MISSING NOUN PHRASES IN NAVAJO

by

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Thesis Supervisor

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ABSTRACT

This dissertation deals with two areas of Navajo grammar which involve problems traditionally subsumed under the rubric of "coreference." These are relativization and pronominalization. In both of these areas of grammar, situations arise in which there would appear to be a coreference relationship holding between an overt noun phrase argument and some distinct noun phrase position (elsewhere in the same sentence) which is "empty" in the sense that it is not overtly occupied by a phonologically constituted element (pronoun or lexical noun phrase). It is to this situation that the expression "missing noun phrase", included in the dissertation title, alludes.

The first chapter reviews earlier work on Navajo which treats missing noun phrases as arising through the action of a deletion rule generalized so as to effect the derivation of relative clauses as well as cases which constitute the Navajo analogue to "pronominalization", so familiar in the study of English and other Indo-European languages. This chapter also introduces the Second Noun Phrase Constraint, whose purpose is to insure that surface structures with missing noun phrases correlate properly with deep structures expressing the grammatical relations which arguments bear to verbs. The burden of the rest of the work is to demonstrate that this constraint is unnecessary in the grammar of Navajo, once a proper understanding of the missing noun phrase phenomenon is achieved.

The second chapter takes issue with the idea that relativization and pronominalization are the same grammatical process in Navajo, thereby weakening the position which holds that the Second Noun Phrase Constraint is a condition on a rule of Navajo grammar. Several contrasts are drawn between relativization and pronominalization, and it becomes questionable whether deletion is involved in either process. In addition, it is suggested that the headless relative clause--i.e., the favored form in surface structures, for all Navajo speakers--is the basic form in underlying structures, the more marginal right-headed structure being derived by means of a movement rule.

Chapter Three develops a Navajo analogue to the theory of pronominalization according to which pronouns are generated in the base. According to this Navajo analogue,
"pronouns" are unexpanded NPs—symbolized by NP | PRO

for purposes of exposition. This chapter also argues that there is in fact no need for any special rule of pronominalization. No mechanisms beyond Lasnik's Non-Coreference Rule (appropriately extended to apply in the Navajo situation) are needed. This position is referred to as "the best possible theory" of Navajo pronominalization, since it requires no special rules. A potential counter-argument to this best possible theory is introduced at the end of the chapter when the now defunct Second Noun Phrase Constraint is reformulated as a surface structure condition enabling the revised theory of Navajo grammar to match surface strings with the correct deep structures.

The fourth and final chapter, after reviewing certain fundamental assumptions upon which the analysis offered in Chapter Three is based, presents evidence against a special constraint which requires coreference between an overt noun phrase and an immediately following PRO. Subsequent to this, a revised conception of Navajo coreference interpretations is offered. This revised conception of the problem makes use of an interpretive strategy employed by Navajo speakers in understanding sentences. The interpretive strategy is in effect a principle for the Interpretation of Grammatical Relations, and it is abbreviated IGR. The force of the IGR, it is argued, makes unnecessary the constraints on surface structures to which the Second Noun Phrase Constraint of Chapter One was ancestral. At the end of the chapter, the contrast between relativization and pronominalization is formalized by proposing a tentative theory of the right-headed relative clause which employs a mechanism utterly distinct from any mechanism involved in pronominalization. And finally, an alternative to the framework of Chapter Three—addressed to certain remaining problems—is briefly considered. In this alternative, missing noun phrases are "truly missing" in deep structures. That is to say, for example, a missing argument does not correspond to an unexpanded NP-node in the deep structure phrase marker; rather, the NP-node is itself missing in deep structure.

Thesis Supervisor: Kenneth Hale
Title: Professor of Linguistics
ÉÉHOOZINãoK (ACKNOWLEDGEMENTS)

Alk’idą́́’ tseebií náahaídą́́’ niléí Tségháhoodzánídi
Kenneth Hale bił ałhéhosisziid. Áádóó k’ad koji’ haashįį
néilą́́’góó shiká eelwod. Díí kóó naanish yii’a’įgįį
dooshįį altso hasht’eedzaadadoo nít’éé’ doo shiká
análwo’gógo; binitsékees dóó binahat’á dóó ñínda bee
ajooba’ yee shiká eelwod. Díí biniinaa iiyisiį
aghánáhóó’áadi ahéhee’ bidishní. Ken bits’ą́́dóó saad
naalkaah bił haz’ą́́gįį ńhooł’ą́́’.

Áádóó haashįį jinelą́́’go álì́́dó’ lándóó adajiizhjéé’;
éi álì́́dó’ binahjį́ dií naanish hasht’eedzaa. T’óó ahayói lá
nidi kóó Noam Chomsky lá, Paul Kiparsky dó’. Áádóó dií
shinaanish íishlaaįgįí MITdi bína’nishtingó éi Frank
Carroll, Dominque Sportiche, Ken Safir, Bob Ingria,
Osvaldo Jaeggli, Yukio Otsu, Marcia Linebarger, dóó
Harry Bochner lándóó na’nitin shił dayíik’ą́́’z. T’áá
ájíltso yéego ahéhee’ dahodishní.

Alah nida’adleeĥgoó naasháago, Laura Wallace, dóó
William Morgan, dóó Alice Nuendorf dóó Ellavina Perkins
lah bił ninádaashnish nít’éé’; dikwíidishįį ninádeiiddéélkid.
Yee shiká adahaaswodígįį éi lándgóó daasdzohgo át’é dií
naanish yii’a’įgįį bii’. Ahéhee’.

Bíl hinishnáanii, Linda, éi álì́́dó’ t’áá iiyisiį
lándóó eelwodgo át’é. Saad Tónaneesdzíidi yee
yádaalti’įgįį doó shí bee yáshti’įgįį ał’ą́́’ át’éé leh,
jó aIk'idaá' nihizázi alts'ádaaznánée bee át'é-
Tóhajiileeédéë' éí naashá. AIká anáhi'niiilchéehgo, saad
bee yáti' díí naaltsoos bii' naashkaahíííi hazhó'ó
hasht'eilyaa. Ałahjí' díí naaltsoos baa naashnish
biniináa sha'álchíní baa náyoos'h'nah nítt'éë' lá. Níneez
daalžíígó naals'í bii béé dahodoožíííi--doo t'áá áköshléehgo
ásht'iíída.

T'áá ániid, neeznáá lááháiiidáá', T'áá Diné bizaak'ehjí
ak'e'elchí bínáhoo'ahgo baa ni'diildeé'éé dííshjííígóó
iiyisií yéego dóó tsxíilgo nooyéél. Niha'álchíní (dóó
t'áá sánii dóó hastóí da aldó') t'áá níhí niihik'ehjí
ak'e'elchí yídahool'akahíííi éí binahjí' ólta' bii芝iishkaal
nítt'éë'--éí bits'áádoó shijéí dóó shinítsékees doo hasht'e'
ádólzingóó nahashziízh, háálá ts'íída ákót'éego t'éiyá
náásgóó Diné hólqoó̲doo. Tsétkéí dóó ch'ikéí dííshjííígóó
bá da'ólta'; T'óó ahayói saad ahqah sinlígo bá da'ólta'.
Kót'éego óhoo'ah bii haz'áníííi binahjí' díí naaltsoos
t'áá tsxíilíígo hadilyaa. Éí dó' ahéhee' bi'dí'ní.
CHAPTER ONE

INTRODUCTION TO NAVAJO RELATIVIZATION AND PRONOMINALIZATION

1.0 Introduction

In recent times, one of the more interesting topics discussed by linguists has been that of coreference. The study of the Navajo language is not exceptional in its ability to reveal new facts concerning this topic of coreference. In the present study, I will briefly review recent accounts dealing with different aspects of Navajo anaphora—concentrating initially on the relative clause and so-called "zero pronominalization"—and I will propose a new departure that appears to achieve greater descriptive adequacy.

1.1 The Relative Clause

The Navajo relative clause appears in two forms. The first of these is common in verb-final languages the world over. It is the type in which a "head" noun phrase follows the relative clause and in which the "relative" noun phrase—i.e., the shared noun phrase in the subordinate clause—appears to be simply deleted. For example, consider sentence (1.1):

(1.1) Dahneeshjídeę́ę́ hastiin yidloh.
    (jump:REL man laugh)₁
    The man who jumped is laughing.
which, according to previous works (cf. Platero 1974), is derived from an underlying structure of the following form:

(1.2)

Let us refer to the theory in which (1.1) is derived from (1.2) as the "Deletion Theory" of Navajo relative clauses. In this theory, the deletion is accomplished by means of a rule of roughly the form given in (1.3) below:

(1.3) \[ X \ [NP \ [S \ Y \ NP \ Z]_S \ NP]_NP \ W \]

\[
\begin{align*}
1 & \quad 2 & \quad 3 & \quad 4 & \quad 5 & \quad 6 \\
1 & \quad 2 & \quad 0 & \quad 4 & \quad 5 & \quad 6
\end{align*}
\]

Condition. \( 3 = 5 \)

It was demonstrated in Platero (1974), that this "backward deletion"—i.e., deletion of the identical noun phrase in the subordinate clause—applies over a true variable. That is to say, there is no apparent limit in terms of the distance which can separate the trigger and target noun phrases. This sort of apparent backward deletion is familiar enough, being well documented in such verb-final languages as Japanese (Kuno 1973), Turkish (Knecht and Hankamer 1976),
and Basque (deRijk 1972).

But what is of special interest here is the fact that Navajo apparently also allows "forward deletion"—not allowed in the more familiar verb-final languages. This apparent forward deletion results in a structure in which the head noun phrase is missing—it results in the so-called "headless" relative clause. That is to say, the relative noun phrase is present while the head noun phrase is missing. This second alternative—i.e., the headless relative clause—is vastly preferred over the type represented by sentence (1.1). It is exemplified in (1.4) below.

(1.4) Hastiin dahneeshjídéé yidloh.

(man jump:REL laugh)

According to the deletion theory, this sentence is also derived from the underlying structure (1.2), but by deletion of the head noun phrase rather than by deletion of the relative noun phrase. The deletion is accomplished by a rule of the following form:

(1.5) \[ X [NP [S Y NP Z] S NP] NP W \]

\[
\begin{array}{cccccc}
1 & 2 & 3 & 4 & 5 & 6 \\
1 & 2 & 3 & 4 & 0 & 6 \\
\end{array}
\]

Condition: \[ 3 = 5 \]

Note that the structural description of this rule is identical to that of (1.3), only the structural change is different—rule (1.3) effects a backward deletion, while rule (1.5)
effects a forward deletion.

It is perhaps not evident as yet that the relative noun phrase /hastiin/ in (1.4) is in fact located within the embedded clause, rather than, say, outside of it and to its left. But I can establish that it is indeed internal to the relative clause by arranging matters so as to "surround" the relative noun phrase with material which clearly belongs to the embedding. For example, consider (1.6):

(1.6) Adáádáá' dahneeshjídéé hastiin yidloh.

(yesterday jump:REL man laugh)

The man who jumped yesterday is laughing.

where, by backward deletion, the relative noun phrase is missing. But forward deletion will remove the head noun phrase, leaving the relative noun phrase in the very position it occupied in the underlying structure--i.e., forward deletion gives (1.7) which is directly underlain by (1.8):

(1.7) Adáádáá' hastiin dahneeshjídéé yidloh.

(yesterday man jump:REL laugh)

(1.8)
It is clearly the case here that the relative noun phrase /hastiin/ is within the embedded clause, since it is preceded and followed by material belonging to that embedded sentence.

Notice the similarities of rules (1.3) and (1.5). Although they are distinct in terms of the direction of the deletion, their structural descriptions are identical. It is possible to collapse the two rules with respect to their structural descriptions into a combined rule of the following form:

\[(1.9)\quad X \left[ N \left[ S \left[ Y \left[ N P \right] S \right] N P \right] N P \right] W\]

\[1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad \Rightarrow\]

(a) \[1 \quad 2 \quad 0 \quad 4 \quad 5 \quad 6\]

(b) \[1 \quad 2 \quad 3 \quad 4 \quad 0 \quad 6\]

Condition: \[3 = 5\]

This rule (1.9) is capable of deriving headed relative clauses by applying the structural change given in subpart (a). This is, in fact, the structural change of rule (1.3). Similarly, subpart (b) has exactly the same effect as the structural change in (1.5) above—it results in the headless relative clause.

1.2 Pronominalization

Apparent forward deletion, similar in its overall effect to that used in relative clauses, is apparently involved in the derivation of sentences like (1.10) below. For the sake of familiarity, let us refer to this process as
"pronominalization."

(1.10) Hastiin deezghal dóó nídii'na'.

(man awaken and get:up)
The man awoke and got up.

According to the deletion theory, this sentence has roughly the following underlying structure:

(1.11)

\[
\begin{array}{c}
S \\
/ \quad / \\
NP \\
/ \\
hastiin deezghal \\dóó \\
hastiin nídii'na' \\
\end{array}
\]

The surface sentence (1.10) is derived by deleting the second occurrence of the noun phrase /hastiin/. But as in English, so also in Navajo, backward deletion is not possible in (1.11). Backward deletion is possible into a subordinate clause only. Thus, in a structure of the following form, either forward or backward deletion is possible:

(1.12)

\[
\begin{array}{c}
S \\
/ \quad / \\
Adv \\
/ \\
S \\
/ \\
COMP \\
/ \\
NP \\
/ \\
V \\
/ \\
hastiin deezghal -go \\
hastiin nídii'na' \\
\end{array}
\]

Forward deletion would give
When the man awoke, he got up.

And backward deletion would give

When he awoke, the man got up.

In the deletion theory, we must insure that backward deletion is allowable only into a subordinate clause. Notice that precisely the same is true in relative clauses--i.e., by virtue of the structure assigned to a relative clause, backward relativization (deletion) is, in fact, into a subordinate clause.

1.3 Deletion Process Generalized

Under the assumption that deletion is involved both in relative clause formation and in pronominalization, there is an obvious similarity between the two processes: the deletion is bidirectional in both, and backward deletion is identically constrained in both. In previous work on Navajo anaphora (e.g., Platero 1974), this similarity led to the proposal that a single deletion operation was involved in the derivation of relative clauses and pronominalization. Formally, this identification of the two processes is achieved by simply deleting the labelled bracketing from the structural description of rule (1.9) and appending a condition to the effect
that the structural change involving backward deletion is possible only where the noun phrase to be deleted is in a subordinate clause. The combined process of deletion can be expressed as follows:

(1.15) **Identical Noun Phrase Deletion**

\[ X - NP - Y - NP - Z \]

1 2 3 4 5 =>

(a) 1 2 3 0 5

(b) 1 0 3 4 5

Conditions: (1) \( 2 = 4 \)

(2) (b) only if 2 is in subordinate clause

This rule will apply alike to the structures assumed to underly relative clauses--e.g., (1.2) and (1.8)--and to structures which underly pronominalization--e.g., (1.11) and (1.12).

1.4 An Apparent Constraint on Deletion

Let us for the time being leave matters as they are and, continuing to assume the deletion theory, let us consider the operation of (1.15) into subordinate clauses more carefully. In our examples heretofore, only intransitive sentences were used to exemplify deletion of a noun phrase from a subordinate clause. It is possible, of course, to have a transitive sentence embedded as a relative clause, as in the following pre-deletion structure:
By rule (1.15a), sentence (1.17) is derived:

(1.17) Ashkii at'éd yi'dísoolé deezgo'.

(boy girl whistle:REL fall)
The boy who was whistling at the girl
(tripped and) fell.
The girl that the boy was whistling at
(tripped and) fell.

This sentence is ambiguous with respect to the question of which of the two remaining noun phrases is to be understood as the subject of the main verb. This ambiguity, which is a common property of certain headless relative clauses in Navajo, will be taken up at a later point. Our interest now is in backward deletion, which can also apply to (1.16). Its application will yield the following:

(1.18) At'éd yi'dísoolé ashkii deezgo'

(girl whistle:REL boy fall)
The boy who was whistling at the girl
(tripped and) fell.
Of special interest is the fact that this sentence is unambiguous with respect to the grammatical function of the noun phrase /at'éd/ in relation to the embedded verb. The point is that it bears the same relation to the verb /yí'dísool/ in (1.18) as it does in the simple sentence

(1.19) Ashkii at'éd yí'dísool.

(boy girl whistle)

The boy whistles at the girl.

This sentence conforms to the SOV pattern of Navajo transitive sentences containing third person noun phrases. That is to say, the first noun phrase is the subject and the second is the object (there is also a morphologically distinct OSV pattern for transitive sentences which will be discussed later). Notice that sentence (1.19) has precisely the form of the embedded sentence in (1.16).

The lack of ambiguity in (1.18) creates a problem for the deletion rule as stated in (1.15). The problem is this: Why couldn't (1.18) have a reading corresponding to the underlying structure (1.20)?

(1.20)
In this structure the noun phrase /at'ééd/ corresponds to the subject rather than the object, as in the perfectly well-formed simple sentence (1.21)

(1.21) At'ééd ashkii yí'dísool.
(girl boy whistle)

The girl is whistling at the boy.

Rule (1.15), as stated, will apply to (1.20) producing a string identical to (1.18). However, that string cannot be understood to have the meaning in (1.20). Notice that there is nothing semantically odd about (1.20) because forward deletion produces the perfectly well-formed sentence

(1.22) At'ééd ashkii yí'dísooléé deezgo'.
(girl boy whistle:REL fall)

(a) The girl who was whistling at the boy
(tripped and) fell.

(b) The boy who the girl was whistling at
(tripped and) fell.

one of whose readings—i.e., subpart (b)—corresponds to the meaning represented in the structure (1.20). But it is precisely that reading which is not available for (1.18). One move which can be made in the deletion theory in order to account for the lack of ambiguity in (1.18) is to place an additional constraint upon the deletion rule. This is the move I made in my study of Navajo relative clauses in 1974. The constraint can be stated in roughly the following form:
(1.23) **Second Noun Phrase Constraint**

In transitive sentences of the form

\[ ... NP NP V, \]

only the first NP may be deleted.

(Actually, I argued in my earlier study that this applies only to cases in which the two NPs are third person. In fact, however, constraints on interpretation involving the linear order of noun phrases are enforced only in cases where the noun phrases are third person. Therefore, in my continuing discussion wherever the category NP is referred to, it can be assumed that the noun phrase is a third person).

The constraint (1.23) will prevent backward deletion—i.e., case (b) of (1.15)—from applying to (1.20). That is, the constraint will prevent the derivation of the string (1.18) from the structure (1.20), thereby accounting for the lack of ambiguity of (1.18).

Notice that (1.23) will not only constrain backward deletion but also forward deletion in so-called pronominalization. Consider, for example, the structure

(1.24)

Since this is a conjoined structure, only forward deletion—
i.e., case (a) of (1.15)—can apply, yielding

(1.25) Ashkii yah'iyá dóó at'éd yí'déésóól.

(boy enter and girl whistle)

The boy entered and whistled at the girl.

Like the relative clause in (1.18), the second conjunct in (1.24) is unambiguous. Specifically the noun phrase /at'éd/ is understood as the object of the verb /yí'déésóól/ just as it is in the simple sentence (1.26) below:

(1.26) Ashkii at'éd yí'déésóól.

(boy girl whistle)

The boy whistled at the girl.

The prohibition against deleting the second noun phrase in a structure of the form NP NP V—i.e., constraint (1.23)—will account for the lack of ambiguity of (1.25). That is to say, the constraint will guarantee that (1.25) is not derived from

(1.27)

In general, constraint (1.23) accounts for the fact that no sequence of the form

(1.28) NP V
which derives from a transitive sentence of the form

\[(1.29) \quad NP \ NP \ V\]

has the interpretation according to which the deletion site immediately precedes the verb. If we represent the deletion site with the symbol GAP, a derived structure of the form (1.28), will correspond in its interpretation to

\[(1.30) \quad GAP \ NP \ V\]

rather than

\[(1.31) \quad NP \ GAP \ V\]

Thus, in the sentences that we have been considering, the GAP corresponds to the position of the subject noun phrase rather than the object noun phrase, since the examples we have chosen involve transitive sentences conforming to the SOV pattern.

It is perhaps appropriate at this point to introduce the OSV pattern which Navajo transitive sentences, involving third person subject and object, may adopt. Consider the sentence

\[(1.32) \quad Ashkii \ at'\acute{e}d \ yizts'\acute{o}s.\]

\[(\text{boy} \ \text{girl} \ \text{kiss})\]

The boy kissed the girl.

