A STUDY OF THE NAVAJO RELATIVE CLAUSE

by

PAUL RANDOLPH PLATERO

Brigham Young University

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Signature redacted

Signature redacted

Signature redacted

Accept by ____________________________
Chairman, Departmental Committee on
Graduate Students

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Paul R. Platero

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ABSTRACT

This study is an examination of the structure of the Navajo relative clause and of the rules involved in deriving surface forms of the relative clause structures in Navajo sentences. It is pointed out that Navajo has relative clauses, both of the "headed" type and of the "headless" types, and it is argued that the rule which converts underlying relative clause structures into their surface forms involves a deletion which can be formally collapsed with the independently existing rule which is used to achieve the same affect as pronominalization in English. It is proposed therefore that relative clause formation in Navajo does not involve the movement of a constituent. However, it is shown in this study that relativization conforms to the constraints observed to hold for movement rules in English. Thus, Navajo contributes to a refinement of these suggested universal constraints. In addition to the study of structural properties of Navajo relative clause, a preliminary examination of Navajo deletion is undertaken. The results of this investigation bring into focus the role of preceptual strategies in the processes which speakers of Navajo use in understanding sentences to which one or more deletion rules have applied.

Thesis Supervisor: Kenneth Hale
Title: Professor of Foreign Literatures and Linguistics
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CHAPTER I

0. Introduction

The purpose of this work is to explore two aspects of the syntax of relative clauses in Navajo: (1) the conditions under which a relative structure is well-formed, and (2) the conditions on the deletion rule which is assumed to be involved in deriving the surface forms of relative clauses.

1. The Structure of the Navajo relative clause

Navajo is a verb-final language. Like many other verb-final languages, such as Japanese, Turkish, and Basque, the relative clause precedes the head noun phrase. Thus the sentence

(1) Ashkii aZhosh.
    (boy imp:3:sleep)

'The boy is sleeping.'

may be used to modify the noun phrase /ashkii/ 'boy' in a matrix sentence of the form

(2) Ashkii aZh44'.
    (boy imp:3:snore)

'The boy is snoring.'

The underlying structure of a complex sentence formed in this way would be roughly the following:
The element /-Igif/, glossed REL, is a relative complementizer. In fact, it is a generalized nominalizer appearing on any sentence dominated by the NP node. We will assume, here, without strong evidence one way or another, that the complementizer is "Chomsky-adjoined" to the embedded sentence. In relative clauses, there are two forms of this complementizer, depending on the tense of the embedded sentence to which it is attached: /-Igif/ is used if the tense is nonpast, as above; and /-y8e/ (appearing phonetically as /-y8e, -e, -a/ depending on phonological processes not relevant to the present discussion) is used if the tense is past, as will be seen in many examples to follow. We will also assume, again without strong evidence, that there is no verb phrase constituent of the node S. The operation which derives the surface form of a relative clause appears to be a deletion rule. Thus, for example, the first occurrence of /ashkii/ 'boy' in (3) above can be deleted, giving (4)
which directly underlies the sentence:

\[(5) \text{Afhosh -} \text{gif ashkii alh4'}. \]
\[(\text{imp:3:sleep-REL boy imp:3:snore})\]

'The boy who is sleeping is snoring.'

2. **Forward Deletion**

Sentence (5) above is produced by an operation which we may refer to as "backward deletion". That is to say, the noun phrase /ashkii/ 'boy' in the embedded clause is deleted under identity with the head noun phrase; since the head follows the relative clause (see (3) above), the deletion must operate "backwards", i.e., to the left, in order to derive (4). This is familiar to linguists who have examined relative clause formation processes in languages like Japanese and Turkish--it is the expected process in languages whose relative clauses precede the head noun phrase.

