:338).
5. Langacker assumes that pronominalization is effected by a transformational rule, and that the constraint based on primacy relations is a constraint on the application of the transformation. Bach (1970) has recently argued that pronominalization cannot be a rule. If Bach is correct, Langacker's constraint must be stated as a kind of well-formedness constraint on surface structures containing pronouns. But if the constraint is applied as a constraint on Identity Deletion, as proposed here, it must be formulated as a transformational constraint as well.
6. Briefly, Gapping is the rule that deletes the repeated verb in sentences such as The boys played volleyball and the girls badminton. By investigating the correlation between directionality of gapping and the order of subject, verb, and object in diverse languages, Ross was able to establish a hypothesis which correctly predicts the non-occurrence of gapped sentences of the form . . . +SO+SV0, and correctly predict that every language exhibiting gapping of the form SOV+SO . . . also exhibits . . . SO+SOV. More importantly, Ross was able to show that all languages which only gap backward (SO+SOV) have underlying SOV order, whereas languages which gap in both directions have underlying SV0 order.
7. Tai does not explicitly discuss the derivation of sentences

containing too. The possibility is left open that they are derived by a process of deletion of anaphora which operates from left to right and is completely independent of Conjunction Reduction. But such an analysis would miss the generalizations that are captured by the present proposal.

8. The rules of secondary conjunction in Stockwell et al. (1969) employ a special device of node-splitting which allows a node dominating a "moved" constituent of a tree to be carried along in a transformation even though it is also left in its original position dominating other, unmoved constituents. Thus in (32) a copy of the original node PROP has been moved along with the object NP Bill. This device violates an important constraint on the theory of transformations, the requirement that a transformation must specify a "proper analysis" of the Phrase-marker to which it applies. Cf. Chomsky (1964:131).
9. I have no explanation for the fact that Secondary Conjunction applies obligatorily in this case only.
10. In order to guarantee that Secondary Conjunction will apply only to (40a), and not to the superficially identical (38) in the derivation of (40b), the identification of "corresponding (contrasting) constituents" indicated by the underlining must be referred to for the operation of the rule. But this information is necessary anyway, since the structural change of this rule involves positioning the remnant of the second conjunct immediately after the corresponding portion of the first conjunct.

11. Notice that also, too, etc., which some may consider obligatory in split conjuncts and secondary conjunction with and, are not allowed in primary conjunction (Regrouping):

- (87) a. Italians like cheese, / and mice, / too.  
 b. Italians, / and also mice, / like cheese.  
 c. \*Italians and also mice like cheese.

It may be that the presence of these particles reflects a distinct underlying type of coordination. In that case we would want to make Regrouping obligatory following Identity Deletion for ordinary "equal" coordinates, and make Secondary Conjunction optional (except in cases where the verb but not the object remains) in the specially marked conjuncts. But there is presently no strong motivation for making a deep structure distinction of this kind. Compare Smith (1969).

12. Here again Tai has not specifically argued for this derivation of (46d). But it is the only one available under the explicitly formulated rules.
13. Tai's insistence on this principle is largely motivated by its usefulness in explaining differences in the operation of Coordination Reduction in languages of diverse structure. I have not considered these matters here, since we are confining our attention to English. But it would be necessary to answer these cross-linguistic arguments (and Ross' arguments from the directionality of Gapping) in order to satisfactorily refute Tai's claims. Notice, however, that the Directionality Principle, if extended to deletion as Lang-

acker suggests, conflicts with the primacy of the relation of Precedence. In order to accept both the Ross-Tai Directionality principle and the Langacker notion of primacy relations as universals, it would at least be necessary to define distinct domains of application for each of them.

14. Note that also and too are mutually exclusive with respectively, which occurs only in sentences with Regrouping.
15. Notice that the rule of Secondary Conjunction maintains the status quo of the primacy relations. In coordination the second sentence is preceded but not commanded by the first; in embedding the embedded sentence is commanded but not preceded by the matrix. The same relations hold in appositive formation. If first conjuncts were embedded in second conjuncts, the relation of primacy would be reversed.
16. This example is from Roberts (1968:392).