This represents the SOV pattern. There is an alternative form, cognitively synonymous with (1.32), to wit:
In this form of the sentence, the object precedes the subject. That is to say, the sentence conforms to the pattern OSV. In addition to the difference in the linear order of the noun phrases, (1.32) and (1.33) exhibit a morphological difference in the verb word. Specifically, in the SOV pattern, the third person object prefix is represented by the morph /yi-/ while in the OSV pattern, it is represented by the morph /bi-. It has been assumed (Hale (1973), Creamer (1974), Frishberg (1972), Witherspoon (1977), and myself (1974)) that the OSV pattern is derived by means of a transformation called subject-object-inversion (SOI). I do not wish to commit myself as to the existence of this rule as a genuine transformation. I will simply assume it here for expository purposes. The rule might be expressed in very abbreviated form, as follows:

(1.34) \begin{align*}
\text{NP} & - \text{NP} - \text{yi-V} \\
1 & \quad 2 & \quad 3 & \quad 4 \\
& \implies \\
2 & \quad 1 & \quad \text{bi} & \quad 4
\end{align*}

In actual fact this formulation masks a large number of details, particularly in relation to terms 3 and 4 in the structural description. The prefix /yi-/ is actually a part of the verb word and may or may not be initial in it.
In addition to the morphological details, there are conditions on the application of SOI relating to semantic content of the noun phrases (see references for discussion). What is relevant here is the interpretation of the noun phrases appearing in the two alternative patterns. The interpretation conforms to the following principles (from Hale, Jeanne, and Platero 1976):

(1.35) **Interpretation of Grammatical Relations**

<table>
<thead>
<tr>
<th>NP is</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>Object / _yi-V</td>
</tr>
<tr>
<td></td>
<td>Subject/ _bi-V</td>
</tr>
<tr>
<td>(b)</td>
<td>Subject/ _NP yi-V</td>
</tr>
<tr>
<td></td>
<td>Object / _NP bi-V</td>
</tr>
</tbody>
</table>

By these principles, sentences of the form

(1.36) NP NP yi-V

will be assigned the functional profile

(1.36') S O V

while sentences of the form

(1.37) NP NP bi-V

will be assigned the functional profile

(1.37') O S V

Now let us return to a reconsideration of the Second Noun Phrase Constraint--i.e., (1.23) above. If (1.23) is correct as stated then it should also pertain to cases in
which the target for deletion appears in an inverted sentence like (1.33). Consider, for example, the following structure.

(1.38)

```
S
  NP V
  at'eed yah'iiyá dóó at'eed ashkii bizts'qs
  girl enter and girl boy bi:kiss
```

Forward deletion in this instance derives

(1.39) At'eed yah'iiyá dóó ashkii bizts'qs.
     (girl enter and boy bi:kiss)
     The girl entered and was kissed by the boy.

The second conjunct in this sentence is in fact, unambiguous and receives only the interpretation corresponding to (1.33). Thus, it appears that the Second Noun Phrase Constraint gives the correct result since it guarantees that the deletion site in (1.39) precedes the noun phrase /ashkii/ and therefore, that the surface string would not come from the following structure:

(1.40)

```
S
  NP V
  at'eed yah'iiyá dóó ashkii at'eed bizts'qs
  girl enter and boy girl bi:kiss
```

Sentence (1.39) illustrates forward deletion into an
inverted sentence. The following sentence illustrates backward deletion into an inverted sentence:

(1.41) Ashkii bizts'qséé at'ééd hadoolghaazh.

(boy bi:kiss:REL girl scream)

The girl that was kissed by the boy screamed.

Here again (1.23) correctly predicts that the sentence is unambiguous. Under the deletion hypothesis, the sentence must come from

(1.42)

and not from

(1.43)
1.5 An Additional Constraint

The constraint expressed in (1.23) has basically the following effect: It prevents deletion of the object noun phrase in sentences with the functional profile SOV, and it prevents deletion of subject noun phrase in sentences with the functional profile OSV. For the cases we have considered so far, this is sufficient to predict the observed facts concerning the interpretation of surface strings resulting from deletion. It is not sufficient, in general, however, as we shall see presently. Consider the following structure:

\[(1.44)\]

\[
\begin{align*}
S & \quad \text{NP} \quad \text{NP} \quad \text{V} \\
S & \quad \text{NP} \quad \text{NP} \quad \text{REL} \\
S & \quad \text{NP} \quad \text{NP} \\
& \quad \text{hastiin} \quad \text{ashkii} \quad \text{at'\'e\'ed} \quad \text{yiyiiltsa(n)} \quad -\text{\'{e}e} \quad \text{ashkii} \quad \text{y'i\'disool}. \\
& \quad \text{man} \quad \text{boy} \quad \text{girl} \quad \text{see} \quad -\text{REL} \quad \text{boy} \quad \text{whistle}
\end{align*}
\]

Backward deletion in (1.44)—applying in conformity with (1.23)—gives rise to the following surface string:

\[(1.45)\]

\[
\text{Hastiin at'\'e\'ed yiyiilts\'an\'e\'e ashkii y'i\'disool.}
\]

\[
(a) \quad \text{The man is whistling at the boy who saw the girl.}
\]

\[
(b) \quad \text{The man who saw the girl is whistling at the boy.}
\]

\[
(c) \quad \text{The girl that the man saw is whist\'ling at the boy.}
\]
We would expect sentence (1.45) to be semantically consistent with the structure it presumably came from—i.e., to have reading (a) above. However, the meaning of (1.45) differs from that embodied in (1.44)—specifically, it has either the interpretation (b), as if it derived from (1.46) below:

(1.46)

or the interpretation (c), identical to (1.46) but with /at'eed/ in head position. Because backward deletion applied to (1.44) does not violate condition (1.23), it is apparent that the constraint is not sufficient. Notice that backward deletion in the substructure (1.47), contained within (1.44), must be allowed:

(1.47)
This follows, since (1.48) is perfectly well-formed:

(1.48) At'ééd yiyyiłtsáneé ashki yiylóh.

(girl see:REL boy laugh)

The boy who saw the girl is laughing.

The special property of structure (1.44) which is relevant to backward deletion relates to the fact that the complex noun phrase is in object position rather than subject position. Because of this, the complex noun phrase is itself preceded by a noun phrase belonging to the main clause. Evidently, this is what is responsible for the interpretations which result. To correct for this, we might propose a constraint in addition to the one already embodied in (1.23) which would prevent deletion from applying even to the first noun phrase where that is immediately preceded by a noun phrase in the main clause. This constraint may be formulated as follows:

(1.49) In a structure of the form

\[ X \text{ NP}_1 [S \text{ NP}_2 Y]_S Z \]

\text{NP}_2 may not be deleted.

This additional constraint will guarantee that sentence (1.45) will not be derived from (1.44) It will, however, permit (1.48) to be derived by backward deletion, since in that sentence, the target noun phrase is not preceded by a noun phrase in the main clause.

The constraint expressed in (1.49) evidently also applies in the case of forward deletion. In this connection consider
When the girl entered, she scolded the boy who was taking care of the baby.

The meaning that I have provided here corresponds to the following:

The deletions which derived (1.50) from (1.51) do not violate either of the constraints (1.23) or (1.49). It is not possible to interpret (1.50) as coming from (1.52) below.
In theory, according to the deletion hypothesis we are now considering, sentence (1.51) could be derived from (1.52) by first allowing deletion to apply in the complex noun phrase (deleting /at'ééd/ from head position) and then, at the root sentence level, permitting forward deletion to apply again deleting /at'ééd/ from the relative clause itself. The latter deletion, however, would be in violation of (1.49). The fact that the reading corresponding to structure (1.52) is impossible to get shows that (1.49) operates to block forward deletion in relevant cases, just as it blocks backward deletion in cases like (1.44).

1.6 A Generalization of the Constraints

The reader will notice, no doubt, that constraints (1.23) and (1.49) are virtually identical in global perspective; both
of them have the effect of blocking the deletion of the second of two noun phrases in sequence. Constraint (1.23) is formulated so as to apply within a clause, while (1.49) is formulated to apply across a clause boundary. Clearly, therefore, the two constraints can be collapsed into the more general formulation (1.53) by simply removing the term V from (1.23) and the bracket from (1.49):

\[(1.53) \text{ Second Noun Phrase Constraint (Revised)}\]

The second NP may not be deleted from a structure of the form

\[X - NP - NP - Y.\]

Formulated in this way, the Second Noun Phrase Constraint will block deletion in all of the relevant cases. There is, however, one additional refinement which must be added to the constraint, in order to account for the interpretation of sentences like (1.54) below.

\[(1.54) \text{ Ashkii at'éd yiyyiilts'égé yizts'qs.}\]

(boy girl see:REL kiss)

The boy kissed the girl he saw.

Presumably, under the deletion hypothesis, this sentence derives from the structure (1.55):
Assuming that the second occurrence of /ashkii/ is deleted from this structure, sentence (1.54) clearly involves a case in which the second of two adjacent noun phrases is deleted. In this instance, however, the first of the two noun phrases is actually the trigger of the deletion. We must, therefore, append to our revised constraint an exception clause to the effect that deletion is allowed where the first noun phrase triggers the deletion. The final revision will look something like the following:

(1.56) **Second Noun Phrase Constraint (Final Revision)**

The second noun phrase may not be deleted from a structure of the form

\[
X - \text{NP} - \text{NP} - Y,
\]

except where the first noun phrase triggers the deletion.

This revision, of course, hinges on the assumption that the second occurrence of /ashkii/ in (1.55) rather than the first is deleted. In other words, we assume deletions cannot apply upwards and backwards.
The constraint embodied in (1.56) will account for an observation pertaining to simple sentences as well as the observations concerning the interpretation of complex sentences of the type we have been considering heretofore. Consider the following simple sentence:

(1.57) Ashkii bizhé'é yiyiiltsá.

(boy his:father see)

(a) The boy saw his father.

(b) The boy's father saw him.

The relevant interpretation of this sentence is the one which, according to the deletion theory, corresponds to a structure of the following form:

\[
(1.58)
\]

\[
S \\
| NP \ |
| NP \ |
| NP N |
| ashkii \ ashkii bi-zhé'é yiyiiltsá |
| boy \ boy his-father see |
\]

Actually, sentence (1.57) is ambiguous but the immediately relevant fact is that it cannot have the meaning which would correspond to the following structural description:

\[
(1.59)
\]

\[
S \\
| NP \ |
| NP \ |
| NP N |
| ashkii \ bi-zhé'é ashkii yiyiiltsá |
| boy \ his-father boy see |
\]
That is to say, (1.57) cannot have the meaning (b). Notice that the structural description of (1.59) is well-formed from a strictly structural point of view, since, except for the actual lexical items present, it is matched by the well-formed structure (1.60).

(1.60)

```
S
   /\  |
  /  \  |
 NP  NP  V
   /\   |
  /  \  |
 NP  N  NP
```

ashkii bi-zhé'é at'ééd yi‘iiltśa
boy his-father girl see

which directly underlies (1.61) below.

(1.61) Ashkii bizhé'é at'ééd yi‘iiltśa.

(boy his:father girl see)

The boy's father saw the girl.

The fact that (1.57) cannot be derived from (1.59) follows from the Second Noun Phrase Constraint forbidding the deletion of the second of two successive noun phrases, and the fact that (1.57) can have the (a) reading follows from the fact that deletion is allowed in (1.58) by virtue of the exception clause appended to the Second Noun Phrase Constraint. Thus, the fact that (1.57) cannot have the (b) reading can be explained in the same way as the fact that the second clause of sentence (1.62) below cannot have the meaning associated with (1.60).
(1.62) At'éd yah'íyá dóó ashkii bizhé'é yiyiiłtsá.
   (girl enter and boy his:father see)
   (a) The girl entered and saw the boy's father.
   (b) # The girl entered and the boy's father saw her.
That is to say, sentence (1.62) cannot have the (b) reading since that would imply a deletion site between the noun phrase /ashkii bizhé'é/ and the verb-word /yiyiiłtsá/. The Second Noun Phrase Constraint is specifically designed to prevent that situation. It is, of course, possible for Navajo to express the (b) meanings cited under (1.57) and (1.62) by resorting to the inverted--i.e., O S bi-V--forms of transitive sentences. Thus, for example, the (b) meaning cited under (1.57) can be expressed as follows:

(1.63) Ashkii bizhé'é biitłtsá.
   (boy his:father bi:see)
   (a) The boy was seen by his father.
   (b) # The boy's father was seen by him.

According to the deletion theory as constrained by (1.56), the (a) reading of (1.63) must come from:

(1.64)

\[
S \rightarrow NP \hspace{1cm} NP \hspace{1cm} V \\
| \downarrow \hspace{1cm} \downarrow \hspace{1cm} \downarrow | \\
NP \hspace{1cm} NP \hspace{1cm} N \\
| \downarrow \hspace{1cm} \downarrow \hspace{1cm} \downarrow | \\
ashkii \hspace{1cm} ashkii \hspace{1cm} bi-zhé'é \hspace{1cm} biitłtsá \\
| \downarrow \hspace{1cm} \downarrow \hspace{1cm} \downarrow | \\
boy \hspace{1cm} boy \hspace{1cm} his-father bi:see
\]

The constraint is formulated in such a way as to insure that
(1.63) cannot derive from (1.65).

\[ (1.65) \]

\[
S \\
NP \\
NP \text{ NP} \text{ V} \\
\text{ashkii bi-zhé'é} \text{ ashkii biíttsá} \\
\text{boy his-father boy bi:see}
\]

and therefore cannot have the reading (1.63b). Precisely analogous observations can be made concerning the following sentence in which an inverted version of (1.60) underlies the second clause:

\[ (1.66) \]

\[
\text{At'éeéd yah'íyá dóó ashkii bizhé'é biíttsá}. \\
\text{(girl enter and boy his:father bi:see)}
\]

(a) The girl entered and was seen by the boy's father.

(b) \#The girl entered and the boy's father was seen by her.
FOOTNOTES

1. Where relevant, the internal structure of Navajo verbs is indicated by hyphenation, both in the Navajo sentence and in the parenthetic glossing. If the Navajo is not hyphenated, the glossing employs a colon to separate meaningful elements. Navajo verbs are glossed by means of the English bare infinitive--i.e., without tense. The actual tense is reflected in the free translations, however.

2. In Hale and Platero, 1974, there was equivocation on this issue in connection with a similar sentence. I am convinced now that (1.50) cannot in fact be understood as deriving from (1.52) and that this observation is correct for all cases of this type.
2.0 Introduction

My discussion so far has been concentrated on the problem of constraining the putative deletion rule so that the sentences which are produced by its application are matched with the proper underlying structures. This is in keeping with the assumption that the meaning implied by the underlying representation of a particular sentence should survive as a reading of the sentence itself. In other words, the purpose of the Second Noun Phrase Constraint (1.56) is to insure that an observed reading of the sentence be relatable to a deep structure that expresses that meaning.

Before I go on to indicate certain empirical problems with the Second Noun Phrase Constraint itself, and with this approach in general, I wish to address myself briefly to another aspect of the analysis of relative clauses and so-called pronominalization--i.e., the assumption that a single rule is involved, an assumption based primarily on the two observations: (a) that forward and backward deletion are used for both processes, and (b) that the deletion is evidently similarly constrained, by (1.56), in both cases.

If the assumption of a single rule is false, then (1.56) is not properly a condition on a rule but rather a more general principle involved in the recovery of underlying
2.1 Extrasentential Reference in Pronominalization

The assumption that relativization and pronominalization are the same rule was challenged in Hale and Platero (1974), but the distinction between the two processes can be much more forcefully drawn than in that paper.

Whether or not deletion is actually involved in relative clause formation, it is very unlikely that pronominalization actually involves deletion under identity as implied by rule (1.15). Consider, for example, (1.13) and (1.14), repeated here for convenience:

(1.13) Hastiin deezghalgo nídi'i'na'.

(man awake:COMP get:up)

When the man awoke, he got up.

(1.14) Deezghalgo hastiin nídi'i'na'.

(awake:COMP man get:up)

When he awoke, the man got up.

In my original discussion of these sentences, I considered only the readings according to which the overt noun phrases and the missing noun phrases were coreferential. However, both sentences have an interpretation in which that is not the case. In other words, (1.13) can mean

When the man$_i$ awoke, he/she$_j$ got up.

and (1.14) can mean
When he/she awoke, the man got up.

In sentence (1.13), the subject argument in the main verb /nídii'na'/ is not overtly present--i.e., it is a "missing noun phrase". If its absence were due solely to the action of rule (1.15), then the sentence could not be ambiguous in the way that it in fact is. Similarly, in sentence (1.14), the subject argument of the subordinate verb /deezghal/ is missing and the sentence has a reading which would not be available if rule (1.15) were responsible for the gap.

Let us now contrast this behavior with that of relative clauses. Consider, for example, the relative clauses in the following sentences which, in the relevant sense, contrast minimally with the pronominalization cases illustrated by (1.13) and (1.14).

(2.1) (a) Hastiin deezghałéę nídii'na'.
        (man    awake:REL  get:up)
The man who awoke got up.

(b) Deezghałéę hastiin nídii'na'.
       (awake:REL  man      get:up)
The man who awoke got up.

These sentences are not ambiguous in the way (1.13) and (1.14) are. The subject arguments of the main and subordinate verbs must be understood as coreferential.

This contrast between the relative clause and the
pronominalization cases is paralleled by an additional contrast. For any sentence in which a noun phrase is missing from a particular position by virtue of pronominalization, there is an equally grammatical sentence in which that position is occupied by an overt noun phrase. Thus, for example, the following sentences are fully grammatical.

\[(2.2) \quad (a) \quad \text{Hastiin deezghalgo asdzáán nídií'na'}.\]
\[(\text{man awake:COMP woman get:up})\]
When the man awoke, the woman got up.

\[(b) \quad \text{Asdzáán deezghalgo hastiin nídií'na'}.\]
\[(\text{woman awake:COMP man get:up})\]
When the woman awoke, the man got up.

These sentences are as grammatical as (1.13) and (1.14). However, the corresponding situation is not true for relative clauses. Thus, the following are ungrammatical.

\[(2.3) \quad (a) \quad *\text{Hastiin deezghaléé asdzáán nídií'na'}.\]
\[(\text{man awake:REL woman get:up})\]

\[(b) \quad *\text{Asdzáán deezghaléé hastiin nídií'na'}.\]
\[(\text{woman awake:REL man get:up})\]

2.2 The Headless Relative Clause and Right Dislocation

The observations just made about relative clauses in contrast to pronominalization could, in the deletion theory, be expressed (a) by imposing the condition that the head of the relative clause be identical to some noun phrase in the
relative clause, and (b) by requiring that either the head or the relative noun phrase be deleted. However, I would like to suggest an alternative proposal for relative clauses which will achieve the same observational effect. This proposal is similar in spirit to the one briefly explored in Hale and Platero (1974). The proposal is this: Relative clauses are basically headless in underlying representation. The headed version of a relative clause is produced by moving a noun phrase (the relative NP) into the head position following the relative clause marker. This will have the effect of creating a gap in the relative clause itself just as the deletion operation did. Now, the constraint on the removal of a noun phrase in this way will be the same as that embodied in (1.56). Thus, only an initial noun phrase will be allowed to move. By adopting a movement analysis of relative clauses, together with the headless underlying structure, we account very simply for the properties which distinguish relative clauses from the cases of so-called pronominalization. Thus, the non-ambiguity of the sentences of (2.1) and the ungrammaticality of (2.3) follow from the fact that there is only one position in which a lexical noun phrase may appear in the underlying representations of (2.1)--i.e., in the subject argument position of the subordinate verb /deezghal/ 'he/she awoke'.

It is interesting to observe that Navajo possesses another construction, not readily accepted by speakers as a
part of the core of Navajo grammar, which exhibits certain similarities to the headed relative clause, which itself is the least favored of the relative clause types. This additional construction involves post-posing a noun phrase to sentence final position in main clauses. I will refer to this process as right dislocation. It is responsible for sentences of the following type:

(2.4) At'édí yizts'qs ashkii.

(girl kiss boy)

He kissed the girl, the boy.

This construction is similar to headed relative clauses in that the right dislocated noun phrase is necessarily construed with a gap in the sentence itself. Furthermore, the position of the gap is subject to the same constraint as in the case of the headed relative clause. Thus, just as in the relative clause

(2.5) At'édí yizts'qseé ashkii.