What makes Navajo particularly interesting in this area, however, is the fact that it allows "forward deletion" as well. That is to say, the head noun phrase itself can be
deleted under identity with the lower noun phrase. Thus, the second occurrence of /ashkii/ 'boy' in (3) could have been deleted to give the structure

\[
\begin{align*}
\text{(6) } & \quad \text{S} \\
& \quad \text{NP} \quad \text{V} \\
& \quad \text{S} \quad \text{REL} \\
& \quad \text{NP} \quad \text{V} \\
& \quad \text{ashkii} \quad \text{ažhosh} \quad \text{-ígíí} \quad \text{ažh44'} \\
& \quad \text{boy imp:3:sleep} \quad \text{imp:3:snore}
\end{align*}
\]

which directly underlies

\[
\begin{align*}
\text{(7) } & \quad \text{Ashkii ažhosh -ígíí ažh44'.} \\
& \quad \text{(boy imp:3:sleep-REL imp:3:snore)} \\
& \quad 'The boy who is sleeping is snoring.'
\end{align*}
\]

In fact, this is the preferred process in Navajo. The preference for forward deletion over backward deletion is so strong in Navajo that Brame in his excellent study of Navajo relative clauses (Brame, 1968) was not aware of the possibility of derived structures of the type represented by (4).

We should perhaps hasten to point out that the noun phrase /ashkii/ in sentence (7) is in fact still in the embedded clause. That is to say, it is not possible to argue that Navajo has an alternative relative clause structure in which the head precedes the relative clause and that the true
structure of (7) is something like

(8)

```
 NP   S   V
  |   |   |
 NP  S  REL
  |   |
 S   V
```

ashkii azhosh -igii azhag' 
boy imp:3:sleep  imp:3:snore

It is quite simple to show that (8) is not a possible structure in Navajo by arranging matters so that the lower noun phrase (i.e., the NP in the embedding) is flanked by material which also belongs to the embedding. Consider, for example, a structure of the form

(9)

```
 Adv  S   NP   S   REL   NP   V
     |   |   |   |   |
     S   V
```

`tl'édéddé' ashkii azhag' -44 ashkii yádooltih` 
`last:night boy imp:3:snore  boy fut:3:speak`

Backward deletion in this case would give

(10) `Tl'édéddé' azhag' -44 ashkii yádooltih.` 
    `(last:night imp:3:snore-REL boy fut:3:speak)`

'The boy who was snoring last night will speak.'
But forward deletion will remove the head noun phrase, leaving the lower noun phrase in the very position it occupied in the underlying structure--that is, forward deletion would give

\[(11)\]

```
S
   NP
  S
  REL
Adv NP V

\text{tl'\'ed\'e}^{4} \text{ ashkii } \text{ a\'zh\'a}^{4} \text{ -}^{4} \text{ y\'adool}^{4} \text{ itih}
```

which directly underlies the following sentence:

\[(12)\]

```
\text{tl'\'ed\'e}^{4} \text{ ashkii } \text{ a\'zh\'a}^{4} \text{ -}^{4} \text{ y\'adool}^{4} \text{ itih.}
```

'(last:night boy imp:3:snore-REL fut:3:speak)

'The boy who was snoring last night will speak.'

Here, the noun phrase /ashkii/ 'boy' is clearly within the embedded sentence, since it is preceded and followed by material belonging to that sentence.

Another fact, following directly from the possibility (or rather preference) of forward deletion in Navajo relative clause formation, is the ambiguity of certain sentences formed from transitive embeddings. Consider the structure
(13)

\[
S \rightarrow \text{NP } \text{NP} \\
\text{NP } \text{NP} \rightarrow \text{V} \\
\text{ashkii } \text{at'66d } \text{yiyiïïts} \rightarrow (n)ëq \text{ ashkii yžt}i'
\]

Backward deletion here would give:

(14) \text{At'66d } \text{yiyiïïts} \rightarrow (n)ëq \text{ ashkii yžt}i'.

\text{(girl 3:perf:3:see-REL boy imp:3:speak)}

'The boy who saw the girl is speaking.'

But forward deletion would give

(15) \text{Ashkii } \text{at'66d } \text{yiyiïïts} \rightarrow (n)ëq \text{ yžt}i'.