## CHAPTER VI

### CONCLUSION

#### 6.1. Nonsentential Root Elements.

In the preceding chapters we have investigated a wide variety of syntactic constructions which call for the introduction of sentence-internal pause. In nearly all cases it has been possible to account for the occurrence of pause, given independently motivated or at least plausible syntactic surface structures, on the basis of a single principle (the OBI convention) which associates phonological phrase boundaries with the termini of all sentences which in any post-cyclic derived phrase-markers are not contained within predicative sentences. This principle accounts for the pause which separates an extraposed phrase from the root sentence which originally contained it and also accounts for the separate phrasing of root sentences which are embedded transformationally within other root sentences, and of reduced forms of such sentences.

There remains, however, a fairly sizeable class of parenthetical phrases which cannot be shown to derive from root sentences but apparently are derived by the parenthetical insertion into a root sentence of a previously extraposed phrase. Examples of such phrases are nonsentential adverbials (discussed in 4.3.2) and the parenthetical vocative (discussed in 4.4). So long as PB's are assigned to root sentences only, the parenthetical phrasing of such phrases cannot be explained.



Two alternative means of bringing these cases within the scope of a general phrasing hypothesis suggest themselves. The first requires the abandonment of the OBI convention as stated in Chapter II and the substitution of a general constraint on certain movement transformations. This constraint could be stated as follows:

- (1) Whenever any constituent is moved into or out of a predicative root sentence by a transformation, PB's are introduced to separate that constituent from the root sentence.

(Application of (1) would be limited to the same set of post-cyclic rules to which the OBI convention was restricted.) The principle (1) accounts for sentence-internal pause in a large number of cases, in particular those mentioned above which are not explained by the OBI convention. But to account for the pause between conjoined sentences, and for all initial and terminal "pauses," it would be necessary to supplement it by a convention assigning pauses at sentence termini, virtually duplicating the OBI convention. A much more serious problem is that the regular process of conjunction reduction, by which conjoined phrases are formed from "corresponding" constituents of conjoined sentences, provides a counterexample, for no pause is introduced in this case.

The second alternative has already been suggested (Section 4.3.2). This is to extend the definition of root element to any constituent not contained in a predicative root sentence, so that extraposed NP's, for example, are root NP's. Then the

OBI convention can be generalized as follows, i.e., simply by replacing "root S node" by "root node":

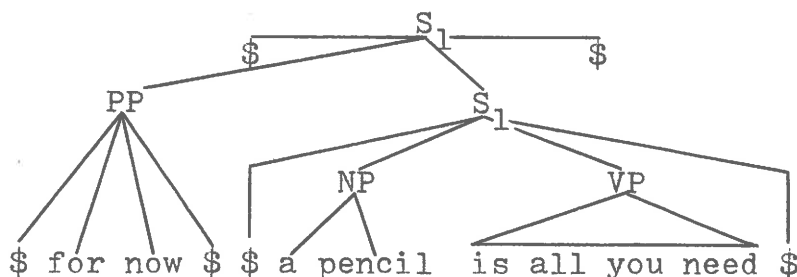
- (2) Phonological phrase boundaries (PB's) are inserted as leftmost and rightmost constituents of every root node that appears in any postcyclic derived P-marker.