(girl kiss:REL boy)

/at'édí/ must be understood as the object of /yizts'qs/, so also in the right dislocation structure of (2.4) /at'édí/ must be understood as object. This similarity carries over to more complicated cases as well. Thus, for example, consider the relative clause in the following sentence:
(2.6) Ashkii adzáán at’éd yizts’qs nínée hadoolghaazh.
   (boy woman girl kiss say:REL scream)
   (a) The boy who said that the woman kissed the
girl screamed.
   (b) The woman who the boy said kissed the girl
screamed.
   (c) The girl who the boy said the woman kissed
screamed.

This sentence is ambiguous in the ways expected by virtue of
the complex headless relative clause structure. However, the
following sentence employing the headed relative clause is
unambiguous.

(2.7) Aṣdzáán at’éd yizts’qs nínée ashkii hadoolghaazh.
   (woman girl kiss say:REL boy scream)
   The boy who said that the woman kissed the
girl screamed.

This sentence is unambiguous, receiving only the interpreta-
tion according to which the boy is understood as the subject
of the verb /nį/ 'he said'. That is, /ashkii/ is construed
with an initial gap, and therefore, with the position which
it occupies in the headless relative clause of (2.6).

Now consider the right dislocation structure (2.8) below

(2.8) Aṣdzáán at’éd yizts’qs nį ashkii.
   (woman girl kiss say boy)
   He said the woman kissed the girl, the boy.
This sentence is unambiguous and receives the interpretation according to which the right dislocated noun phrase /ashkii/ is understood as the subject of /ni/, as it is overtly in (2.9) below:

(2.9) Ashkii asdzáán at'éd yizts'qs ni.

(boy woman girl kiss say)

The boy said the woman kissed the girl.

It should be pointed out that the non-ambiguity of (2.7) and (2.9) is not due simply to the inability of a noun phrase to extract out of an embedded clause but rather due to the constraint against moving the second of two noun phrases in sequence. Let us assume for the moment that movement is, in fact, involved in developing the headed relative clause and in right dislocation. That a noun phrase can extract from a subordinate clause can be shown by the following sentences, in which /ashkii/ is extracted from the complement of the verb /dishñi/ 'I said'.

(2.10) (a) (At'éd yizts'qs) dishníné ashkii hadoolghaazh.

(girl kiss I:say:REL boy scream)

The boy that I said kissed the girl screamed.

(b) (At'éd yizts'qs) dishní ashkii.

(girl kiss I:say boy)

I said he_i kissed the girl, the boy_i.

These sentences receive the interpretation according to which the noun phrase /ashkii/ is the subject of the verb /yizts'qs/.
In other words, the relation which the noun phrase /ashkii/ bears to /yizts'qs/ is the same as in the following restored versions of (2.10).

\[(2.11)\]
\[(b) \text{(Ashkii at'66d yizts'qs) dishníé.} \]
\[(b) \text{(boy girl kiss I:say)}\]
\[(\text{hadooghaazh. scream})\]

The point of this digression has been to suggest an alternative conception of relative clause formation and to compare it to another construction that involves the creation of a gap. I do not wish to commit myself at this point to the details of a movement analysis for the headed relative clause. However, it is clear that the features which distinguish relative clauses from pronominalization could be reflected in the grammar by an analysis of this nature. It is clear also, that if the headed relative clause is actually produced by movement, some constraint akin to (1.56) would have to be involved in order to insure that the output structure be relatable to the correct underlying representation. Thus, for example, the relative clause (2.5) must, under the movement analysis, derive from the structure
Of course, the proper constraint is more global in nature, since it is not enough to make reference to the more local structure which constitutes the domain of the putative movement rule itself--i.e., the complex noun phrase structure. Thus, just as in the deletion theory, so in the movement theory, we must avoid deriving sentence (1.45) from a structure analogous to (1.44). Clearly, this cannot be done if the constraint is permitted to refer solely to material contained within the complex noun phrase structure to which the rule itself applies--that is to say, the constraint must have a more inclusive view of the total phrase marker than the more limited substructure which defines the domain of the rule.
Under the movement analysis we are considering, the underlying structure corresponding to (1.44) would be roughly the following:

(2.14)

That is to say, the complex noun phrase would be as in (1.44) but without the head noun phrase. The domain of the movement rule, presumably, is the complex noun phrase, or perhaps the structure containing the embedded sentence and the relative clause marker REL. But in order to achieve the effect of (1.56), the rule must be prevented from applying in (2.14). However, the constraint which would prevent application here must have reference to the matrix sentence in order to take into consideration the noun phrase /hastiin/, which is not a part of the domain of the movement rule. This observation is consistent with the growing awareness that the effect which (1.56) has attempted to produce relates to a more general problem in the interpretation of sentences. The problem is not specific to a particular rule of grammar but, rather, relates to certain properties of surface structures regardless of the processes involved in their derivations. So, for
example, while it is perfectly possible to compose an analogue to (1.56) for the movement analysis of the headed relative clause, say, the following:

(2.15) The second noun phrase may not be moved from a structure of the form

\[ X - \text{NP} - \text{NP} - Y, \]

the effect which is desired is not properly viewed in terms of rules, but in terms of surface structures and their interpretations. The point is this, a surface string of the form \( X - \text{NP} - X \) does not receive an interpretation according to which a "gap" immediately follows the noun phrase--where by "gap" we mean a noun phrase-argument position not occupied by an overt noun phrase.

2.3 Number Agreement

Let us return now to the contrast between the behavior of relativization and pronominalization. Consider first the following sentence, which evidently involves a case of pronominalization:

(2.16) Ashkii at'ééd yizts'ós go dahdii'áázh.

(boy girl kiss:COMP leave:dual)

When the boy kissed the girl, they left.

The main verb here has the property that its subject, when overt, must be capable of referring to two entities--i.e., it requires either an explicitly dual subject or else a non-singular subject, as in
(2.17) (a) Ashkii dóó aț’éd dahdii’áázh.
(boy and girl leave:dual)
The boy and girl left.

(b) Ashiiké dahií’áázh.
(boys leave:dual)
The boys left.

In (2.17a) the subject is a compound noun phrase, consisting of two singular conjuncts, and is therefore exactly dual in number. In (2.17b), the subject is a non-singular capable of referring to two or more entities, and is therefore compatible with the dual verb /dahdii’áázh/. Returning now to sentence (2.16), the subject of the main verb in that sentence is not overtly present—i.e., it is not present as a full noun phrase in the subject position for the main verb. Nonetheless, the subject of the main verb is understood as dual in number reference, as can be determined by the form of the verb. While sentence (2.16) is ambiguous, it admits the reading according to which the subject of /dahdii’áázh/ is understood as referring to the two individuals mentioned in the subordinate clause—i.e., the subordinate subject /ashkii/ and the subordinate object /aț’éd/. It is clear that rule (1.15), alone and as it stands, cannot account for this reading of (2.16). The only plausible fully specified source structure for (2.16), under the deletion theory of pronominalization, is something like the following:
In fact, this structure is well-formed in Navajo and directly underlies the sentence

(2.18)  Ashkii at'ëéd yizts'qs -go ashkii dóó at'ëéd dahdi'áázh
(boy girl kiss -COMP boy and girl leave:dual)

which can be interpreted in a way which corresponds to the reading of (2.16) with which we are now concerned. Therefore, semantically, (2.18) would appear to be an appropriate source for (2.16). The problem, however, is this: There is in (2.18) no appropriate noun phrase antecedent to effect the deletion of the compound subject of the main verb—the understood subject of the main verb has what is commonly referred to as a "split antecedent" in the subordinate clause. It is quite evident that deletion is an inappropriate mechanism to account for the facts of (2.16)—at least it is inappropriate under the assumption that (2.18) is the source, and that is the only plausible assumption under the deletion theory. If deletion were, in fact, applicable in (2.18),
then there is no reason to rule out the backward deletion which rule (1.15) allows. However, if we permit the com-
pound noun phrases in the main clause of (2.18) to delete the subject and object in the subordinate clause, we obtain

(2.20) Yizts'qsgo ashkii dóó at'éd dahkan'áazh.
(kiss:COMP boy and girl leave:dual)
(a) When heₐ kissed herₐ, the boyₐ and the
girlₐ left.
(b) When sheₐ kissed himₐ, the boyₐ and the
girlₐ left.
(c) When theyₐ kissed (him/her)ₐ, (the boy
and girl)ₐ left.

In Navajo this sentence does not receive the interpretation corresponding to the meaning embodied in (2.18).

The foregoing is consistent with the possibility that deletion is not in fact involved in the process to which we have been referring by the term "pronominalization."

Our immediate concern, however, is not to determine the exact nature of "pronominalization"--we will address that question shortly--but rather to contrast it with relativization. Consider now sentence (2.21), containing a relative clause, but otherwise constructed in close imitation of sentence (2.16):

(2.21) *Ashkii at'éd yizts'qséé dahkan'áazh.
(boy girl kiss:REL leave:dual)
This sentence is ungrammatical. The complex noun phrase subject of (2.21) cannot be interpreted as referring to two entities—i.e., as being dual in number—despite the fact that two singular noun phrases appear in the subordinate clause, which is identical to the subordinate clause in the grammatical sentence (2.16). Obviously, therefore, it cannot be the case that relative clause formation and pronominalization are identical processes. At least, it is quite certain that both cannot be special cases of the deletion rule (1.15).

The deletion analysis could, of course, account for the ungrammaticality of (2.21). Thus, if we insisted that exactly rule (1.15)—in its forward application—were responsible for the headless form of the relative clause in Navajo, and if, furthermore, we assume that selection—in this case number selection—were determined by the head, then the ungrammaticality of (2.21) would follow automatically from the fact that the only possible sources of relative clauses in (2.21) would be (2.22a,b), with singular heads:

(2.22) (a) Ashkii at'êéd yizts'ôseê ashkii....
   (boy girl kiss:REL boy ....)

   (b) Ashkii at'êéd yizts'ôseê at'êéd....
   (boy girl kiss:REL girl...)

Only these would serve as appropriate inputs to rule (1.15) and their singular heads are in conflict with the inherent
dual numbers of the verb /dahdi'áázh/; this constitutes a selectional violation, just as do the simple sentences of (2.23)

(2.23) (a) *Ashkii dahdi'áázh.
(boy leave:dual)

(b) *At'éd dahdi'áázh.
(girl leave:dual)

and the complex sentence (2.24) containing the headed relative clause corresponding to (2.22a):

(2.24) *At'éd yizts'qéè ashkii dahdi'áázh.
(girl kiss:REL boy leave:dual)

However, while the deletion theory, under the assumption just outlined, can account for the ungrammaticality of (2.21), the grammaticality of (2.16), under the relevant reading, poses a dilemma for the theory which holds that the selfsame deletion process constitutes the central core of relative clause formation and pronominalization.

2.4 Additional Remarks on the Relative Clause

I have suggested an alternative to the deletion theory for relative clauses. In particular, I have suggested that the headless relative clause may be the basic form in underlying structure. If so, then no deletion whatsoever is involved in producing such sentence as the grammatical (2.25) below:
(2.25) Ashkii at'éd yi'déésoléé deezgo'.

(boy girl whistle:REL fall)

(a) The boy who whistled at the girl (tripped and) fell.

(b) The girl who the boy whistled at (tripped and) fell.

In introducing this conception of the headless relative clause, I did not specify any mechanism for its interpretation. Specifically, I did not indicate how the complex noun phrase as a whole is to be interpreted as coreferential with a relative noun phrase—i.e., a noun phrase contained within the subordinate clause. I will adopt here the practice followed by Fauconnier (1971), according to which the interpretation of a relative clause—at least the restrictive relative clause of the type with which we are concerned here—is indicated by coindexing the superordinate noun phrase node with a noun phrase in the sentence which it dominates. In Navajo, evidently, this is all that is required to account for the headless relative clause. That is to say, there is, strictly speaking, no transformational process of relativization. There is simply the interpretability condition that the complex noun phrase as a whole be capable of referring to the same entity as does some noun phrase in the subordinate clause. I will follow Fauconnier in symbolizing this capability by means of coindexing in underlying phrase markers. Thus, for example,
to the (a) reading of (2.25) will be attributed the following representation:

\[
(2.25')
\]

```
NP_i

S

ashkii_i  at'eed  yi'deesoo1  -ee  deezgo'
```

And to the (b) reading will be attributed roughly the following representation:

\[
(2.25'')
\]

```
NP_i

S

ashkii  at'eed_i  yi'deesoo1  -ee  deezgo'
```

In these representations I intend to be vague about the exact structure which should be attributed to the relative clause. In particular, I wish to remain vague about the precise structural position of the relativizing element /-ee/.

Properly worked out, this conception of the relative clause will account automatically for the ill-formedness of (2.21). The structure of (2.21) would be roughly of the following form:
The complex noun phrase is in the structural position appropriate to the subject of the main verb. In order to be well-formed this relative clause expression must be capable of referring to two entities since the main verb requires a dual subject. However, the expression as a whole cannot, in fact, refer to two entities since there is no noun phrase in the subordinate clause which can so refer. There are, to be sure, two noun phrases which jointly refer to two entities, but there is no one noun phrase which can, and this latter is the requirement, namely, that coreference be possible between the relative clause expression as a whole and some noun phrase in the subordinate clause—the sequence /ashkii at'ééd/, although it refers to two entities, is not a noun phrase. Just as in the deletion theory, so in the headless base theory, the grammaticality of (2.21) is attributable to conflicting number selection. Thus, the subject of /dahii'áázh/ must be dual, but the relative clause expression cannot, in fact, be dual.

A proper formulation of the interpretation of relative
The complex noun phrase is in the structural position appropriate to the subject of the main verb. In order to be well-formed this relative clause expression must be capable of referring to two entities since the main verb requires a dual subject. However, the expression as a whole cannot, in fact, refer to two entities since there is no noun phrase in the subordinate clause which can so refer. There are, to be sure, two noun phrases which jointly refer to two entities, but there is no one noun phrase which can, and this latter is the requirement, namely, that coreference be possible between the relative clause expression as a whole and some noun phrase in the subordinate clause—the sequence /ashkii at'éd/, although it refers to two entities, is not a noun phrase. Just as in the deletion theory, so in the headless base theory, the grammaticality of (2.21) is attributable to conflicting number selection. Thus, the subject of /dahdiiáázh/ must be dual, but the relative clause expression cannot, in fact, be dual.

A proper formulation of the interpretation of relative
clauses must be capable of accounting for the well-formedness of (2.26a) and the ill-formedness of (2.26b), in both of which no noun phrase is overtly present in the subordinate clause:

(2.26) (a) Yáálti’ée dahdiiaázh
(speak:REL leave:dual)
(b) *Yilwodéé dahdiiaázh.
(arrive:sg:REL leave:dual)

Although no noun phrases appear overtly in the subordinate clauses of these sentences, the subject of the subordinate sentence in (2.26a) can be understood as dual since the verb form /yáálti'/ 'he/she/they spoke' permits either singular or dual subject. Therefore, the relative clause /yáálti’ée/ may refer to two entities as is required by the main verb /dahdiiaázh/. Sentence (2.26b) on the other hand is ill-formed precisely because the relative clause expression /yilwodéé/ cannot refer to two entities. This follows from the fact that the verb form /yilwod/ 'arrived running (sg)’ requires a singular subject. I would like to formulate the principle for interpreting relative clauses in terms of the notion "argument" rather than in terms of the notion NP. The principle might be expressed as follows:
A relative clause expression \([\text{NP } S ]_{\text{NP}}\) refers to an entity which is the referent of one of the arguments within \(S\).

It may, of course, be the case that the notion "argument" coincides exactly with an element represented in phrase markers as NP—but that depends, ultimately, upon the theory adopted for "missing noun phrases" (see, for example, Chapter Four below). In any event, the term "argument" is to be understood as including such notions as 'subject of verb', 'object of verb', 'object of postposition', and so on. It is not necessary that an argument be overtly represented by a noun phrase. Thus, for example, in sentence (2.26), the subject argument of the subordinate verb /yáálti'/ is not overt. It is nonetheless correct to say that the verb has a subject argument—an "understood subject", if you will. Moreover, that subject argument is capable of referring to two entities. The relative clause expression, therefore, can have dual number reference as required by the main verb /dahdií'áázh/. Hence, (2.26a) is well-formed. The relative clause expression in (2.26b), by contrast, fails to conform to the constraint embodied in (2.27), since the main verb requires that it have dual reference while the subordinate verb requires that its sole argument, i.e., its subject, have singular reference. The expression as a whole cannot, therefore, be coreferential
with an argument in the subordinate clause.

2.5 Ambiguity of Relative Clause Expressions and the First Noun Phrase Principle in Pronominalization

Returning again to the contrast between relativization and pronominalization, let us consider the ambiguity observed in connection with sentence (2.25). The essential fact is this: Headless relative clauses formed upon transitive clauses of the uninverted (or S O yi-V) form are ambiguous with respect to the identity of the relative noun phrase--i.e., the noun phrase in the embedded clause whose referent coincides with that of the relative clause expression as a whole. That is to say, they admit two interpretations--one according to which the subject is understood as being modified by the relative clause expression and another according to which it is the object that is being modified. This ambiguity is present in (2.25) where either /ashkii/ or /at'6éd/ may be understood as the subject of the main verb /deezgo'/.

Under the deletion theory of relative clause formation, this ambiguity is accounted for by positing distinct underlying structures--differing in the choice of head noun phrase. Thus, in the case of (2.25), the noun phrase /ashkii/ appears in head position for the (a) reading, while the noun phrase /at'6éd/ appears in head position for the (b) reading.
And, in general under the deletion theory, the ambiguity of headless relative clauses formed on S 0 yi-V sentences is due to the effect of forward application of rule (1.15) which deletes the head and thereby obliterates from surface structure the information which would permit the assignment of a unique interpretation.

On the alternative theory, according to which relative clauses are basically headless, the ambiguity of (2.25) would be accounted for simply by virtue of the fact that the form of a relative clause does not, in and of itself, determine which of two (or more) noun phrases in the subordinate clause is the relative noun phrase. Relative
clauses are simply subject to interpretation in accordance with the principle expressed in (2.27), which, in the case of (2.25), allows either of the two interpretations represented in (2.25', 2'25''), above.

Whichever theory of the headless relative clause is ultimately determined to be correct, it will be necessary in one way or another to account for the fact that the ambiguity present in (2.25) is absent from the parallel case of pronominalization presented in (2.29) below:

(2.29) Ashkii at'ééd yi'déésolgo deezgo'.

(boy girl whistle:COMP fall)

When the boy whistled at the girl, he (tripped and) fell.

The sentence is unambiguous with respect to the question of which of the two noun phrases in the subordinate clause, if either, is understood as the subject of the main verb. Although there exists a reading according to which neither of those noun phrase is the subject of /deezgo'/, if either is so interpreted, it must be the first, not the second.

Evidently, it is a general principle in Navajo that, in cases of so-called pronominalization, if two adjacent noun phrases are potential antecedents for an understood, or "missing" noun phrase to the right, only the first of the two may be interpreted as the actual antecedent. This principle can also be observed in a coordinate sentence like the following in which only /ashkii/ is understood as the
subject of the verb in the second conjunct.

(2.30) Ashkii at'ééd yí'déésol dóó deezgo'.
(boy girl whistle and fall)
The boy whistled at the girl and he (tripped
and) fell.

The effect of this principle extends through an indefinite
number of missing noun phrases, as can be seen by such
sentences as the following:

(2.31) Ashkii at'ééd yí'déésol dóó deezgo' dóó
(boy girl whistle and fall and
háácha dóó nídii'na' dóó yaaltáál dóó
cry and get:up and run and
náádeezgo'.
fall:again)
The boy whistled at the girl and he fell and
he started to cry and he got up and
he started to run and he fell again.

In this sentence, of the two overt noun phrases, only the
first (i.e., /ashkii/) may be understood as the antecedent
of the missing subjects in the non-initial conjuncts. How-
ever, the effect of the principle is cancelled if an overt
noun phrase candidate antecedent intervenes between the
NP NP sequence and a gap farther to the right. Thus, in
the following sentences, any of the overtly present noun
phrases may be understood as antecedent for the missing
subject of the final conjunct:

(2.32) (a) Ashkii at'ééd yí'déésol dóó asdzáán
(boy girl whistle and woman
yah'íiyá dóó deezgo'.
enter and fall)
The boy whistled at the girl, the woman entered, and he (tripped and) fell.
The boy whistled at the girl, the woman entered, and she (tripped and) fell.
The boy whistled at the girl, the woman entered, and she (tripped and) fell.
The boy whistled at the girl, the woman entered, and she (tripped and) fell.