\text{(boy girl 3:perf:3:see-REL imp:3:speak)}

This sentence is ambiguous, since it could have been derived by forward deletion from

(16)
in which /at'éd/ 'girl' rather than /ashkii/ 'boy' was the head noun phrase. Thus, sentence (15) is ambiguously either 'The boy who saw the girl is speaking' or 'The girl whom the boy saw is speaking.' The existence of ambiguity in such cases seems not to diminish the Navajo preference for forward deletion over backward deletion.

3. A formalization of the deletion rule

"Pronominalization" in Navajo is also by deletion. And like relative deletion, it may apply forward or backward. As in English, and probably most languages, backward "pronominalization" is possible into subordinate clauses only. Thus, in a coordinate structure of the form

(17)

```
  S
 /\ 
/  \ 
NP  V NP  V
```

```
ashkii yah'îyá dôô  
boy perf:3:enter and

ashkii neezdá
boy perf:3:sit
```

only forward "pronominalization" (= deletion) is possible, giving

(18) Ashkii yah'îyá dôô neezdá.
(boy perf:3:enter and perf:3:sit)

'The boy entered and sat down.'
But in a structure of the form

(19)

(add) NP V

in which the initial clause is subordinate, either forward or backward deletion is allowed. Forward deletion would give

(20) Ashkii yah'iyá -(a)go neezdá.
(boy perf:3:enter-COMP perf:3:sit)

'When the boy came in, he sat down.'

and backward deletion would give

(21) Yah'iyá -(a)go ashkii neezdá.
(perf:3:enter-COMP boy perf:3:sit)

'When he came in, the boy sat down.'

It appears, therefore, that the deletion operation involved in developing sentences of the type represented by (18), (20), and (21) can be formulated as follows:

(22) Identical Noun Phrase Deletion
Identical Noun Phrase Deletion

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

1 2 3 4 5 \[ \Rightarrow \]

(a) 1 2 3 \[ 0 \] 5

(b) 1 0 3 4 5

Condition: 1. \( 2 = 4 \)

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

Notice that precisely this rule will effect the deletion operation involved in deriving the surface forms of relative clauses. In what follows we will assume that exactly the same deletion rule—i.e., (22) above—is operative in both cases.

A final introductory comment on the Navajo relative clause has to do with the possibility of extraposition. Consider, for example, the underlying structure (9) and its extrapoosed counterpart (23):

(23)

[Diagram]

ashkii yádooştih tl'édéédé áshkii ažháá'í-44
boy fut:3:speak last:night boy imp:3:snore

Forward deletion (i.e., forward in direction but not deletion of the head in this case) gives rise to
We assumed that extraposition was applied before deletion; however, precisely the same surface results could be obtained by first doing backward deletion and then extraposition. Evidence presented in Chapter III will weakly support the first alternative.

Also noun phrase postposing exists in Navajo. Generally a noun phrase that is postposed is the subject of the sentence. For example, structure (9) is given in its NP-postposed form in (25):

\[(25) \quad yádooZtih \ t'l'ééd44' \ aZh44'-44 \ ashkii \ a\#h44'-44 \ ashkii \ fut:3:speak \ last:night \ boy \ imp:3:snore-REL \]

This, by forward deletion, gives:

\[(26) \quad YádooZtih \ t'l'ééd44' \ ashkii \ a\#h44'-44. \quad (fut:3:speak \ last:night \ boy \ imp:3:snore-REL) \]

'The boy who was snoring last night will speak.'
and by backward deletion:

(27) Yádoótłii tli'édéé'í’ ázhóó’í’ 4 á ashkííi.
(fut:3:speak last:night imp:3:snore-REL boy)

'The boy who was snoring last night will speak.'

4. Definitions and purposes

Consider the structure (3) again:

In the discussions to follow, we will refer to the modified NP--i.e., NPj in (3)--as the head NP, and the identical NP in the embedding--i.e., NP1 in (3)--as the lower NP. And we will refer to the linkage between them, represented by the arrow, as the relative connection.