The effect of this change may be illustrated with an example involving extraposition and subsequent parenthesization of a prepositional phrase:

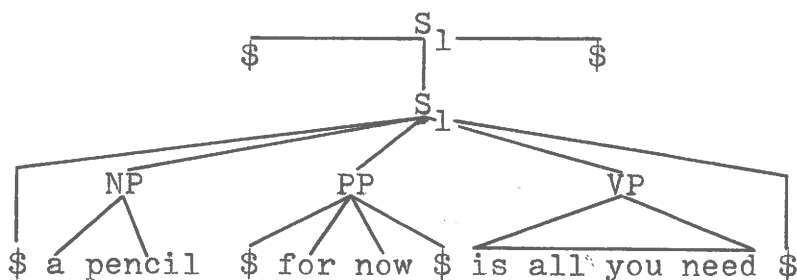
- (3) a. A pencil is all you need for now.  
 b. For now, / a pencil is all you need.  
 c. A pencil, / for now, / is all you need.

As stated in (2), the OBI convention assigns PB's to the (b) and (c) sentences of (3) as shown in (4).

(4) a.



b.



My reluctance to adopt (2) as the proper formulation of the OBI convention at the outset stems from a desire to preserve the generalization that "roots" are sentences and that obligatory PB's are essentially sentence boundaries. This intuitive feeling has been supported by the fact that in most cases separately

phrased nominal or verbal phrases can be shown to result from the reduction of sentences. Nevertheless, in order to account for sentences such as (3), given our present inadequate knowledge of the deep structure of adverbial expressions like for now, (2) is clearly the only adequate formulation of the OBI convention, and therefore this modified version of the phrasing hypothesis must be adopted, if only tentatively.

## 6.2. Summary of Results.

In this section I will simply list some of the results which have been obtained directly or indirectly through the present study of the syntactic basis of obligatory phrasing:

1. A single principle, the OBI convention, suffices to account for nearly all occurrences of obligatory pause.

2. This principle makes crucial use of the notion of root sentence (or root constituent) and of the notion of predicative sentence.

3. Although phonological phrase boundaries have only phonological effects, they must be assigned prior to the application of certain late transformational rules of the syntactic component. Therefore, it must be concluded that independently motivated aspects of syntactic surface structure are not sufficient for the operation of phonological rules: some aspects at least of surface structure are determined exclusively by the necessity of providing input to the phonological rules that specify prosodic features. In effect, the PB's assigned to parenthetical elements are simply a marker of the information that,

at some point prior to surface structure, the sentence or phrase so marked was a root element. Thus the claim that all information necessary for the operation of phonological rules is present in surface structure (cf. Chomsky 1968a:26) is true only in a trivial sense.

4. The existence of an elementary transformational operation of Chomsky adjunction, involving node copying, is strongly supported by the fact that Chomsky adjunction provides a structural basis for the distinction between extraposition rules on the one hand and preposing and postposing rules on the other, which in turn determines whether the constituent moved receives separate phrasing. However, it is not possible to predict which particular transformations will employ Chomsky adjunction; rather it is necessary to specify Chomsky adjunction, sister adjunction, etc., as part of the structural change of each particular movement transformation. It appears in fact that individuals may employ different types of adjunction (as revealed in phrasing) in what is essentially the same transformation, e.g., in adverb preposing.

5. A previously unnoted principle of adjunction, requiring that a moved constituent be adjoined "as high as possible" was posited as the basic operation in parenthesization and appositive formation, and is also required for the correct operation of Complement Detachment.

6. It is apparently necessary to specify a subcomponent of "postcyclic" transformations within which the OBI convention operates as an "anywhere rule." For this purpose a "cyclic"

transformation must be identified as one that must be ordered among the cyclic rules rather than one that may be so ordered. It seems a plausible assumption that the dividing point between cyclic and post-cyclic rules is the level of "shallow structure" which has previously been posited on independent grounds (cf. G. Lakoff 1969). It is not entirely clear, however, that there are cyclic rules which must in fact be ordered before the application of the OBI convention; at present, it is only possible to claim that all rules which are known to follow the assignment of PB's are postcyclic rules.