(b) Ashkii at'ééd yí'déésol dóó hastiin
(boy girl whistle and man
yiyiiłtsá dóó deezgo'.
see and fall)
The boy whistled at the girl, he saw the man, and he (tripped and) fell.
The boy whistled at the girl, he saw the man, and she (tripped and) fell.
The boy whistled at the girl, he saw the man, and she (tripped and) fell.
The boy whistled at the girl, he saw the man, and she (tripped and) fell.
Notice, incidently, that while the subject of the final conjunct may be understood as being coreferential with any of the overt noun phrases present in the sentence, such is not the case for the medial conjunct /...hastiin yiyiiltsé/ '...saw the man'. The subject of that conjunct, if found in the sentence at all, must be /ashkii/ not /at'éd/. This follows from the principle, because it is enforced from the medial conjunct leftwards.

It should be mentioned also that the principle is in full force only where the gap corresponding to the missing noun phrase is to the right of the NP NP sequence. Thus, in the following case of "backward pronominalization", while the favored reading is that in which /ashkii/ is understood as the subject of the subordinate verb, the reading according to which /at'éd/ is the subject of that verb is also available.

(2.33) Yah'íiyáago ashkii at'éd yí'déésol.
     (enter:COMP boy girl whistle)
     (a) When he entered, the boy whistled at the girl.
     (b) When she entered, the boy whistled at the girl.

There is also, of course, a reading in which neither of the overt noun phrases in the main clause is understood as coreferential with the subject of the subordinate verb.

Since the principle just described plays a role in later discussions, I attempt a tentative prose formulation of it in (2.34) below:
(2.34) **First Noun Phrase Principle**
Given a string of the form

\[ \text{NP}_1 \text{NP}_2 \ldots \text{GAP}, \]

in which GAP corresponds to a "missing noun phrase", NP\(_1\), but not \(\text{NP}_2\), may be understood as the antecedent of the missing noun phrase. This is so, however, only if the ellipsis contains no noun phrase which could serve as antecedent.

In the examples of the operation of the First Noun Phrase Principle so far adduced, the NP NP sequences have consistently been subject and object, in that order, of the verb of their clause. The principle operates also in the case where the NP NP sequence are object-subject--i.e., where their clause is of the inverted type. Thus, in the following sentence, /at'ëéd/, the logical object of the subordinate clause, is understood to be the antecedent of the missing subject in the main clause:

(2.35) *At'ëéd ashkii bi'dëésolgo deezgo'.*

(girl boy bi:whistle:COMP fall)

When the girl was whistled at by the boy, she (tripped and) fell.

It is natural to ask whether the two consecutive noun phrases referred to in the First Noun Phrase Principle must
be co-arguments within the same clause. In other words, is the principle operative where a clause boundry intervenes between the two noun phrases? Consider, for example, the following surface structure:

(2.36)

```
NP          S          NP
     |          |          V
     D        N      I

ashkii  dii  at'eed  nilk'ol  diiniid  doo  neezda
boy    this girl  blink  say  and  sit
```

This structure directly underlies the following sentence:

(2.37) Ashkii dii at'eed nilk'ol diiniid doo neezda.

(boy this girl blink say and sit)

(a) The boy said "this girl blinks" and he sat down.

(b) ?The boy said "this girl blinks" and she sat down.

The question, of course, is whether /dii at'eed/ 'this girl' can be understood as the antecedent of the missing subject in the second conjunct—i.e., whether, the (b) reading is possible for (2.37). While it is not particularly easy to come to a clear decision in this regard, I feel that it is possible, with considerable difficulty, to attribute the (b) reading to (2.37), although the (a) reading is much preferred. I am not sure what property of (2.37) is
responsible for the weakening of the First Noun Phrase Principle, so I will not attempt to add any further refinement to it. It should, in any event, be borne in mind that the principle is not iron-clad. It is possible to weaken the force of the principle in a variety of ways by altering the situation being described in a particular sentence. Consider, for example, the following:

(2.38) At'ééd li'ı' yiztalgo deesgeed.

(girl horse spur:COMP buck)

When the girl spurred the horse, it started bucking.

Here, the overwhelmingly favored interpretation is that in which the noun phrase /li'ı'/—i.e., the second of the two consecutive noun phrases—is understood as antecedent for the missing subject of the main verb /deesgeed/ 'started to buck'. Only in a very special circumstance could the alternative interpretation be attributed to this sentence—e.g., where the girl is pretending to be a mare, say, and the entity referred to by /li'ı'/ is, say, a stuffed animal, and, moreover, /yiztal/ is understood to mean 'kicked' rather than 'spurred'.

The above qualifications do not alter the basic point concerning the contrast between relative clauses and pronominalization. A semantically uncomplicated sentence like (2.29) conforms clearly to the First Noun Phrase Principle, and is unambiguous with respect to the choice
of antecedents in a NP NP sequence. The closely parallel relative clause (2.25), however, is ambiguous with respect to the identity of the relative noun phrase.

2.6 Coreference Between Overt Noun Phrases

In concluding this chapter, I wish to mention one final contrast between "pronominalization" and relative clause formation. Consider the following sentence:

(2.39) Hastiin deezghalgo hastiin nííi'na'.

(man awake:COMP man get:up)

This is identical to (1.13) cited above, except that the noun phrase /hastiin/ appears overtly both as subject of the subordinate verb and the subject of the main verb. This sentence is somewhat awkward but it is possible, and moreover it is ambiguous according to whether or not the two instances of /hastiin/ are understood as coreferential. The co-reference reading is aided somewhat by employing the suffix /-(y)é/ 'aforementioned definite (DEF)' appended to the second instance.

(2.40) Hastiin deezghalgo hastiinéé niíi'na'.

(man awake:COMP man:DEF get:up)

When the man awoke, that same man got up.

Under the deletion theory of pronominalization, one could account for the possibility of coreference in (2.39) and (2.40) by stipulating that pronominalization is optional. However, if relativization is also by deletion, then the
deletion rule must be obligatory when it is used to form relative clauses because the hypothetical deletionless relative clause parallel to (2.39) and (2.40) is completely ungrammatical.

(2.41) *Hastiin deezghalêë hastiin(eë) nîdiï'na'.

(man awake:REL man:(DEF) get:up)

The ungrammaticality of (2.41) would, of course, follow automatically from the alternative conception of relative clauses according to which they are basically headless.

The purpose of this chapter has been primarily that of contrasting "pronominalization" and "relativization". In the next chapter I will present a preliminary hypothesis concerning the nature of so-called pronominalization and will make a preliminary attempt to explain the contrasts described in this chapter and the similarity described in the first chapter, i.e., apparent conformity of both phenomena to the Second Noun Phrase Constraint (1.56).
CHAPTER THREE

AN ELEMENTARY THEORY OF

NAVAJO PRONOMINALIZATION

3.0 Introduction

I would like now to turn to the question of an appropriate conception of so-called pronominalization in Navajo.

I will assume that it is correct in the Navajo case to devise a unified account of the "missing noun phrase" phenomena illustrated by the two readings of a sentence like:

(3.1) Ashkii deezgo'go háácha.
    (boy fall:COMP cry)
(a) When the boy, (tripped and) fell, he cried out.
(b) When the boy (tripped and) fell, (he/she) cried out.

And, in general, I will assume that a single mechanism is responsible for the gap representing a missing noun phrase, in cases subsumed under so-called pronominalization, regardless of whether or not the missing noun phrase in a particular instance finds its antecedent within or outside of the sentence in which the gap appears. This seems a reasonable position to take, since in both cases the superficial effect is the same--an argument, known to be "semantically present" by virtue of the meanings of words overtly present in the
sentence, is "physically" absent, i.e., not overtly present as a phonologically constituted noun phrase. However, if this position is adopted, then it is quite clear that the deletion rule (1.15) cannot be responsible for the missing noun phrases of Navajo "pronominalization." This follows, since the deletion rule requires that any missing noun phrase (i.e., gap created by deletion) have an overt antecedent in the linguistic context.

It has been recognized for some time that third person pronouns in English cannot all be due to a process of pronominalization--i.e., a process which converts a full noun phrase into a pronoun under identity with an antecedent. Thus, for example, Postal (1966) pointed out that for sentences like

(3.2) She dances well.

in which the pronoun she is without an antecedent in the linguistic context, it is "...quite sufficient to indicate precisely that such [pronominal] forms refer to object-types whose particular referents are assumed by the speaker to be known to the person spoken to" (Postal 1966, footnote 3). The consequence of this observation, of course, is that at least some English pronouns are present in the basic or underlying representations of sentences.

It has also been pointed out--see, for example, Lasnik's excellent discussion (1976)--that even in cases of sentence-internal coreference, there is no advantage in positing a
pronominalization rule for English. The fact that he and the boy can co-refer in

(3.3) When the boy fell, he cried out.

is adequately provided for by the rules of pronominal usage implied by Postal's observation. The expression the boy designates an object-type appropriately referred to by the pronoun he. Moreover, if the addressee knows the referent of the boy, then the speaker of (3.3) can reasonably assume that the referent of both the full noun phrase and the pronoun, under the coreference reading, is known to the addressee. Thus, even where the pronoun has an overt ante-
in the linguistic environment, there is no reason to assume that the pronoun is produced by a rule of pronominalization. Independently necessary base-generated pronouns will serve to provide all antecedent-pronoun connections in the language.

Viewed in this way, the problem of pronominalization becomes not one of producing pronouns in appropriate places but, rather, one of determining conditions under which noun phrases (whether pronouns or full noun phrases) can, must, or must not be coreferential. In English, for example, the grammar must account for such coreference facts as those illustrated in the following sentences:

(3.4) (a) *Oscar_i finally realized that Oscar_i is unpopular.

(b) *He_i finally realized that Oscar_i is unpopular.
Recent work on coreference in English has advanced considerably our understanding of these issues (e.g., Dougherty 1969, Jackendoff 1972, Wasow 1972, Lasnik 1976, Reinhart 1976). By and large there is now agreement on the question of the basic status of pronouns, both those which do and those which do not enter into sentence-internal coreference relationships.

3.1 A Navajo Analogue to a Base-Generated Pronoun

In view of the observations I have made regarding "pronominalization" in Navajo, it seems reasonable to adopt for that language a treatment of missing noun phrases which is analogous in certain respects to analyses of English according to which all pronouns appearing in the surface representations of sentences. The Navajo analogue, in very superficial terms, would be an analysis according to which noun phrases "missing" in surface representations are also "missing" in the base. The exact nature of the analogue, however, is open to question. In the present chapter, I will consider one conception of missing noun phrases, and I will very briefly consider another in the next chapter.

First, I will consider an analysis in which missing noun phrases are in fact present as noun phrases in the
structural representations of sentences—i.e., as NP nodes which dominate the phonologically null element PRO in the phrase marker corresponding to actual sentences. According to this analysis the phrase marker corresponding to (3.1) above is roughly as follows:

(3.5)

```
S
   |
   | Adv
   |
S   NP
   |
   | V
   |
NP   V
   |
   | COMP
   |
```

I will not commit myself here as to the exact nature of the NP-over-PRO substructure. In particular, I will not concern myself very much about the status of the symbol PRO; it is not relevant, so far as I can see, to the broader issues surrounding the missing noun phrase phenomenon in Navajo. The essential property of the proposal is that the "missing" noun phrase corresponds to an actual NP-node in the phrase marker—-it is "missing" only in the phonological sense. It is perhaps reasonable to view this structure as arising by virtue of the optionality of phrase structure expansion rules (cf. the treatment of certain phonologically null noun phrase structures in Chomsky and Lasnik (1977)). That is to say, it is possible to think of the NP-over-PRO substructure as an unexpanded NP phrase. On this view, the entity PRO is, in fact, the identity element e. I will
continue, however, to refer to the element as PRO, for mnemonic convenience.

I should mention, before proceeding, that I have briefly considered, and rejected, the alternative according to which Navajo missing noun phrases are underlingly the third person pronoun /bí/ "he/she/they" deleted from surface structure by means of a rule similar in its effect to "pronoun drop" seen in such languages as Japanese and Turkish (cf. Perlmutter, 1972). Although this is a possibility, it is somewhat perverse from the semantic point of view in Navajo, since in a sentence like

(3.6) Ashkii deezgo'go bí háácha.

(boy fall:COMP he/she/they cry)

which would, under the pronoun-drop hypothesis, be the source of (3.1), only with considerable difficulty could the pronoun /bí/ be taken as coreferential with /ashkii/. By contrast, the phonologically null PRO very readily accepts /ashkii/ as its antecedent.

Returning then to the theory in which (3.5) is the basic representation of (3.1), we can characterize the problem of "pronominalization" in Navajo. As in the case of English pronouns, the problem in Navajo is to determine the conditions under which the PRO element may, may not, or must be understood as coreferential with an overt noun phrase in the same sentence. In (3.1) (= (3.5)), PRO may be understood as coreferential with the overt noun
phrase /ashkii/. But it may also be understood as not coreferential with that noun phrase. In the latter case, it is understood in the same way as a free pronoun is in English--i.e., it falls under the principle of usage articulated by Postal in his discussion of (3.2). Thus, it is perfectly appropriate to use (3.1) with PRO referring outside the sentence, provided the speaker assumes that its referent (or referents) is (are) known to the addressee. In fact, this latter condition--the "principle of cooperation" as Lasnik (1976, p.2) calls it--is required for certain uses of (3.1) with sentence-internal coreference as well. That sentence is appropriate only where the speaker assumes that the addressee knows the referent of /ashkii/ 'the boy', at least this is so on the definite reading of that noun phrase (the reading which would be the sole one available if the suffix /-(y)ê/- 'the aforementioned' were appended to the noun phrase).

In the following structures, PRO must have external reference--in (3.7a) because there is no overt noun phrase to serve as antecedent, and in (3.7b) because the sole overt noun phrase is not in an appropriate position to serve as antecedent:

(3.7) (a)  

```
   S  
  /   \  
 NP   V  
 /     \  
 PRO deezgo'  
he/she (trip and) fall
```
In (3.7b) coreference is impossible because PRO precedes /ashkii/ but is not in a subordinate clause. Notice that this failure of coreference would, under the deletion hypothesis, be accounted for by placing a condition on backward deletion (i.e., condition (2) of rule (1.15)).

We may assume also, following accepted belief concerning well-formed anaphoric connections, that the following structures would likewise require sentence-external reference of the PRO element.

(3.8)
Assuming, as I will, that the PRO element behaves like a pronoun with respect to coreference, it seems reasonable to suggest that sentence-internal coreference in (3.8-9) is impossible because of the fact that PRO both precedes and commands the overt lexical noun phrase. Notice that the phonologically constituted terminal strings appearing in (3.8-9) are in fact ambiguous, permitting a reading according to which the subject of the main verb has sentence-external reference and in addition, a reading according to which the subject of the main verb is understood as being coreferential with the noun phrase /ashkii/.

Now, if we assume that the PRO in (3.8-9) must have sentence-external reference, then these phrase markers are not the correct ones for these alternative interpretations of the terminal strings. The interpretations according to which /ashkii/ is understood as the subject of the main verb correspond to the following structures, in which coreference between PRO and /ashkii/ is perfectly possible:
The boy i saw his father.

The boy i kissed the girl he i saw.

Coreference is possible in (3.10-11), I assume, because the lexical noun phrase precedes and commands the PRO element. According to this conception of the phenomenon, the strings (3.12-13) below are structurally ambiguous, depending upon the location of the PRO element--for the (a) readings, PRO precedes and commands /ashkii/ (as in (3.8-9)), and for the (b) readings, /ashkii/ precedes and commands the PRO element (as in (3.10-11)):

(3.12) Ashkii bizhé’é yiyiiłtsá.

(boy his:father see)

(a) He/she i saw the boy j's father.
(b) The boy i saw his i father.
(3.13) Ashkii at'ééd yiyiiltsánée yizts'qs.

(a) He/she kissed the boy who saw the girl. He/she kissed the girl who the boy saw.
(b) The boy kissed the girl he saw.

3.2 Non-Coreference Rule of Lasnik

It is relevant to notice that the lack of coreference between PRO and /ashkii/ in (3.8-9) is, in fact, a special case of a much more general coreference fact in Navajo. Recall that coreference is possible between the two instances of /hastiin/ 'the man' in (2.39)—repeated here, with its phrase marker, as (3.14):

(3.14)

Moreover, if PRO is substituted for either instance of /hastiin/ , coreference is still possible. Notice that in (3.14), the first noun phrase does not command the second, although it precedes it. Now let us consider the structures corresponding to (3.8-9) in which the noun phrase /ashkii/ appears in place of PRO.
Just as in (3.8-9), so also in (3.8'-9'), coreference is impossible between the first two noun phrases. This suggests strongly that a general principle is involved. I will assume that a version of Lasnik's Non-Coreference Rule is the appropriate principle:

(3.15) **The Non-Coreference Rule**

If NP₁ precedes and commands NP₂, and NP₂ is not a pronoun [or PRO, in the Navajo case], NP₁ and NP₂ are non-coreferential. [Lasnik 1976, p. 6]

This simultaneously accounts for the non-coreference observed in (3.8-9) and that observed in (3.8'-9')--in those structures, the second noun phrase is not a pronoun and is commanded by the first; hence the Non-Coreference
Rule correctly blocks coreference. The Non-Coreference rule, on the other hand, will permit coreference in (3.10-11), since the second noun phrase is PRO, and it permits coreference in (3.14) because neither noun phrase both precedes and commands the other. The Non-Coreference Rule will also permit coreference in the following cases:

(3.16)

\[
\begin{align*}
S & \rightarrow NP \rightarrow NP \rightarrow V \\
& \rightarrow NP \rightarrow N \\
& \rightarrow PRO \rightarrow PRO \rightarrow bizhé'é yiyiltsą \\
& \rightarrow PRO \rightarrow PRO \rightarrow his:father \rightarrow see \\
& \rightarrow He/she saw his/her father.
\end{align*}
\]

(3.17)

\[
\begin{align*}
S & \rightarrow NP \rightarrow NP \rightarrow V \\
& \rightarrow NP \rightarrow NP \rightarrow V \\
& \rightarrow PRO \rightarrow PRO \rightarrow at'ééd yiyiltsą(n) \rightarrow -éę yizts'qs \\
& \rightarrow PRO \rightarrow PRO \rightarrow girl \rightarrow see \rightarrow -REL \rightarrow kiss \\
& \rightarrow He/she kissed the girl he/she saw.
\end{align*}
\]

As in (3.10-11), coreference is possible here by default, so to speak. That is to say, the Non-Coreference Rule does not block coreference, since the relevant noun phrase—i.e., the second—is a pronoun. As Lasnik did for English, I must also for Navajo assume that the notion command is to be extended at least to the extent of subsuming the Wasow-Lasnik notion "Kommand" (Lasnik, 1976, p. 15) in
which not only S but also NP serve as defining nodes. Thus, consider the following in which a coreference interpretation linking the two instances of /ashkii/ is available:

(3.18)

\[
\begin{array}{c}
S \\
\downarrow \\
NP \\
\downarrow \\
NP \\
\downarrow \\
N \\
\downarrow \\
NP \\
\end{array}
\]

ashkii bizhé é ashkii yiyi ltsá
boy his:father boy see

Since coreference is possible here, we must assume that the first instance of the noun phrase /ashkii/ does not command the second. Therefore, NP, as well as S, must be relevant to the definition of command in Navajo. It is in fact possible that the proper definition of command for Navajo must be more general than this, since certain postpositional phrase (PP) nodes also permit coreference in the relevant configurations. Thus, for example, in the now famous structure of (3.19) coreference between the two instances of /ashkii/ is possible:

(3.19)

\[
\begin{array}{c}
S \\
\downarrow \\
PP \\
\downarrow \\
NP \\
\downarrow \\
P \\
\downarrow \\
NP \\
\end{array}
\]

ashkii biíghahgi ashkii tl'iish yiyi ltsá
boy beside boy snake see

Presumably, coreference is possible here, as in (3.18), because the first instance of /ashkii/ does not command
the second. Notice, however, that coreference is impossible if the postpositional phrase as a whole appears to the right of the subject:

\[(3.20) \text{Ashkii [ashkii biíghahgi] tľ'iish yiyiiltsá.} \]

(boy boy beside snake see)

In the case of (3.20), the Non-Coreference Rule, properly formulated, will block coreference here because the first instance of /ashkii/ precedes and commands the second. In view of (3.19), it is possible that the appropriate notion of command for Navajo is the notion "constituent command" defined by Reinhart, and quoted here as (3.21):

\[(3.21) \text{Constituent Command} \]
\[\text{Node A } \text{c(onstituent)-commands node B if} \]
\[\text{neither } A \text{ nor } B \text{ dominates the other and} \]
\[\text{the first branching node which dominates } A \text{ dominates } B. \quad \text{[Reinhart 1976, p. 32]}\]

With this conception of command, the Non-Coreference Rule (3.15) will account for facts of coreference I have discussed here.