Chapter II will be concerned exclusively with the relative connection--it will attempt to determine what relative connections are allowable in Navajo, irrespective of the direction in which deletion operates to derive the surface forms of relative clauses.

Chapter III will be concerned with the deletion rule
itself--it will attempt to determine what constraints, in addition to the conditions appended to (22) in the formulation given above, must be placed on deletion of identical noun phrases in Navajo
0. Introduction

This chapter will be concerned with the conditions under which a relative connection may hold between a head NP and the lower NP. For the moment we will not be concerned with whether the head or the lower NP is deleted in the process of relativization, but only with the whether or not a given connection is possible at all.

1. Well-formed relative connections

iii Lower NP as subject

The connection between the lower NP /ashkii/ and the head NP /ashkii/ is a legitimate connection in the sense that there exists a well-formed relative clause which is derived from the underlying structure (3). In this instance, it happens that either the head or the lower NP may be deleted; in the first
case, we get

(7) Ashkii ažhosh -igii ažhag'.
    (boy imp:3:sleep-REL imp:3:snore)

'The boy who is sleeping is snoring.'

and in the second,

(5) Ažhosh -igii ashkii ažhag'.
    (imp:3:sleep-REL boy imp:3:snore)

'The boy who is sleeping is snoring.'

But our concern in this case is not with deletion but only with the question of what relative connections are allowed. As (3-7) shows, it is possible to have a relative connection between the head and the subject of the embedded sentence.

The following sentences provide additional examples of the head-subject connection.

(29)(a) Mosif abe' yi-žch'al -乞 deesyz.
    (cat milk 3:imp:3:lap_up-REL perf:3:fright)

'The cat that was lapping up the milk was frighten.'
Lower NP as object

In a similar fashion a relative connection between the head and the lower NP is possible when the latter functions as the object of the embedded sentence. For example, in

\[
\begin{array}{c}
\text{(30)} \\
\end{array}
\]

relative connection holds as shown by the arrow in (30). That is, the lower NP can appear as the object of an embedded sentence in a well-formed relative clause. In this instance, forward deletion is allowed. The head, /zéécháq'1/ 'dog', is deleted by the lower /zéécháq'1/, giving

\[
\begin{array}{c}
\text{(31)} \\
\end{array}
\]
Strictly speaking (31) is ambiguous. The sentence could mean that the boy kicked the dog and he is also barking. The underlying structure as given in (30) provides us the correct interpretation of (31). If it were to mean that it was the boy who was barking, then the deep structure would be similar except that the head NP would be /ashkil/ 'boy' instead of /Zeéchąą'į/. Other well-formed sentences showing head-object connections are illustrated below:

(32)(a) Hastiin at'êéd yiyliltsą -(n)ę ashchį.  
\(\text{(man \ girl 3:perf:3:see-REL perf:3:give:birth)}\)

'The girl that the man saw gave birth.'

(b) Hastiin jooł yiztalį -ę siltsoq.  
\(\text{(man \ ball 3:perf:3:kick-REL imp:3:flat)}\)

'The ball that the man kicked is flat.'

(c) Akallii béégashii yizloh -ę yilgoł.  
\(\text{(cowboy \ cow 3:perf:3:lasso-REL imp:3:bucks)}\)

'The cow that the cowboy lassoed is bucking.'

1.3 Subject-Object Inversion.

It should perhaps be pointed out that Navajo transitive sentences are, under appropriate conditions, capable of undergoing a rule of subject-object inversion (similar in its effect to the English passive transformation). This rule converts an underlying transitive structure of the form

(33)
into a derived structure of the form

(34)

For example, the sentence

(35)(a) Náshdőítsoh bîh yiyiissí.
   (lion deer 3:perf:3:kill)
   'The deer was killed by the lion.'

and other sentences illustrating the same phenomenon are:

(36)(a) Hastiin asdzáan yitzts'qs.
   (man woman 3:perf:3:kiss)
   'The man kissed the woman.'