In addition to the results of general theoretical interest listed above, the present investigation has presented evidence concerning the proper form of several transformational rules of English. These results include a reanalysis of the rules involved in the process of topicalization, some evidence for a Verb Second principle underlying the process of subject-auxiliary (or subject-verb) inversion, and evidence that the rule of Right Dislocation does not exist. In addition a new account of parenthesization has been given involving the rules of Complement Detachment and Matrix Embedding. Our concern to account for phrasing in a general way led also to a new analysis of the process of Secondary Conjunction which put in question the Ross-Tai principle of directionality of deletion as applied to conjunction reduction in English.

### 6.3. Problems and Prospects.

Certain questions raised here have not received satisfactory answers within the confines of this study. I have assumed the existence of a set of rules of variable phrasing complementing the obligatory phrasing principle developed here. Such rules have been specified in detail for German by Bierwisch (1966) and the English rules are outlined in Downing (MS). Among the rules discussed here, the parenthesization rules require further study before they can be fully formalized. The principal problem is that of specifying the positions at which parenthetical elements may be inserted. To my knowledge no transformational rule has yet been formalized which requires variables in specifying the structural change effected by the rule. Yet it is clear that such a device is necessary in the case of parenthesization rules in order to enable the parentheses to be inserted in any of a number of positions. It appears likely, furthermore, that any adequate formulation must make reference to phonological word boundaries. If so, then the boundary between syntax and phonology becomes less well defined, for the phonological rule assigning word boundaries must be ordered before at least one transformational rule--not only in order to assign the word boundaries correctly but to provide the required input to the syntactic rule itself. Further consideration is given to these matters in Downing (in preparation).

In Chapter V it was pointed out that certain instances of obligatory pause cannot be accounted for under any conceiv-

able extension of the OBI convention. One of these was the "serial" phrasing of more than two conjoined phrases; the other involved the appearance of pause in certain groupings of prenominal modifiers. It was suggested that in addition to the OBI convention it may be necessary to hypothesize a principle by which pause functions as a marker of deviation from normal word order, in violation of the principle that movement within a single predicative root sentence does not result in the introduction of pause. This is certainly a question which deserves further attention.

Despite these unresolved problems, the primary goal of this study, the formulation of a general principle of obligatory phrasing, has been achieved. To the degree that this principle is confirmed by further investigation, it may serve to augment the meager set of criteria by which the constituent structure of derived P-markers is established. In addition, the characterization of the phonological phrase accomplished by the OBI convention plus the Variable Phrasing rules, is one of the prerequisites to any adequate formulation of the Nuclear Stress Rule (Chomsky and Halle 1968), which has the phonological phrase as its (maximal) domain, and of the generative rules which assign pitch contours to phonological phrases.

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## VITA

Bruce Theodore Downing was born in Boise, Idaho, on November 11, 1934, the son of Dolores Eichmann Downing and Theodore Almon Downing. He graduated from Eagle High School, Eagle, Idaho, in 1952, and entered the College of Idaho at Caldwell. Following service in the U.S. Army, he was graduated from the College of Idaho with a major in English literature in June, 1959. That September he entered the University of Utah as a teaching assistant in English. From 1960 to 1961 he was employed as a writer by an advertising agency, and during 1961-1962 he taught English in a Salt Lake City high school. In September, 1962, he entered the Graduate School of the University of Texas at Austin, where he received the M.A. degree in linguistics in August, 1963. From 1963 to 1967 he was an instructor at Robert College in Istanbul, Turkey. He returned to the University of Texas with an NDEA Title IV Fellowship in September, 1967. He is a co-author of Spoken English for Turks, Books I-XVI (Istanbul, 1967). A paper, "Vocatives and Third-person Imperatives in English," appeared in Papers in Linguistics 1:3, 1969. Since September, 1970, he has been an Instructor in English and Linguistics at the University of Southern California in Los Angeles. He was married to Sylvianne Jallerat of Paris, France, in 1960, and they have three daughters, Francine, Theresa, and Valerie.

Permanent address: 8906 El Capitan Avenue  
Fountain Valley, California 92708

This dissertation was typed by Sylvianne Downing