3.3 The Best Possible Theory of Navajo Pronominalization

I will assume that the "best possible" theory of Navajo "pronominalization" would be quite closely analogous to Lasnik's theory of English in that it would not, in fact, have a rule of pronominalization assigning coreference between noun phrases. Rather, it would have the Non-
Coreference Rule which blocks coreference in certain cases—a rule which is needed independently to handle cases which do not involve a pronoun (or PRO in the Navajo analogue) at all. Cases of possible coreference would, in this view, simply be cases which are not blocked by the Non-Coreference Rule. Instances of NP-PRO pairs which pass this filter, so to speak, would be coreferential or non-coreferential freely. Coreference would be allowed provided it did not conflict with other principles of grammar, such as, for example, the number agreement which permits coreference in (3.22a) but not in (3.22b):

(3.22) (a)

```
S
   /\   /
  /  \ /  \
SP   VN   VN
  hastiin níddi'na' dóó PRO dahiyyá
  man get:up and PRO leave:sg
```

(3.22) (b)

```
S
   /\   /
  /  \ /  \
SP   VN   VN
  hastiin níddi'na' dóó PRO dahdi'ázh
  man get:up and PRO leave:dual
```

Coreference is not possible in the second of these structures because the subject of the first conjunct, being explicitly singular in form, cannot be construed with the subject of the second conjunct, which, although
it is a PRO and therefore not itself explicitly dual in form, must be understood as dual because of the verb form. The coreference possibilities in (3.22a-b) are precisely the same as in the following sentences (3.22a'-b'), where overt singular /hastiin/ and non-singular /hastóí/ appear in place of PRO:

(3.22) (a') Hastiin nííi'na' dóó hastiin dahdiiyá.
(man get:up and man leave)
The man got up and the man left.

(b') Hastiin nííi'na' dóó hastóí dahdii'áázh.
(man get:up and men leave:dual)
The man got up and the men left.

The essential point is this: The best possible theory of Navajo "pronominal" coreference would require no mechanism beyond the independently necessary Non-co-reference Rule and very general principles of compatibility, such as number consistency. But this best possible theory will be observationally correct only if there are no cases in which coreference must be positively stipulated for Navajo. There are, however, such cases. One of these is, in fact, not a serious problem because it involves a principle which is needed independently of NP-PRO coreference cases. I will describe this non-problematic type of positive coreference immediately below, and I will discuss another, more problematic, type toward the end of
3.4 The "Proximate" Conjunction /-ii'/

In structure (3.14) above, the subordinate clause is marked by the suffixal element /-go/, which I have glossed COMP. This element functions as a subordinating conjunction. Exactly parallel to (3.14) is the following structure, in which the conjunction /-ii'/ appears in place of /-go/:

(3.23)

```
(3.23') (a) Hastiin deezghalii' PRO nídii'na'.
       (man awake:COMP PRO get:up)

       (b) PRO deezghalii' hastiin nídii'na'.
           (PRO awake:COMP man get:up)

       (c) PRO deezghalii' PRO nídii'na'.
           (PRO awake:COMP PRO get:up)
```

The terminal string of (3.23) and the sentences of (3.23')
are unambiguous—they require the interpretation according to which the subject of the subordinate clause is coreferential with that of the main clause. The following sentence is not grammatical, since two principles of Navajo grammar come into direct conflict:

(3.24) *Hastiin nídiин'na'ii' PRO dahdiin'áázh.

(man get:up:COMP PRO leave:dual)

The point is this: The conjunction /-ii'/ requires coreference between the subjects of the subordinate and main clauses. But the subject of the subordinate clause in (3.24) is explicitly singular while the subject of the main clause must be understood as dual, in conformity with the explicitly dual verb.

This is clearly a case in which coreference must be positively stipulated. It is, however, not restricted to NP-PRO pairs since the same necessary positive coreference is to be observed in (3.23), with lexical noun phrases in both subject positions, and in (3.23'c) where PRO appears in both positions. Moreover, the behavior of (3.23) and (3.23') is not really part of the general phenomenon of pronominal coreference, but rather a matter specific to the subordinating conjunction /-ii'/.

The phenomenon which these sentences illustrate is widespread among languages of Southwest, although it has not, to my knowledge, been reported for Southern Athabascan languages prior to this. The grammatical principle involved here has in recent years
come to be referred to by the algonguianist term "obviation". In Uto-Aztecan languages, for example, it refers to
the situation in which a clause is overtly marked to reflect
either "proximate" or else "obviative" coreference (Grimes
1967, Hale 1969, Jeanne 1978, and see also Helke 1971 for
a discussion of bound anaphora, which constitutes an English
manifestation of the "proximate" situation). Proximate
coreference in the Uto-Aztecan usage refers to the case in
which the subjects of two syntactically related clauses
are necessarily coreferential; obviative coreference refers
to the opposite circumstance, i.e., necessary disjoint
reference between the subjects of syntactically related
clauses. Navajo, evidently, exhibits one side of the
obviative principle--i.e., its subordinating conjunction
/-ii'/ signals proximate coreference.

3.5 A Review of Contrasts Between Relative Clause and
NP-PRO Coreference

Let us assume that the conception of missing noun
phrases just outlined for Navajo is the correct one--i.e.,
that the Navajo analogue of pronouns, to wit phonologically
empty noun phrases, are present in the basic representations
of sentences and that an appropriately modified version of
Lasnik's Non-Coreference Rule is at work in determining
possible coreference relationships among noun phrases. And
let us assume further that the alternative conception of
Navajo relative clauses briefly outlined in Chapter Two is
also correct—specifically, relative clauses which are "headless" at surface structure are likewise headless in the base, and the interpretation of a relative clause involves associating, as coreferential, the complex noun phrase expression as a whole with an argument appearing in the embedded clause (symbolized by co-indexing the superordinate NP node and an NP functioning as an argument of a subordinate verb). With this model, the contrast between "relativization" and "pronominalization" observed in Chapter Two finds rather natural explanation.

Consider again the contrast in coreference relationships between (1.13) and (2.1a)—repeated here as (2.25a-b):

(2.25) (a) Hastiin deezghalgo PRO nídii'na'.

(man awake:COMP PRO get:up)

When the mani awoke, hei got up.
When the mani awoke, he/shej got up.

(b) Hastiin deezghalge nídii'na'.

(man awake:REL get:up)

The man who awoke got up.

The first of these contains an NP-PRO pair, according to the view we are now considering, and since there is nothing in the sentence which requires that the noun phrase and the PRO be coreferential, and since the sentence does not represent a structure in which coreference would be blocked by the Non-Coreference Rule, the sentence is open to the two interpretations indicated in translation. By contrast,
sentence (3.25b), representing the relative clause, is not ambiguous. This follows from two facts: (1) the complex noun phrase as a whole is necessarily understood as the subject of the main verb, since that verb is intransitive and the complex noun phrase is in subject position with respect to it; and (2), the relative clause is formed from an intransitive sentence, whose single argument, /hastiin/, is the sole candidate for identification as the relative noun phrase.

The curious ambiguity situation—noted in Chapter Two in connection with sentences (2.29) and (2.25), repeated here as (3.26a-b)—also finds a natural explanation in this framework:

\[(3.26) (a) \text{ Ashkii at'ééd yí'déésolgo deezgo'.} \]
\[
\text{(boy girl whistle:COMP fall)}
\]
\[
\text{When the boy whistled at the girl, he (tripped and) fell.}
\]

\[(b) \text{ Ashkii at'ééd yí'déésolée deezgo'.} \]
\[
\text{(boy girl whistle:REL fall)}
\]
\[
\text{The boy who whistled at the girl (tripped and) fell.}
\]
\[
\text{The girl who the boy whistled at (tripped and) fell.}
\]

Although (3.26a) is ambiguous, allowing both sentence-
internal and sentence-external coreference for the PRO element, the point which is relevant here is the fact that
on the sentence-internal coreference reading, PRO is necessarily coreferential with the first overt noun phrase--i.e., with /ashkii/ 'the boy'. This is due, I have suggested, to the operation of the First Noun Phrase Principle, which governs the selection of an antecedent from a sequence of two adjacent noun phrases appearing to the left of the gap corresponding to the position of the PRO element. This principle simply does not enter into the coreference relationships involved in well-formed headless relative clauses, since the latter do not involve coreference between an NP and a PRO. The ambiguity of (3.26b) follows naturally from my account of the headless relative clause, in as much as the subordinate clause, being transitive and in the uninverted (S O yi-V) form, presents two possible candidates for identification as the relative noun phrase. As expected, however, sentence (3.26b), unlike (3.26a), is unambiguous with respect to the choice of sentence-internal versus sentence-external location of the subject of the main verb. The complex noun phrase in (3.26b) is necessarily the syntactic subject of /deezgo'/ and it follows from the principle of relative clause interpretation (2.27) that the "semantic" subject of /deezgo'/ must be an argument internal to the relative clause. The observed ambiguity in (3.26b) has to do with the identification of the relative noun phrase and it is, therefore, only indirectly related to the identification of the subject of the main verb.
Finally, let us turn to the contrast observed, in connection with sentences (2.16) and (2.21)—repeated here as (3.27a–b):

(3.27) (a) Ashkii at'éd yizs'qsgo dahdi'i'áázh.  
(boy girl kiss:COMP leave)  
When the boy kissed the girl, they left.  
(b) *Ashkii at'ééd yizs'qsee dahdi'i'áázh  
(boy girl kiss:REL leave)

These two sentences contrast straightforwardly in terms of grammaticality. In Chapter Two, I attempted to present a conception of headless relative clauses which would explain the ungrammaticality of (3.27b)—essentially, it involves a conflict between two principles of grammar: (1) The requirement that the subject of the main verb /dahdi'i'áázh/ 'they (dual) left' be capable of having dual number reference, and (2) the necessary singular number reference of the complex noun phrase, which follows from the fact that each of the two candidates for identification as the relative noun phrase is explicitly singular in form. (Actually, this latter follows only under the assumption, which I adopt, that the two noun phrases cannot jointly function as the relative noun phrase, since they do not jointly constitute a single argument within the subordinate clause). By contrast, the grammaticality of (3.27a), under either the sentence-internal or the sentence-external coreference reading, is perfectly consistent with the
conception of NP-PRO coreference relationships I have described in this chapter. Sentence-external coreference is, of course, no problem—Lasnik's "cooperation" principle would simply require that the speaker believe the unmentioned referents to be known to the addressee, just as the speaker would in cooperatively using the simple sentence:

(3.28) Dahdii'áázh.
They (dual) left.

I assume the sentence-internal coreference in (3.27a) follows similar principles. Since the structure of (3.27a) does not preclude sentence-internal coreference, there is nothing to prevent PRO from receiving an interpretation according to which it refers to the two-membered set comprising the two individuals mentioned in the subordinate clause.

3.6 A Revised Conception of the Second Noun Phrase Constraint

The contrast between relativization and NP-PRO coreference seems to me to be substantial enough to justify distinct analyses of the two phenomena along the lines suggested above. On the other hand, the burden of Chapter One was precisely to reveal a certain similarity between the phenomena. This similarity resided in the fact that both appear to be subject to an identical constraint—to wit, the Second Noun Phrase Constraint, which I repeat here as (3.29):
The Second Noun Phrase Constraint

The second noun phrase may not be deleted from a structure of the form

\[ X - \text{NP} - \text{NP} - Y \]

except where the first noun phrase triggers the deletion.

In connection with relativization, in the context of the theory assumed in Chapter One, this constraint is relevant only to the formation of the headed relative clause—and then it is only partially so since the exception clause is completely irrelevant, inasmuch as the trigger (in the deletion theory) is to the right, not the left, of the deletee. Let us assume here without discussion—since it is immaterial in any event—that the headed relative clause is in fact formed by moving an NP into right-head position. As pointed out in Chapter Two, the appropriate formulation of the Second Noun Phrase Constraint for the headed relative clause would be roughly as follows:

\[(3.30) \quad \text{The second noun phrase may not be moved from a structure of the form} \]

\[ X - \text{NP} - \text{NP} - Y . \]

This will correctly prevent the undesired derivations in the formulation of headed relative clauses (e.g., (1.18) from (1.20)) and, assuming that movement is also involved
in "right dislocation", it will prevent undesired right dislocation as well--e.g., it will prevent moving the second or third noun phrase in (2.9). I pointed out also that, in the case of the formation of headed relative clauses, the constraint must be capable of taking a global view of the sentence, since in certain cases, the relevant NP NP sequence is not properly within the domain of the rule--the first noun phrase being in a higher clause. This hints already that the constraint is not properly a constraint on a rule but rather a more general principle of some sort.

Turning now to NP-PRO coreference, it becomes quite evident that (3.29) will not serve as it stands, since deletion is apparently not involved in the Navajo analogue to pronominalization. Nonetheless, it is necessary in one way or another to "constrain" the appearance of PRO in structures in order to account for the observations which motivated the Second Noun Phrase Constraint in the deletion theory--assuming, of course, that the grammar of Navajo should relate surface strings to phrase markers which express configurationally the logical relations (subject, object) which arguments bear to their verbs. Under this assumption, for example, a "fragmentary" transitive sentence such as that appearing in
should in our current view of "missing noun phrases" in Navajo, be related to a phrase marker of the form

(3.32) \[ S \]
    \[ NP \]
    \[ NP \]
    \[ NP \]
    \[ PRO at'\'ed yizts'qs \]
    
    \[ PRO girl kiss \]

and not to a phrase marker of the form

(3.33) \[ S \]
    \[ NP \]
    \[ NP \]
    \[ V \]
    
    \[ at'\'ed PRO yizts'qs \]
    
    \[ girl PRO kiss \]

This follows, since, in the type of sentence we have been considering, the NP V string in (3.31) receives unambiguously the (a) reading and not the (b) reading. The requirement that PRO precede rather than follow the overt noun phrase is identical in its effect to the prohibition, in the deletion theory, against deleting the second of two consecutive noun phrases. In essence the intended effect is to insure that the actual surface string not be related to a structure in which a gap—in the sense of a noun phrase argument position not occupied by a phonologically constituted noun phrase—
directly follows an overt noun phrase.

It is, of course, a relatively straight-forward matter to translate the Second Noun Phrase Constraint into a form which will achieve the desired effect in terms of NP-PRO coreference. Considering (3.29) without the exception clause, the appropriate translation would be very approximately as follows:

(3.34) Identify as ill-formed any structure in which PRO immediately follows an overt noun phrase.

This will correctly rule out structures like (3.33) above and, therefore, insure that only (3.32)--with PRO preceding the overt noun phrase--will be available as a structural description for the fragmentary transitive sentence in (3.31).

This new version of the Second Noun Phrase Constraint will also guarantee that the sentence

(3.35) Ashkii bizhê'ë yiyiûntsê.

(boy his:father see)

(a) The boy saw his father.

(b) The boy's father saw him.

not be related to the following structure:
It thereby accounts for the observation that (3.35) cannot have the (b) reading. The constraint will also handle much more complicated cases like that represented by (1.50).

The constraint as reformulated in (3.34) does not, however, incorporate the exception clause of the deletion theory version of (3.29). As a result, it will incorrectly define as ill-formed the following structures:

Under our current conception of the problem, (3.37a) directly underlies the perfectly grammatical sentence.
(3.38) Ashkii at'éd yiyiíłtsáñéę yizts'qs.
(boy girl see:REL kiss)
The boy kissed the girl he saw.

and (3.37b) directly underlies (3.35) with the (a) reading. The exception clause in (3.29) was included to permit a gap to follow an overt noun phrase provided it was construed therewith—as is possible in the structures of (3.37). We can translate this exception clause into our current framework quite simply as follows:

(3.39) ...except where PRO is coreferential with that NP.

It is quite obvious, however, that when (3.39) is integrated into (3.34), the combined effect is the same as the following formulation:

(3.40) The NP-PRO Constraint
If PRO immediately follows an overt noun phrase NP', it must be coreferential with NP'.

This formulation will accomplish the tasks for which (3.29) was designed in the context of the deletion theory.

3.7 An Aside on the Reflexive and the Disjoint Reference Principle

It happens that the sentences we have so-far considered in our study of NP-PRO coreference have all had the property that the NP and the PRO in which we were interested were not
arguments of the same verb--specifically, we have not looked at the simplest case of an NP-PRO pair, such as that appearing in (3.41) below, where the NP and the PRO are, respectively, the subject and the object of the same transitive verb:

(3.41)

\[
\begin{array}{c}
S \\
NP \\
ashkii \\
NP \\
PRO \\
yiyiîltsá \\
V \\
\end{array}
\]

boy \\
PRO \\
see

Notice that the constraint embodied in (3.40) would preclude this structure, except where PRO is coreferential with /ashkii/. But (3.40) would allow the structure under the latter interpretation--this would, of course, be the reflexive reading: "the boy saw himself." It happens, however, that (3.41) cannot receive this reading. I suspect that the fact that disjoint reference is necessary in (3.41) is, again, a general fact of Navajo, and not just a fact concerning NP-PRO pairs. Notice, for example, that while (3.42) is perfectly grammatical, it cannot have a reading according to which the set denoted by the non-singular object noun phrase /ashkii/ 'the boy' includes as one of its members the individual denoted by the subject noun phrase /Kii/ 'Kee' (a boy's name):

(3.42) Kii ashiiké yiyiîltsá.

(Kee boys see)

Kee saw the boys.
Similarly, although the object prefix /nihi-/ is ordinarily ambiguous—allowing either first or second person non-singular reference, as it does in

(3.43) Ashkii niiiltsgá.

(boy nihi:see)

The boy saw us.

The boy saw you (non-sg).

—it is unambiguous in each of the following:

(3.44) (a) Niheesh'į

(< /nihi-ghi-sh-'į/) I see you (non-sg).

(b) Niińni'į

(< /nihi-ghi-ni-ń'į/) You see us.

That is to say, the sentences of (3.44) do not allow an interpretation in which the set denoted by the object prefix /nihi-/ includes the individual denoted by the subject prefix—thus, the otherwise ambiguous object prefix /nihi-/ has only second person reference in (3.44a), where the subject prefix is the first singular /sh-/; and /nihi-/ has only first person reference in (3.44b), where the subject prefix is the second singular /ni-/.

I assume that the prohibition against over-lapping reference observed in the interpretation of (3.42) and (3.44a-b) is also responsible for the impossibility of coreference between subject and
object in (3.45a-b) below. In this case, the prohibition against over-lapping reference results in ill-formedness.

(3.45) (a) *Sheesh'¡.

(< /shi-ghi-sh-'¡/) 
I see me.

(b) *Níni'¡.

(< /ní-ghi-ni-'¡/) 
You (sg) see you (sg).

In each of these forms, the subject and object prefixes are identical in person and number—/shi-/ '1st singular object' and /sh-/ '1st singular subject' in (3.45a); and /ni-/ '2nd singular object' and /ni-/ '2nd singular subject' in (3.45b).

The principle involved here is the "Inclusion Constraint" of Postal (1974, mentioned originally, but not under this name, in Postal 1966), which gave rise to what is now known as the Disjoint Reference Rule (cf. the "rule of interpretation" of Chomsky, 1973, p. 241). This principle will, in English for example, preclude coreference between the subject and object in

(3.46) John saw him.

and, at the same time, it will prevent an interpretation according to which the set denoted by the object noun phrases in (3.47a-b) includes the individuals denoted by the subject noun phrases.

(3.47) (a) John saw them.
In addition, for many speakers at least, this principle renders unacceptable the following English sentences.

(3.48) (a) *I see us.
(b) *You see you (all).

and it renders unambiguously exclusive in interpretation the 1st person plural pronoun in the following.

(3.49) Do you see us?

I will assume that Navajo, like English, has a Disjoint Reference Rule precluding over-lapping reference, whether total or partial, in sentences like (3.41-2, 3.44-5). I am not sure how the rule should be formulated and I will not attempt to formulate it here--hopefully it will be extremely general (as, for example, in Chomsky 1973, p. 24) and subject only to general constraints on rules of grammar. I will simply assume here that Disjoint Reference is a genuine principle of Navajo grammar and that it will, at the very least, block over-lapping reference between clause-mate subject and object noun phrases and/or pronominal prefixes.

To be sure, Navajo has a way of expressing the situation in which the logical subject and object are coreferential--it uses a special reflexive form for this purpose. The reflexives corresponding to (3.41) and (3.45) above are as
follows:

(3.50) (a) Ashkii ádiiltsá.

(boy self:he:see)
The boy saw himself.

(b) Ádeesht'í.

(self:I:see)
I see myself.

(c) Ádiínít'í.

(self:you:see)
You see yourself.

The Navajo reflexive is open to a variety of analyses. I will, more or less arbitrarily for present purposes, adopt the position that the reflexive element /'á-di-/ (actually, a sequence of prefixes) renders a transitive verb intransitive—i.e., no longer capable of taking an object noun phrase—and that the reflexivized verb simply receives the interpretation according to which the entity denoted by the subject acts upon itself. Navajo also possesses a reciprocal form—requiring a non-singular subject—as in

(3.51) (a) Ashiiké ahiiltsá.

(boys RECIP:they:see)
The boys saw each other.

(b) Ahiit'í.

(RECIP:we:see)
We see each other.
Again I will assume that the reciprocal is developed directly in the lexicon as a special sort of "detransitivized" verb form which receives the reciprocal interpretation (Navajo postpositions, like verbs, have reflexive and reciprocal forms whose use is governed by essentially the same principles).

3.8 The Combined Effect of Disjoint Reference and the NP-PRO Constraint.

The combined effect of the Disjoint Reference principle and the NP-PRO Constraint embodied in (3.40) above can be seen most clearly in the following sentence where they result in unacceptability:

(3.52) *At'ééké 'taahníídee' dóó ashkii yisdáyiínil.

(girls into:water:fall and boy save:non-sg)

In this sentence, the transitive verb of the second conjunct has the property that it requires a non-singular object. There is, however, only one overt noun phrase in the clause. The question is, where is the PRO? If it followed the overt noun phrase /ashkii/, it would have to be coreferential with it, according to (3.40), but that would violate the Disjoint Reference principle which precludes over-lapping reference between clausemate subject and object noun phrases. Therefore, PRO must precede the overt noun phrase, thereby forcing the interpretation according to which /ashkii/ is the object of the non-singular-object verb /yisdáyiínil/
'saved (non-singular)'. However, /ashkii/ is explicitly singular in form. Hence, the sentence is unacceptable—it violates a general principle of number consistency in Navajo grammar.

Notice incidently that the corresponding structure, in which the second conjunct is in the inverted (or O S bi-V) form is perfectly well-formed:

(3.53) At'éekeké taahníídee' dóó ashkii yisdábíínil.
(girls into:water:fall and boy bi:save)
The girls fell into the water and they were saved by the boy.

Under the hypothesis that we are now considering the structure of (3.53) is quite obviously (3.54) below, a structure which is perfectly well-formed in terms of its relationship to the NP-PRO Constraint expressed in (3.40):

(3.54)

Sentence (3.52) is ill-formed for the same reason that (3.55) below is ill-formed:

(3.55) *Hastōí ashkii yisdáyiínil.
(men boy save:dual)
The singular noun phrase /ashkii/, is necessarily the object noun phrase, by virtue of its linear position in relation to the verb in this uninverted (S 0 yi-V) sentence. But the verb requires a non-singular object, as it in fact has in (3.56) below:

(3.56) Hastóí ashiiké yisdáyiíníil.

(men boys save:non-sg)

The men saved the boys.

With a singular object, the verb form would be as in (3.57)

(3.57) Hastóí ashkii yisdáyiíltí.

(men boy save:sg)

The men saved the boy.

In the framework under consideration here, the constraint embodied in (3.40) operates correctly to contribute to the identification of (3.52) as ill-formed. By requiring that PRO precede rather than follow /ashkii/ it forces the interpretation according to which that noun phrase is understood as the object; a Navajo principle of number consistency is thus violated and the sentence is identified as ill-formed, as it is in fact. This is the desired result, and to that extent it confirms the existence of some principle of Navajo grammar having the effect of (3.40). The question of whether (3.40) is itself the correct principle is an issue with which we will have to come to grips shortly.
3.9 A Unified Conception of Noun Phrase Gaps

If I am correct in my view that "relativization" and "pronominalization" are distinct processes -- particularly if they are distinct in the way I have suggested -- then it is rather clear that the constraints embodied in (3.30) and (3.40) must be reconsidered jointly, since they have an identical effect.

The effect they have in common is that of precluding the occurrence of a gap immediately after an overt noun phrase -- whether that gap is produced by movement (or even deletion) or is merely the position occupied by a phonologically empty noun phrase constituent. Elevating the term GAP to the status of a technical term, and using it in the generalized sense of a phonologically vacuous noun phrase argument position, we can formulate prosaically the following constraint which can be understood as applying to strings resulting from either circumstance of grammar -- i.e., NP-removal or NP-over-PRO:

(3.58) \[ \text{NP-GAP Constraint} \]

Identify as ill-formed any structure of the form

\[ X - \text{NP} - \text{GAP} - X , \]

in which NP does not "bind" the GAP.

The final clause of this constraint is included to permit the case where the GAP corresponds to a PRO which is coreferential with the immediately preceding noun phrase.
Clearly, the constraint we now have is not a constraint on rules but rather a condition on surface structures. This is an advance, since it now permits us to remove a condition or constraint from whatever rules are involved in forming headed relative clauses and in producing right dislocated structures. And it is also an advance in that it brings us a step closer to a true understanding of the nature of the problems involved in dealing with "missing noun phrases in Navajo.

However, from another perspective, the NP-GAP Constraint represents a loss in our over-all conception of Navajo grammar. In my discussion of the "best possible theory" of Navajo "pronominalization", I expressed the hope that the grammar would require only the appropriate version of Lasnik's Non-Coreference Rule (3.15) and that in no case would necessary coreference between NP and PRO have to be stipulated in the grammar. The constraint embodied in (3.58) is just such a stipulation, however, since, like the more specific version (3.40), it has the effect of requiring coreference in any sequence of the form NP PRO.

In the next chapter, I will present evidence which goes against the NP-GAP Constraint and, more generally, I will discuss certain considerations which bring into question a certain basic assumption underlying the NP-over-PRO hypothesis which I have developed in this chapter--specifically the assumption that the grammar of Navajo must relate surface
structures to deep structure phrase markers which express configurationally the argument structure of verbal clauses.
CHAPTER FOUR
SURFACE INTERPRETATION OF
GRAMMATICAL RELATIONS

4.0 Introduction
At the end of the previous chapter, I arrived at a prose formulation (3.58) of a constraint on the appearance of gaps in surface structure. Implicit within this formulation is a special condition on the appearance of the PRO element to the effect that if PRO immediately follows an overt NP, it must be coreferential with the overt NP. That condition was expressed as (3.40) in Chapter Three, and it is repeated here as (4.1).

(4.1) The NP-PRO Constraint
If PRO immediately follows an overt noun phrase NP', it must be coreferential with NP'.

As I pointed out in the previous chapter, this represents a loss in our overall conception of "pronominalization" in Navajo, since it constitutes a case in which positive coreference must be stipulated between a PRO and an overt NP antecedent. If it were not for (4.1) it would be possible to "get by" with the Non-Coreference Rule of Lasnik, together with other independently justified principles of grammar not specific to PRO--e.g., the obviation principle illustrated by (3.23) and (3.23') and the principle of Disjoint Reference
illustrated by (3.42-45).

In this chapter, I will present and discuss certain direct counterexamples to (4.1), and I will suggest an alternative conception of the problem according to which (4.1) plays no role in the grammar of Navajo.

Before I embark on the study of counterexamples to (4.1), I would like briefly to repeat and hopefully clarify certain fundamental assumptions which have underlain my discussion up to this point.

I have been assuming that certain verbs, postpositions, and nominal forms are subcategorized to appear with one or more obligatory noun phrase arguments and, moreover, that it is a condition on their appearance in phrase structures that their full complement of noun phrase arguments be actually present in the phrase marker in which they are inserted. Thus, I have been assuming a condition on lexical insertion roughly like that suggested by Chomsky (1965, p. 110 and elsewhere). I have also assumed that each noun phrase argument has a fixed position within the phrase headed by the nuclear element (i.e., verb, postposition, or noun) which selects it. This is relevant to the present discussion in the following way. If an obligatory noun phrase argument is not phonologically realized in its appropriate position in the surface representation of a particular phrase, we must assume (i) it was removed (say, by right dislocation or by the process creating headed
relative clauses), or else (ii) it is an instance of NP-over-PRO. For the present purposes, I am interested in the second of these cases.

Consider, for example, an intransitive third person verb form like /yálti/ 'he/she is talking'. I assume that this form is subcategorized to take an obligatory noun phrase argument, functioning as its subject. Navajo is verb-final, and we have no particular evidence to assume that there is a verb phrase. Therefore, the minimum phrase marker in which this intransitive verb form may appear is as follows:

(4.2)

And it in fact appears with overt NPs in such sentences as (4.3)

(4.3) (a)  

S
  NP  V
  ashkii  yálti'
  boy   talk

The boy is talking.

(b)  

S
  NP  V
  ashkii  dóó  at'éd  yálti'
  boy   and  girl   talk

The boy and the girl are talking.
But, as should now be clear, in Navajo, such a verb form as this can appear in an equally well-formed sentence without an overt NP. Thus, the following is a perfectly good sentence in Navajo:

(4.4) Yálti'.

He/she/they is (are) talking.

My assumption is, however, that the phrase marker associated with this sentence has an NP (actually an NP-over-PRO) in subject position as follows:

(4.4')

Similarly, a third person transitive form like /yizts'qs/ is subcategorized to take two NP arguments, as it does overtly in the sentence

(4.5)

The boy kissed the girl.
The verb is in the "yi-form", so the first and second NPs are understood to function, respectively, as subject and object.

This verb form may also appear with one or both of its arguments missing—i.e., not phonologically overt as in

(4.6) (a) At'éd yizts'qs.
(girl kiss)
He/she kissed the girl.

(b) Yizts'qs.
He/she kissed him/her.

Again, my assumption is that the missing NPs are instances of NP-over-PRO:

(4.6') (a)

```
S
  NP  NP  V
  PRO at'éd yizts'qs
he/she girl kiss
```

(b)

```
S
  NP  NP  V
  PRO  PRO yizts'qs
he/she him/her kiss
```

And here again the arguments are arranged in the order subject-object, as required by the yi-form of the verb. If the verb were in a bi-form—i.e., /bizts'qs/ 'he/she was kissed by him/her'—the arguments would be understood to be in the order object-subject (see Chapter One, (1.32-3),
et passim), as in

(4.7) (a)

\[
\begin{array}{c}
S \\
NP & NP & V \\
\text{at'ééd} & \text{ashkii} & \text{bizts'qs} \\
\text{girl} & \text{boy} & \text{bi:kiss} \\
\end{array}
\]

The girl was kissed by the boy.

(b)

\[
\begin{array}{c}
S \\
NP & NP & V \\
\text{PRO} & \text{ashkii} & \text{bizts'qs} \\
\text{PRO} & \text{boy} & \text{bi:kiss} \\
\end{array}
\]

He/she was kissed by the boy.

(c)

\[
\begin{array}{c}
S \\
NP & NP & V \\
\text{PRO} & \text{PRO} & \text{bizts'qs} \\
\text{he/she} & \text{him/her} & \text{bi:kiss} \\
\end{array}
\]

He/she was kissed by him/her.

This line of reasoning extends to other nuclear categories as well. Thus, the nominal form /bi-zhé'é/

'his/her-father'—is said to require an NP argument functioning as possessor. And it appears with an overt possessor in (4.8) below:
The boy's father is talking.

Expectably, however, the possessor argument may be non-overt phonologically, as in the perfectly well-formed sentence

(4.9) Bizhé'é yálti'.
(his/her:father talk)
His/her father is talking.

In line with my general approach here, I assume the possessor argument in (4.9) to be another instance of NP-over-PRO. Thus, the phrase marker for (4.9) is as follows:

Finally, a postpositional form like /binaagóó/ 'around him/her' is said to require an NP argument functioning as its object, as in
where this object argument is not phonologically overt, I assume it to be present as NP-over-PRO in the phrase markers. Thus, parallel to (4.10) above we have (4.10'):

(4.10')

In general then, I am assuming that the phrase marker for a particular clause or phrase matches the subcategorizational properties of the nucleus. This assumption is crucial to what follows, since only under this assumption is it possible to posit a PRO element in structural positions which might violate the condition expressed in (4.1).

4.1 Ellipsis in discourse

I will first mention a class of counterexamples to (4.1) which is of relatively minor interest. I mention this type here primarily to "get it out of the way", so to speak, since the fact that it represents is very clearly
one relating to the well-formedness of a particular type of discourse.

In answering an information question, it is customary to answer with the word or phrase which in fact constitutes the answer. All or a part of the presupposed portion of the question may be suppressed. Thus, for example, the question

(4.11) Háí lá at'éd yizs'qs?

(who Q girl kiss)

Who kissed the girl?

can be answered simply,

(4.12) Ashkii.

(boy)

The boy (did).

with ellipsis of all but the portion which answers the question. Alternatively, it can be answered more fully as follows:

(4.13) Ashkii at'ééd yizts'qs.

(boy girl kiss)

The boy kissed the girl.

But it is also possible to answer as follows:

(4.14) Ashkii yizts'qs.

(boy kiss)

The boy kissed her.
This is a perfectly well-formed response, and, in the question-answer discourse context, it is readily understood as having the meaning according to which the noun phrase /ashkii/ is the subject. But, with this meaning, and if the missing noun phrase is actually present as PRO, given my assumptions, the phrase markers for (4.14) must be (4.15) below:

(4.15)

```
S
   NP
   NP
   V
ashkii  PRO  yizts'qs
```

boy    PRO    kiss

This is in direct violation of (4.1) since PRO follows an overt NP with which it is not coreferential (and, incidently, could not be, due to the Disjoint Reference principle).

There are several ways to view this problem. One way is simply to allow the configuration (4.15)--with sentence external reference for PRO--under the special circumstance of a question-answer exchange. Another way--possibly the correct way--is to assume that the missing NP in (4.14) is not really a case of NP-over-PRO, but rather a genuine case of ellipsis--simply a less thorough ellipsis than (4.12). Under this interpretation, (4.14) would not be in violation of (4.1) since there would be no PRO present in the structure at all. In any event, I maintain that the use of (4.15) in response to (4.11) is a matter belonging to the study of discourse and is not properly within the range of topics.
with which I am attempting to deal. Henceforth, therefore, I will leave this class of apparent counterexamples to (4.1) out of consideration altogether.

4.2 PRO as Possessor

A more interesting class of counterexamples to (4.1) involves possessive constructions of the type represented by (1.57), repeated here as (4.16):

(4.16) Ashkii bizhé'é yiyiiltsá.

(boy his:father see)

The point which such sentences were used to illustrate in Chapter One was the fact that they cannot be associated with a structure in which a gap appears immediately before the verb. In our current framework, this means that (4.16) cannot correspond to (4.17) below:

(4.17)

```
S          V
|          |
NP        NP
|          |
ashkii bizhé'é PRO yiyiiltsá
```

boy his:father PRO see

This is exactly correct since (4.16) cannot receive an interpretation according to which the possessive construction /ashkii bizhé'é/ 'the boy's father' is the subject of the verb /yiyiiltsá/ 'he/she saw him/her'. Thus, (4.16) cannot mean either (a) or (b) below:
(4.18) (a) The boy's father saw him.

(b) The boy's father saw him/her.

This, of course, is consistent with (4.1). On the other hand if (4.17) were allowed, it would be in direct conflict with (4.1).

It is possible, of course, to have an interpretation of (4.16) according to which the possessive construction is the object of the sentence, as depicted in (4.19) below:

(4.19)

This corresponds to the reading (4.20)

(4.20) He/she saw the boy's father

And again this is consistent with (4.1).

It is also possible for (4.16) to receive an interpretation according to which /ashkii/ is the subject and in which /bizhé'é/ constitutes the overt portion of the object. Under the assumption mentioned in the introduction of this chapter, the structure in this instance could be as illustrated in (4.21) below:
This is consistent with (4.1), so that this construction may receive the interpretation (4.22) below:

(4.22) The boy$_i$ saw his$_i$ father.

In fact, this is precisely the interpretation required by (4.1)—i.e., it is the interpretation in which PRO is coreferential with the immediately preceding NP.

What we did not mention in Chapter One, however, is the fact that (4.16) can also receive an interpretation in which PRO refers outside the sentence, as in the reading (4.23) below:

(4.23) The boy$_i$ saw his/her$_j$ father.

And, of course, it may be understood as coreferential with a noun phrase appearing farther to the left but still within the same (more complex) sentence, as in the (b) reading of (4.24) below:

(4.24) At'éd yah'iiyáago ashkii bizhé'é yiyiiltsá.

(girl enter:COMP boy his:her:father see)

(a) When the girl entered, the boy$_i$ saw his$_i$ father.

(b) When the girl$_i$ entered, the boy saw her$_i$ father.
This is in direct violation of (4.1). But notice that it is exactly what one would expect in the "best possible theory" of Navajo pronominalization which contained only Lasnik's Non-Coreference Rule together with the various general principles of grammar briefly described in the preceding chapter.

This observation certainly casts doubt on the validity of (4.1), increasing the chances that a more general--"best possible"--theory of Navajo pronominalization is the correct one. We must, of course, explain the fact that still remains--namely, the fact that (4.16) cannot receive the interpretation corresponding to (4.17). I will delay my attempt to do this until after I have considered another class of counterexamples to (4.1).

4.3 PRO Following Relative Clauses

A somewhat more intricate case involves sentences containing relative clauses built upon transitive sentences, such as the following:

(4.25) Hastiin lìí' yizloheè yi'diilid.

(man horse rope:REL brand)

(a) The manI branded the horse heI roped.
(b) He/she branded the horse that the man roped.

The interpretations (a) and (b) are perfectly consistent with (4.1). They correspond, respectively, to the structures below:
Interpretation (4.25a) corresponds to that in which PRO is coreferential with the immediately preceding noun phrase /hastiin/-as required by (4.1). And here (4.1) is supported further by the fact that PRO in (4.26a) cannot refer outside the sentence. Interpretation (4.25b), if associated with structure (4.26b), is also consistent with (4.1), since PRO is not preceded by a noun phrase at all, and therefore does not even come under the purview of (4.1).

The constraint embodied in (4.1) predicts that sentence (4.25) cannot have an interpretation according to which the expression /hastiin liš' yizlohep/ 'the man who roped the horse' (or 'the horse that the man roped') appears in subject position, with PRO in object position:
Thus, for example, (4.1) predicts that (4.25) cannot mean

(4.28) The man who roped the horse branded it.

This is observationally correct. However, (4.1) makes a false prediction also. While it correctly predicts that PRO in a configuration like (4.27) cannot refer outside the sentence, it fails to allow an interpretation according to which PRO in such a configuration is coreferential with one of the two NPs within the relative clause. In fact, (4.1), in conjunction with the Disjoint Reference principle, would rule (4.27) out altogether—(4.1) requires coreference between PRO and the immediately preceding NP, but since that NP is the subject in (4.27), and therefore a clause-mate with PRO, Disjoint Reference would preclude coreference, thereby rendering (4.27) uninterpretable. The fact is, however, there is an interpretation of (4.25) which, under our assumptions, corresponds precisely to the structure (4.27). This interpretation is the one in which the relative clause is understood as "modifying" /hastiin/, and in which PRO is coreferential with /lîlî/:
(4.29) The man who roped the horse branded it.

Under our assumptions, this interpretation constitutes a counterexample to (4.1). That is to say, this interpretation corresponds to the configuration (4.27), in which PRO appears in object position following an overt noun phrase. Again, doubt is cast on the validity of the NP-PRO Constraint expressed in (4.1). This is an especially interesting example for another reason—namely, PRO is evidently allowed to appear in object position in (4.27), but it cannot refer outside the sentence. This fact must eventually be explained.

Before proceeding to explain the observations we have made here and in the previous subsection, I should point out a certain fact concerning sentence (4.25) and its various readings. The critical reading—i.e., (4.29), which constitutes a counterexample to (4.1)—is somewhat difficult to get, and I have had some difficulty in convincing other Navajo speakers that it exists. The judgements are somewhat delicate, since the difference between the favored reading (4.25a) and our critical reading (4.29) is not one of "truth value", but rather one of "modification" or "restriction" by the relative clause. In (4.25a), the relative clause modifies /lįt'/ 'the horse', while in (4.27) it modifies /hastiin/ 'the man'. It is perfectly understandable that these two readings should in fact exist, since, as we have seen, headless relative clauses formed on transitive sentences in the yi-form are ambiguous with respect to the
identity of the relative noun phrase. However, in the case of (4.25), there is a very natural parsing of this string which separates /hastiin/ from the substring /lî'î yizloh-ë/., thereby favoring the reading according to which the relativized verb /yizloh-ë/ is associated with /lî'î'/ 'the horse'. I am referring, of course, to the parsing which corresponds to the structure (4.26a).

To show that an interpretation corresponding to (4.27) is in fact possible, it is sufficient to choose NPs in the subordinate clause in such a way as to disfavor the interpretation according to which the object NP is the relative noun phrase. For example, if the object of the embedded verb uniquely refers--or is "referentially restrictive" in some sense--the subject is more readily understood as being modified by the relative clause. Thus, for example, the following sentence readily receives an interpretation according to which it is the subject of the embedded verb that is modified by the relative clause:

(4.30) Asdzáán Kii ya'nîltsoodeë yich'ahóóshkeed.

(woman Kee feed:REL scold)

The woman who fed Kee scolded him.

In fact, it is almost impossible here to get the interpretation according to which the proper noun /Kii/ 'Kee' functions as the relative noun phrase. Therefore, sentence (4.30) clearly establishes the possibility of a configuration parallel to (4.27)--i.e., the following:
I take this to mean that (4.1) is in serious trouble. But this is somewhat encouraging, because if (4.1) can be eliminated, there is some hope that the maximally general conception of Navajo pronominalization is correct. To substantiate this, however, it is necessary to explain all of the instances in which (4.1) appears to apply.

Another way in which an interpretation corresponding structurally to (4.31) can be brought out is to form the relative clause upon the inverted (or O S bi-V form) of a sentence in which the subject and object are equal in rank (e.g., both human, or both animal). In this case, the relative clause will be unambiguous with respect to the identity of the relative NP--it is regularly the initial NP in such cases. Thus, the sentence (4.32a) readily receives the interpretation corresponding to (4.32b):

(4.32) (a) **Lįį' dzaanéez bi-shxash-ēę yi-ztal.**

(horse mule bi-bite-REL yi-kick)

'The horse which was bitten by the mule kicked it.'
The string (4.32a) can, to be sure, be interpreted in other ways, but the point I wish to make is that it readily receives the interpretation embodied in (4.32b)—since relative clauses formed upon inverted sentences (with equal-ranking subject and object) are unambiguous. (It should be pointed out, incidentally, that Hale, Jeanne, and Platero, 1976 p. 403, asserted erroneously, that such relative clauses were ambiguous. This error was an unfortunate accident arising from the complex logistics involved in composing that paper by correspondence.)

4.4 Discussion: The Interpretation of Sentences

I will now attempt to show that a constraint like (4.1) is unnecessary in the grammar of Navajo.

Heretofore, I have left completely out of consideration the possible role which might be played by quite general principles employed by speakers of Navajo in understanding Navajo sentences. I hope to show that such principles are intimately involved in explaining many of the coreference phenomena described in the first three chapters. In particular, I will be concerned with principles which speakers might reasonably be assumed to employ in assigning
"grammatical relations" (subject, object) to overt noun phrases in transitive clauses.

Let us consider the simplest possible case, namely a transitive clause in which both subject and object are represented overtly by noun phrases:

(4.33) (a) Ashkii at'ț̆'d yi-zts'q̄s.
   (boy girl yi-kiss)

(b) Ashkii at'ț̆'d bi-zts'q̄s.
   (boy girl bi-kiss)

As should be quite clear by now, the grammatical relations borne by the noun phrases in these sentences correlate with the morphology of the verb word in accordance with the principle expressed in (1.35), which is repeated here as (4.34):

(4.34) Interpretation of Grammatical Relations

NP is

(a) Object /_yi-V
   Subject /_bi-V

(b) Subject /_NP yi-V
   Object /_NP bi-V

In these formulae, the expressions "yi-V" and "bi-V" are to be understood as abbreviations for "a verb word in which the object prefix is /yi-/ or /bi-/". In effect, what (4.34) says is that the NP nearest the verb is object if the object person marker is /yi-/, but it is subject if the
object person marker is /bi-/; and it says that the leftmost of two NPs is subject if the object person marker is /yi-/, and it is object if the object person marker is /bi-/. Notice that these principles of interpretation, by themselves, will account for the readings assigned to transitive clauses in which one of the noun phrases is missing--i.e., clauses like

(4.35) (a) At'éd yi-zts'qs.
   (girl yi-kiss)
(b) At'éd bi-zts'qs.
   (girl bi-kiss)

By virtue of (4.34), the sole overt NP argument in (4.35a) must be understood as the object; and, similarly, the sole overt NP argument in (4.35b) must be understood as the subject. Thus, these principles of interpretation are all that is needed to account for the fact that sentences like those in (4.35) cannot be associated with a structure in which a gap--whether the gap is PRO or a "removal site"--immediately precedes the verb. These principles, therefore, preclude association of (4.35) with a structure of the following form:

(4.36)  
```
S
  NP   NP  V
at'éd PRO (yi, bi) -zts'qs
   girl  PRO  -kiss
```
Now it is my contention that this makes (4.1) completely unnecessary in Navajo grammar. Moreover, I contend that interpretive principles of the type expressed in (4.34) are independently needed in any fully adequate description of Navajo linguistic competence. If they in fact render (4.1) unnecessary, then we can assume that the maximally general, "best possible", theory of Navajo pronominalization is correct. My job is not finished, however, since it remains for me to show that principles like (4.34) do in fact account for the various observations made in previous chapters.

Before continuing, however, I would like to pause briefly in order to devise a somewhat more streamlined formulation of (4.34), by collapsing the strictly structural description included in it.

(4.37) Interpretation of Grammatical Relations

In an overt string of the form

$$(NP_b) \ NP_a \ V$$

(i) $NP_a$ is [+obj] if the object marker in the verb word is [+yi], and
(ii) $NP_b$ is [+obj] if the object marker is [-αyi]. (Where: [+obj] = the grammatical relation "object", and [-obj] = the grammatical relation "subject"; and [+yi] = /yi-/, and [-yi] = /bi-/.)

These principles, of course, come into play only in the interpretation of transitive clauses in which both the
subject and object are third person. And I will restrict
my attention here to those cases, since they are the ones
which are responsible for the observations with which I have
been concerned in this study. Notice that the revised
formulation of the Interpretation of Grammatical Relations
(hereafter IGR) employs parentheses in order to accommodate
transitive clauses in which one of the arguments is not
overtly expressed by an NP. We can think of the structural
description in (4.37) as applying in much the same way as
does a phonological expression collapsing disjunctively
ordered rules (e.g., Chomsky and Halle, 1968 p.30). Thus,
the maximum expansion of (4.37) applies only where both the
subject and the object are overt. The shorter expansion
applies where only one of the arguments is overt. We are,
of course, immediately interested in cases where the shorter
expansion applies—as for example, in the sentences of (4.35)
above. The structural description in (4.37) will correctly
identify the sole overt argument in (4.35a-b) as \( NP_a \) and
will interpret its grammatical relation in accordance with
principle (i). Notice, that the IGR applies to overt
strings; it does not itself take into consideration any PRO
elements which might be present in the actual structure of
which the overt string is a part. However, given the
interpretations assigned by (4.37) together with the
assumptions outlined in the introduction to this chapter,
it is possible to deduce the position of the PRO element in
"missing NP" cases. Thus, for example, (4.37) assigns the object relation to the overt noun phrase /at'ėéd/ in (4.35a). The object is nearest the verb where the verb is in the yi-form, as it is in (4.35a), therefore, the PRO must precede the overt NP, as illustrated in (4.38) below:

(4.38)

\[
\begin{array}{c}
S \\
| |
NP NP V \\
| |
PRO at'ėéd yizts'qs \\
| |
PRO girl kiss
\end{array}
\]

An exactly parallel line of reasoning leads us to assign structure (4.39) to (4.35b):

(4.39)

\[
\begin{array}{c}
S \\
| |
NP NP V \\
| |
PRO at'ėéd bizts'qs \\
| |
PRO girl bi:kiss
\end{array}
\]

Given the IGR, there is no way in which structure (4.36)--with PRO following /at'ėéd/--could be associated with either of the sentences in (4.35a-b). This is precisely the result we want. And notice also that this account gives no role whatsoever to our supposed NP-PRO Constraint (4.1). This is also a desired result.

4.5 Possessive Construction Reconsidered

Let us turn now to a consideration of sentences of the type represented by (4.16) above. The overt string in such a sentence as (4.16) can be "parsed" in two ways--as
indicated below:

\[(4.40) \text{(a)} \quad (NP_{\text{Ashkii}})_{NP} (NP_{\text{bi-zhé'ē}})_{NP} \text{yiyiiltsá}. \]

\[(4.40) \text{(b)} \quad (NP_{\text{Ashkii bi-zhé'ē}})_{NP} \text{yiyiiltsá}. \]

That is to say, it is possible to view the sentence as having two overt arguments for the transitive verb 'yiyiiltsá/ 'he/she saw him/her'--as in (a)--or it is possible to view it as having only one overt argument for the transitive verb--as in (b). Now in the first case the IGR principle of (4.37) will assign the object relation to the noun phrase represented by the possessive construction '/bizhé'ē/ 'his/her father', and it will assign the subject relation to the initial overt noun phrase '/ashkii/ 'the boy'. This corresponds to the reading

\[(4.41) \quad \text{The boy saw his/her father.} \]

Given our assumptions about the underlying representations of phrases in Navajo, we must assume that there is a PRO in possessor position within the second noun phrase of this sentence, under the (a) parsing. This is depicted in (4.21) above. In accordance with the maximally general conception of Navajo pronominalization, this PRO element may be understood as referring to any entity properly subsumed under the category "third person", including the overt noun phrase which immediately precedes and c-commands it in the sentence--i.e., '/ashkii/ 'the boy'. If (4.1) does not exist as a principle of Navajo grammar--as I claim it does not--
there is no necessity that PRO in (4.21) be coreferential with /ashkii/. This is, in fact, the case, since the possessor in the noun phrase represented overtly by /bi-zhé'é/ may be an individual not represented by any overt noun phrase in the sentence. That is to say, it is possible to by-pass the noun phrase /ashkii/ in searching for the referent of the possessor. The possessor may be located in the linguistic environment, further to the left, as in (4.24) above; or the possessor may be simply understood from the extra-linguistic context. This is totally consistent with the view of pronominalization represented by Lasnik's Non-Coreference Rule and with the Navajo analogue to this view which I sketched out in Chapter Three. The facts here seem to indicate quite clearly that (4.1) is not a genuine principle of Navajo grammar.

Turning now to the (b) parsing indicated in (4.40) above, the IGR principle will interpret the noun phrase /ashkii bizhé'é/ 'the boy's father' as bearing the object relation to the verb /yiyiiłtsá/. This corresponds to the reading

(4.42) He/she sees the boy's father.

And we can deduce from this that the PRO element is initial in the sentence—as depicted in (4.19) above. Since the IGR itself precludes associating the sentence with (4.17)—i.e., where PRO follows the overt NP—there is no reason
to invoke (4.1) to achieve this effect. Again the role of (4.1) is eliminated as a principle of relevance to the understanding of Navajo coreference phenomena.

4.6 The Relative Clause Case Reconsidered

I will consider now the various observations concerning coreference in sentences of the general form represented by (4.25) above.

First I will deal with the observation that (4.25) cannot be associated with a structure of the form illustrated in (4.26a) in which PRO refers outside the sentence--rather, PRO in (4.26a) must refer to the immediately preceding noun phrase. Notice that this observation is quite consistent with (4.1). If we are to eliminate (4.1), we must explain these coreference facts in some other way.

It is quite obvious, that the IGR will account for the fact just noted. Recall that the IGR is oblivious to PROs. The task of the IGR is simply to relate overt NPs to verbs. Now, if we consider the overt string of (4.25), we see that the embedded verb /yizloh/ 'he/she roped him/her/it' is immediately preceded by two noun phrases--namely, /hastiin/ 'the man' and /lii'i/ 'the horse'. The IGR analyzes these as NP\textsubscript{b} and NP\textsubscript{a} respectively. Since the verb is in the yi-form, the IGR assigns the object relation to NP\textsubscript{a} (i.e., /lii'i/) and it assigns the subject relation to NP\textsubscript{b} (i.e., /hastiin/). Now notice that this is sufficient to account for the coreference facts. Let us consider the analysis of
(4.25) embodied in the phrase marker (4.26a)--repeated here for convenience:

\[\text{(4.26) (a)}\]

\[
\begin{array}{c}
\text{NP} \\
\text{NP} \\
S \\
V \\
\text{man} \\
\text{hastiin} \\
\text{PRO} \\
\text{li} \text{i} \\
yi-zloh-\text{ê} \text{ê} \\
yi'\text{diilid} \\
yi-rope-\text{REL} \\
yi\text{-brand}
\end{array}
\]

Notice that the noun phrase /hastiin/ appears in the position appropriate to the subject relation with respect to the main verb--and it will be assigned that relation by the IGR. We see, therefore, that the IGR interprets /hastiin/ as subject of both verbs in the sentence. Now the PRO which appears in the embedded sentence must also be the subject of the embedded verb--this follows, by default, so to speak, since /li'ii'/ 'the horse' has been assigned the object relation. Notice incidently, that PRO is not assigned a grammatical relation by IGR directly, since PRO is invisible to the IGR. We deduce the grammatical relation borne by PRO from that assigned to its overt neighbor noun phrase--the PRO bears the grammatical relation "complementary" to that of its neighbor; we may assume that this is by some sort of general convention. Now if PRO and /hastiin/ are both assigned the subject relation with respect to the embedded verb /yizloh/ 'he/she roped him/her/it', then it follows that /hastiin/ and PRO must be
coreferential. And this follows from principles quite independent of (4.1). Moreover, there is no need to directly specify coreference between PRO and /hastiin/ in (4.26a)--the coreference follows automatically from independent principles.

In addition to the interpretations just discussed, (4.25) receives two other interpretations which are relevant to our argumentation against the NP-PRO Constraint (4.1). However, one of these additional interpretations is also a problem for the IGR, as now stated. But let us consider the easy case first.

Sentence (4.25) may be parsed in such a way as to group all of the overt string preceding the main verb into a single noun phrase constituent, as follows:

\[ (4.43) \text{NP}(\text{Hastiin } \text{i'ii' yizloh-} \varepsilon \varepsilon)_{\text{NP}} \text{ yi'diilid.} \]

Applied to the embedded clause, the IGR assigns grammatical relations in a perfectly straight-forward way--assigning the object relation to /i'ii'/ and the subject relation to /hastiin/. From the point of view of the main verb, under the parsing of (4.43), the IGR as currently stated will assign the object relation to the complex noun phrase expression /hastiin i'ii' yizloh-\varepsilon\varepsilon/. And in accordance with our assumptions, this locates the PRO in initial position, as depicted in the structural description (4.26b) above. And the PRO is assigned the subject relation by the
"complementarity" convention alluded to earlier. This is all very fine, since sentence (4.25) does in fact receive this interpretation—namely

(4.44) He/she branded the horse that the
man roped (= (4.25b)).

However, as I pointed out in subsection 4.3 above, sentence (4.25) is open to another interpretation as well, an interpretation which we adduced as a counterexample to (4.1). This is the interpretation according to which the relative noun phrase is /hastiin/ rather than /lìì'/ and in which /lìì'/ is understood as the object of the main verb /yì̱'diiliid/ 'he/she branded it':

(4.45) The man who roped the horse_
branded it_

In accordance with our assumptions concerning phrase structure in Navajo transitive sentences, this interpretation corresponds to the structural configuration (4.27), in which PRO follows an overt noun phrase:

(4.27)

```
S
 NP       NP
  S       V
   NP     NP
   hastiin liì li-zloh-êe FRO yì̱diiliid
man horse yi-rope-REL FRO yi-brand
```
This counterexemplifies (4.1), to be sure, but it also presents a problem for the IGR as stated in (4.37) above. This follows since PRO is invisible to the IGR, and the overt NP—namely the complex nominal expression under the parsing of (4.43)—must necessarily be interpreted as object by the IGR. Thus, it would appear, we now face a counterexample not only to (4.1), which is desirable, but also to (4.37), which is regrettable.

I contend that the apparent problem is not a problem with the approach that I am suggesting, but merely with the conception of the IGR implied by the formulation in (4.37). I neglected there to point out that the interpretive principles must be capable of ignoring certain material which intervenes between the transitive verb and the noun phrases whose grammatical relations are being assigned. It is clear that some sort of "variable" must be included in the structural description of the IGR. This is indicated in (4.46) below:

(4.46) IGR (Structural Description Reformulated)

\[(\text{NP}_b) \quad \text{NP}_a \quad X \quad V\]

That a variable must be included can be seen even in such simplex examples as the following, in which the entire parenthesized substring is overlooked in assigning grammatical relations to the underlined noun phrases:
47) Hastiin asdzáán (at'éd ashkii yił yi-ch'i') niinílóóz (ni-yi-nílóóz).

(man  woman  (girl  boy  him:with her-to) yi-lead)

The man led the woman up to the girl with the boy.
Let us assume that when the IGR assigns grammatical relations with respect to a main verb, it may apply either the longer expansions, according to which the variable is non-null, or else it can apply the shorter expansion, according to which the variable is null. In the first case, applied to (4.25), the noun phrases /hastiin/ and /li'li'/ are directly associated with the main verb /yí'diilid/, as depicted in the following analysis:

(4.48) Hastiin | li'li' | yizlohe | yí'diilid.

NP_b | NP_a | X | V

Now notice that the overt string (4.25) can be parsed as in (4.43)—or better said, the phrase structure of Navajo provides an analysis of the sentence according to which the substring /hastiin li'li' yizlohe/ is a noun phrase constituent—i.e., it is a relative clause. If we recall that relative clauses built upon yi-form transitive sentences are ambiguous with respect to the identification of the relative noun phrase, we can see immediately how (4.25) can receive the interpretation (4.29 = 4.45). When the IGR applies as depicted in (4.48), it does not actually assign a grammatical relation to the complex nominal expression—rather it assigns grammatical relations directly to the embedded noun phrases. It is because of the ambiguity of the relative clause that (4.25) can receive the interpretation (4.29 = 4.45). To clarify this,
let us use Fauconnier's indexing convention, mentioned in Chapter Two, to indicate the interpretation of relative clauses. The relative clause in (4.25), under the parsing indicated in (4.43), may receive either of the following two interpretations:

(4.49) (a)  
\[
\begin{array}{c}
\text{S} \\
\text{NP}_i \\
\text{NP}_i \\
\text{NP} \\
\text{V} \\
\hastii\text{i} \text{'yizlo}h \ -\epsilon\epsilon \\
\text{man} \\
\text{horse} \\
\text{rope} \\
\text{REL}
\end{array}
\]

The man who roped the horse

(b)  
\[
\begin{array}{c}
\text{S} \\
\text{NP}_i \\
\text{NP} \\
\text{NP}_i \\
\text{V} \\
\hastii\text{i} \text{'yizlo}h \ -\epsilon\epsilon \\
\text{man} \\
\text{horse} \\
\text{rope} \\
\text{REL}
\end{array}
\]

The horse which the man roped

The first of these corresponds to the relative clause reading in (4.29 = 4.45) which, according to our assumptions, is to be associated with the phrase marker (4.27). The second corresponds to the relative clause reading in (4.25b = 4.44) which, according to our assumptions, is to be associated with the phrase marker (4.26b).

One final fact about the possible interpretations of (4.25) should be mentioned here, since it lends further
support to our current conception of the IGR. Despite the selectional properties inherent in (4.25), that sentence can have the meaning (4.50) below as well as all of the meanings mentioned heretofore:

(4.50) He/she branded the man who roped the horse.

This follows automatically from the ambiguity of yi-form relative clauses. Recall that the IGR may use the "empty" value of the X variable. This, combined with the parsing indicated in (4.43), gives the following analysis:

(4.51) Hastiin li4i' yizloh-êe Ø yi'diilid.

Now the relative clause is interpretable as either (4.49a) or (4.49b)—the first of these is the meaning in (4.50), and the second is the meaning in (4.25b).

4.7 Some Final Remarks Concerning the IGR and Certain Other Issues

The precise formulation of the IGR is a matter which is still under investigation. In particular, the domain to which it applies in a given instance, and the precise way in which the X variable works are matters which are not as yet completely understood. These issues are currently being studied by Ellavina Tsosie Perkins, at the University of Arizona, in the context of a general investigation of the yi/bi- alternation in Navajo sentences involving third person subjects together with third person
objects (of verbs and postpositions). The formulation of
the structural description embodied in (4.46) must be
understood as approximate. It is sufficient for our
purposes, however. What I intend to claim, essentially,
is that a principle of this general sort is unquestionably
involved in the interpretation, by Navajo speakers, of both
simple and complex sentences. Moreover, I claim that the
coreference interpretations which have led to the formulation
of the Second Noun Phrase Constraint (1.56), within the
deletion theory of pronominalization, and the NP-PRO
Constraint (4.1), within our present treatment of Navajo
pronominalization, are natural consequences of the IGR
principles; the special provisions represented by (1.56) or
(4.1) are, therefore, unnecessary in the grammar of Navajo.

While I will not attempt in this work to develop a
final formulation of the IGR, since that is, in essence,
being done as a part of Perkin's dissertation on yi/bi-, I
should point out here one fact of relevance to the domain
to which the structural description of the IGR applies.
With respect to the main verb in a sentence like (4.52)
below, the structural description (4.46) must be understood
as being able to apply in such a way that the IGR fails to
assign a grammatical relation to any of the overt noun
phrases.

(4.52) \( (\text{Adv Ashkii at'éd yi-deelchid-go})_{\text{Adv}} \text{ yi-zts'q} \text{s.} \)
( boy girl yi-touch-COMP yi-kiss)
Thus, the structural description of the IGR must permit an analysis in which the adverbial clause as a whole is taken as a unit—so that the IGR will in fact fail to apply with respect to the main verb:

\[(4.53)\]

\[(\text{Adv Ashkii at'éd yideelchidgo})_{\text{Adv}} \text{ PRO PRO} yizts'qs.\]

\[X \rightarrow V\]

On this analysis, the IGR simply fails to find overt arguments for the verb /yi-zts'qs/ (yi-kiss)—so that verb must be interpreted as it would be in the totally NP-less sentence:

\[(4.54)\] Yizts'qs.

He/she kissed him/her.

That is to say, (4.46) must be allowed to fail to apply to sentence (4.52) in order to account for the fact that it can have the meaning given in (4.55) below:

\[(4.55)\] When the boy\(_i\) touched the girl\(_j\), he/she\(_k\) kissed him/her\(_l\).

This sentence has a variety of other interpretations as well. Notice that since the PROs in (4.53) are free, there is no reason why they cannot in fact be coreferential with the overt noun phrases in the adverbial clause—and they can. Thus (4.53) can also mean
(4.56) (a) When the boy \(i\) touched the girl \(j\) he\(_i\) kissed her\(_j\)

(b) When the boy \(i\) touched the girl \(j\) he\(_i\) kissed him/her\(_k\).

It cannot, however, receive the interpretation according to which the grammatical relations borne by /ashkii/ and /at'ééd/ are inverted in the main clause. That is, (4.53) cannot mean

(4.57) When the boy \(i\) touched the girl \(j\) she\(_j\) kissed him\(_i\).

This reading is presumably precluded by the First Noun Phrase principle of Chapter Two, or by an appropriate modification thereof.

Notice, incidently, that the IGR cannot fail to apply in the parallel relative clause case since, under any mode of application, at least one overt noun phrase argument will be located for the main verb. If we assume that the X variable of (4.46) cannot correspond to an overt noun phrase— a necessary assumption for the simplest possible case in Navajo (i.e., any NP NP V sentence)— a sentence like (4.25) above will always present an overt noun phrase to the main verb. Thus, (4.25) will be analyzed either as (4.48) or else as (4.51).

It should be obvious by now that if I am correct in
assuming that the IGR exists as a genuine principle employed by Navajo speakers in understanding Navajo sentences, then not only is the NP-PRO Constraint (4.1) unnecessary in Navajo grammar but the more embracing NP-GAP Constraint on surface structures (3.58) is also unnecessary. The NP-GAP Constraint is repeated here for convenience as (4.58):

(4.58) **NP-GAP Constraint**

Identify as ill-formed any structure of the form

\[ X - NP - GAP - X \]

in which NP does not "bind" the GAP.

You will recall that this is intended to cover not only the NP-PRO situation but also the situation in which an NP has been moved rightward, either to create the relative clause or to effect right dislocation. Thus, it is intended that (4.58) prevent association of the string

(4.59) **At'ééd yizts'qs(-éê) ashkii**

(girl kiss (-REL) boy)

(a) The boy who kissed the girl (with /-éê/)

(b) He₁ kissed the girl, i.e., the boy₁ did (as a root sentence)

with an underlying structure according to which the noun phrase /ashkii/ 'the boy' is in immediate preverbal position:
But the NP-GAP Constraint is itself completely unnecessary to achieve this effect, given the IGR. The structural description of the IGR will insure that the noun phrase /at'éd/ in (4.59) is analyzed as NPₐ and, in accordance with the object marking of the verb, that it is assigned the object relation. Thus, the only conceivable position to which /ashkii/ can be related is the initial, or NP₉, position. To interpret the sentence, therefore, we must, so to speak, "restore" the dislocated noun phrase to its normal NP₉ position—by, say, locating its trace and assigning to it the appropriate grammatical relation (see Fiengo 1977, for a detailed discussion of trace theory).

Precisely the same conclusion is reached when one considers more complicated cases of this apparent rightward movement of noun phrases. Consider, therefore, the sentence (1.46), repeated here as (4.61):

(4.61) Hastiin at'éd yiyiiltsánée ashkii yídísool.

(a) The man who saw the girl is whistling at the boy.
(b) The girl who the man saw is whistling at the boy.

(c) The man is whistling at the boy who saw the girl.

The fact that (4.61) cannot receive the (c)-reading follows
automatically from the IGR. Notice that the substring /hastiin at'éd̂ yiyiíṭtsâ'/ must be analyzed such that /hastiin/ 'the man' and /at'éd̂/ 'the girl' are respectively NP\(_b\) and NP\(_a\) with respect to the embedded verb /yiyiíṭtsâ'/. This totally prevents any understanding of the sentence according to which /ashkii/ is the subject of the embedded verb. There is clearly no need to appeal to the NP-GAP Constraint to account for the range of interpretations assignable to (4.61).

There is in fact more to be said about the irrelevance of the NP-GAP Constraint in relation to these apparent rightward movement cases. There must be some principle or other involved in the interpretation of these structures which, in effect, restores the normal position of the dislocated noun phrase. Without attempting here to formulate such a principle, I will simply designate it the Restoration Strategy. Evidently, given enough supportive information, it is possible for the Restoration Strategy to relocate a noun phrase in NP\(_a\) position, following an overt NP\(_b\), in direct violation of the NP-GAP Constraint and, incidently, in defiance of the normally extremely powerful IGR principles. Thus, for example, the selectional properties inherent in the following sentence permit the hearer to deduce that the right-head of the relative clause comes from NP\(_a\) position, not NP\(_b\) position:
The dog which the man was bitten by is barking.

With some difficulty, to be sure, this sentence can be understood as having the same cognitive meaning as (4.63) below, in which the NP /lééchąą'į/ 'the dog' appears in its normal (NPₐ) position:

The reason why (4.62) can correspond in its interpretation to (4.63) has to do partly with the greater likelihood that a dog would bite a man than the reverse and partly with the specific Navajo fact that if the embedded sentence were "restored" to one in which /lééchąą'į/ 'the dog' appeared
in $NP_b$ position, it would violate a principle according to which the higher ranking of two unequal nominal concepts is placed first in transitive sentences of this type (cf. Hale 1973, Creamer 1974, Witherspoon 1977). In accordance with the hierarchy principle, the inverted sentence (4.64) below is an unacceptable way to describe the situation in which a man bites a dog:

$$(4.64) \quad *\text{léécháq'í hastiin bi-shxash.}$$

(dog man bi-bite)

The dog was bitten by the man.

This situation must be described using the uninverted yi-form, as follows:

$$(4.65) \quad \text{Hastiin léécháq'í yi-shxash.}$$

(man dog yi-bite)

The man bit the dog.

These selectional considerations allow recovery of the meaning of (4.63) from (4.62) in violation of the NP-GAP Constraint and in defiance of the IGR.

It is interesting to note, incidently, that rightward movement and pronominalization are utterly different in this respect. The exactly parallel pronominalization structure in (4.66) below does not permit an interpretation according to which PRO is in $NP_a$ position, despite the selectional facts inherent in the subordinate clause.
(4.66) ?Hastiin bi-shxash-go lééchá'í nahas'íin.

(man bi-bite-COMP dog bark)

When it was bitten by the man, the dog barked.

I do not know why this particular distinction between relativization and pronominalization exists. However, it seems reasonable to assume, as I have, that a special interpretative procedure—in addition to the IGR—is applied in rightward movement cases and that this Restoration Strategy can overturn the interpretation imposed by the IGR.

4.8 An Aside on Rightward Movement

I feel that it is not out of place here to offer a suggestion concerning the so-called headed relative clause. In Chapter Two, I proposed that the headless relative clause is a basic form and that the headed relative clause might be derived by rightward movement of a noun phrase into the head position—directly following the nominalizing complementizer (/-ígií, -éé/). I also pointed out that another apparent rightward movement process exists—i.e., that which produces the right dislocation structures. I intended to hint that these two processes may in fact be the same. I now think that this is indeed correct. At least, it is almost certain that no special provisions are necessary just for the headed relative clause, since a right dislocation process applies quite generally in Navajo. It even applies in the case of embedded adverbial clauses, producing from a structure like
When the boy entered, the girl ran out.

In linear form, at least, the adverbial expression in (4.68) closely mimics the headed relative clause. I suggest that exactly the same rule is involved in all such cases. The use of this rule is somewhat marginal in Navajo and its exact status is not altogether clear. It is not unreasonable to assume that the rule is of the most general form—i.e., roughly as formulated in (4.69) below:

(4.69) **NP Extrapolation**

\[
X - NP - YV
\]

\[
1 \ 2 \ 3 \ \Rightarrow
\]

\[
1 \ 0 \ 3 \ 2
\]

This is evidently a rule belonging properly to the stylistic
realm in Navajo grammar. It is apparently capable of extracting an NP any distance to the right and, moreover, it can extract a noun phrase out of a subordinate clause of the direct discourse type (cf. (2.10) above, and also Platero, 1974, for other examples, and see also Kaufman 1974, for a detailed discussion of direct and indirect discourse in Navajo). The term V in (4.69) must be understood as subsuming not only a verb word of the type appearing in main clauses but also the sort of verb word which appears in desentential adverbial clauses and in relative clauses--i.e., a verb form together with a suffixed adverbial complementizer (/-go, -ii'/ glossed COMP) or nominalizing complementizer (/-ígií, -éé/ glossed REL). Thus, the extraposed noun phrase appears to the right of any such subordinating element. The precise point of attachment of an extraposed NP in derived structure is not clear to me at this moment, but it is probable that the application of the rule is governed by quite general constraints on possible "landing sites", constraints of the type currently being studied by Mark Baltin (1978).

4.9 Concluding Remarks

In this chapter, I have suggested that the IGR principles--whose existence seems warranted on the basis of even the simplest sort of transitive sentences in Navajo--make unnecessary certain initially plausible conditions on structures in which a noun phrase is "missing" from a "basic"
argument position relative to a verb. I have not referred to the IGR as a "rule" of Navajo grammar, but rather as a "principle" involved in the on-line processing of sentences. I will leave this question open, in fact. My guess is that the IGR is best viewed as a perceptual strategy employed by Navajo speakers in determining the grammatical relations which overt noun phrases bear to verbs in a given sentence. This conception of the IGR is consistent with the observation that it can penetrate into a "subordinated" clause--i.e., a clause overtly marked as subordinate by means of one or another of the complementizers (/-go, -ii', -ígíí, -êê/)--and this is normally impossible for established rules of Navajo core grammar (e.g., Kaufman's Spatial Enclitic Movement, 1974). A subordinated clause in this sense (i.e., marked as subordinate), may well constitute the Navajo realization of the "Propositional Island" (Chomsky, 1977). The direct discourse embedding (without complementizer, cf. (2.10)), by contrast, is certainly not a Propositional Island (cf. Kaufman, 1974; but see also evidence adduced by Kaufman which raise serious questions about the proper identification of islands in Navajo).

Given this general conception of Navajo grammar, we must now face the question of the status of a structure like (4.70) which, given our assumptions, is a proper underlying structure produced by the rules of the base component:
This structure has /ashkii/ in subject position, yet the IGR must interpret that noun phrase as bearing the object relation--this follows, since /ashkii/ is necessarily NPa.

What, then, is the status in Navajo of (4.70)? Given what precedes in my discussion, I must assume that (4.70) is a grammatical structure in Navajo. The overt string which it dominates, however, cannot be understood to have the meaning logically associated with the structure, since the IGR simply makes it impossible for that meaning to shine through.

I think that this position is correct, given my overall framework. My position then forces me to the conclusion that the sentence

(4.71) Ashkii yi-zts'qs.

(boy yi-kissed)

is "structurally ambiguous". It receives only one interpretation, however, due to the extraordinary strength of the IGR principles.

There is an alternative to this position suggested by Hale (class, Fall Semester 1977, cf. also Hale and Platero, in preparation), which I will briefly discuss here, without developing it fully. According to this alternative, the rules of the Navajo base do not produce structures of the
type (4.70) at all. Instead, the basic structure for (4.71) is simply

\[(4.72) \quad S \quad NP \quad V \quad ashkii \quad yi-zts'qs\]

And, in general, there are no NP-over-PRO structures in Navajo. Missing noun phrases are missing by virtue of the phrase structure rules, which have optionality parentheses around all occurrences of NP on the right hand side of expansion rules. This, of course, requires us to abandon our basic assumption of this chapter—namely, that the diathesis (or "argument structure") of a nuclear element (verb, postposition, etc.) must be matched by the phrase marker into which it is inserted. That is, we must give up the condition on the insertion of lexical items. The lexical entry of a verb (or other nuclear element) will, of course, specify its diathesis—either as a part of the semantic representation of the lexical entry or by means of some notation similar in appearance to the strict subcategorization frames employed in the standard theory of transformational grammar (Chomsky, 1965). Thus, the verb form /yi-zts'qs/ 'he/she kissed him/her' will be identified as taking a subject and an object (further identifiable as third person by virtue of the verbal morphology). The interpretative component will, then, have two tasks. First, it will assign grammatical relations to overt noun phrases
in the sentence—using essentially the IGR principles. And it will insert "dummy NPs"—dummy NP-over-PRO structures, if you will—into missing noun phrase positions in the phrase marker. Thus, in the case, of (4.72), the IGR will identify the overt noun phrase as NP<sub>a</sub> and, by virtue of the verbal morphology, it will assign to that noun phrase the object relation. The "structure building" portion of the interpretive procedure will insert a dummy NP in initial, or NP<sub>b</sub>, position. One might think of the second interpretive process as one which "builds up" a structure which can be interpreted (or mapped onto logical form) in the most straightforward way—i.e., in accordance with the self-same principles which would operate in a "fully specified" phrase marker, that is, a phrase marker with all of the arguments overtly present as noun phrases. This is roughly the approach suggested in Hale, Jeanne, and Platero (1977). The dummy noun phrases inserted in this way are assigned their grammatical relations in some way—it is reasonable to suggest that this is by a reapplication of the IGR—and furthermore, they are interpreted as definite and, of course, are candidates for free coreference or anaphora in conformity with the general framework developed in Chapter Three. Thus, the "structure building" procedure just outlined would apply to (4.72) to derive the "logical" structure in (4.73) below:
The inserted "NP" would be assigned the subject relation and it would be interpreted as definite—just as the English pronouns which translate it are definite:

(4.74) He/she kissed the boy.

The inserted "NP" is, of course, open to an interpretation according to which it is coreferential with an overt noun phrase—say, in an earlier clause, as in

(4.75) At'ééd yah'ííyáago ashkii yizts'qs.
   (girl enter:COMP boy kiss)
   (a) When the girl\(i\) entered, she\(i\) kissed the boy.
   (b) When the girl\(i\) entered, he/she\(j\) kissed the boy.

Notice that this analysis avoids the necessity of saying that (4.71) is structurally ambiguous while being understood unambiguously.

There is another possible advantage to this approach. Consider, the following sentence.

(4.76) Adáádáá' ashkii at'ééd yi-yiiltsá(n)-éé
   (yesterday boy girl yi-saw-REL yi-doots'qs.
   yi-will:kiss)
   The boy will kiss the girl he saw yesterday.
Notice that the adverb /adäßig'/ 'yesterday' belongs to the embedded clause since it must go with the perfective verb /yiyiltså/ 'he/she saw him/her'—it would be incompatible with the future tense of the main verb /yidoots'qs/ 'he/she will kiss him/her'. This means that the sentence must be parsed as follows:

\[(4.77)\]

\[(\text{NP } \text{Adäßig' ashkii at'éd yiyiltsánée}) \text{NP yidoots'qs}.\]

Notice further that the relative clause is understood as modifying /at'éd/ 'the girl'. It could alternatively be understood to modify /ashkii/ 'the boy', but the fact that it can—and most readily does—modify /at'éd/ indicates that the complex relative expression is in object position. If this is so, then under our NP-over-PRO theory of Chapter Three, which we have maintained heretofore in this chapter as well, we must have an NP-over-PRO in subject position with respect to the main verb /yidoots'qs/, as indicated in the following phrase marker:

\[(4.78)\]

\[
(\text{NP ad conferences } \text{NP ashkii at'éd yiyiltsánée}) \text{NP yidoots'qs}.
\]
But the subject of the main verb can be readily understood as being coreferential with that of the embedded verb—as in the translation given in (4.76). That is to say, the PRO can be coreferential with an overt noun phrase which it both precedes and commands. This is in direct violation of Lasnik's Non-Coreference Rule (3.15), which otherwise works perfectly and is moreover necessary in the grammar of Navajo. Notice, incidently, that %e cannot assume that the underlying structure of (4.76) has /ashkii/ outside the relative clause and that the adverb has simply "scrambled" forward from the position it occupies in the well-formed alternative

(4.79) Ashkii adáá' át'ééd yiyiiltsánée yidoots'qs.

This sort of scrambling is not allowed in Navajo. Thus, from

(4.80) Ashkii adáá' át'ééed deeztlízhée yidoots'qs.

(boy yesterday girl trip:fall:REL kiss)

The boy will kiss the girl who fell down yesterday. One cannot get:

(4.81) *Adáá' ashkii át'ééed deezhtlízhée yidoots'qs.

The alternative proposal—i.e., that which does not posit underlying NP-over-PRO structures—does not have to face the dilemma brought about by (4.76). According to this alternative, the structure of (4.76) would be the same as (4.78), but without the NP-over-PRO—i.e., it would be
This would receive the interpretation of interest here—i.e.,

(4.83) The boy will kiss the girl he saw yesterday.

—by direct application of the IGR. Nor would any dummy
NP-over-PRO have to be inserted at an intermediate
interpretive stage in this structure, since the IGR will
succeed in locating overt noun phrase arguments for both
the subordinate verb and the main verb. In the latter case,
the analysis would be as follows:

(4.84) Adåådåå' ashkii at’ééd yiyiitstsâ -é yidoots'qs.
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BIOGRAPHICAL SKETCH