(b) Asdzáan hastiin bizts'qs.
   (woman man 3:perf:3:kissed)
   'The woman was kissed by the man.'

(37)(a) Dzaanéez yishxash.
   (horse mule 3:perf:3:bite)
   'The horse bit the mule.'

(b) Dzaanéez bishxash.
   (mule horse 3:perf:3:bitten)
   'The mule was bitten by the horse.'

Notice that the rule effects an interchange of the subject and object NP's, and in addition, a prefix change in the verb word (the object prefix /yi-/ is replaced by /bi-/ ; see, for
example the articles referred to in footnote 3 and Young and Morgan, pp 48-49; Haile, pp 65, 119-120). The rule is not strictly free in its application—it is governed in roughly the following way. Nominal concepts are assigned to a hierarchy with those denoting humans at the top, and those denoting inanimate and abstract concepts at the bottom. If the subject and object are equal in rank, then the subject-object inversion rule applies freely; if they differ in rank, then the rule applies or does not apply in such a way to insure that the higher ranking nominal appears in initial, or "topic" position. We assume that, where the rule applies freely, its purpose is to bring a noun phrase into "aboutness focus", (to use the term suggested by Ken Hale, personal communication) i.e., the distinction between (35a) and (35b) is one of focus—sentence (35a) is primarily about the agent /náshdítsoh/ 'lion' while the inverted version (35b) is primarily about the patient /bólìh/ 'deer'.

With this introduction we can now illustrate the relative connection for relative clauses formed from inverted sentences. The structure below exemplifies the relative connection between a head noun phrase and the initial noun phrase of the inverted sentence which forms the relative clause—the initial noun phrase is the underlying object now topicalized to initial position:
Structure (38) underlies (39)

(39) \textit{lééchəq'1 ma'iitsoh bishxash -éé lééchəq'1 nahaZ'in}.
      \textit{dog wolf 3:perf:3:bitten} \textit{dog imp:3:bark}

'The dog that was bitten by the wolf is barking.'

derived by deletion of the head NP, and

(40) \textit{ma'iitsoh bishxash -éé lééchəq'1 nahaZ'in}.
      \textit{wolf 3:perf:3:bitten-REL dog imp:3:bark}

'The dog that was bitten by the wolf is barking.'

derived by deletion of the lower NP. Structure (41) exemplifies
the relative connection between the head and the medial NP in
an inverted sentence embedded as a relative clause—this
medial NP is the underlying subject now displaced from initial
position:
Structure (41) underlies

(42) Dibé żeččači bishxash -eq néhaż'ín.
(sheep dog 3:perf:3:bitten-REL imp:3:bark)
'The dog that the sheep was bitten by is barking.'

which is derived by deletion of head NP.⁴

In this discussion, we have referred to relative connection between a head NP and a subject or object of the embedded relative clause. We might just as well have used the terms 1st NP and 2nd NP since, as we have seen, a relative connection is possible between the 1st NP or the 2nd NP of the embedded sentence regardless of whether the latter functions grammatically as subject or object. Thus, in transitive sentences, whether inverted or not, either of the following relative connections is a legitimate one:

(43)(a)
1.4 Lower NP as object of Postpositional Phrase

As we saw above, it is possible for the lower NP in a well-formed relative connection to occupy subject or object position in the embedded sentence. In what follows, we will see that it is possible for the lower NP to have the relative connection with the head NP when it functions as the object of a postposition (P)—'postpositional phrases' will be symbolized PP. Postpositions in Navajo are the counterparts of English prepositions and their semantic content is similar to that of English prepositions. Consider, for example, the sentence

(44) (Shi) lééchą́ą́́́'1 bá hashtaaį́́.
((I) dog for:it imp:1:sing)

'I am singing for the dog.'

This sentence can be embedded in a relative clause, as is shown by:

(45) (Shi) lééchą́ą́́́'1 bá hashtaaį́́ -į́́į́́ naха́́į́́'in.
((I) dog for:it imp:1:sing-REL imp:3:bark)

'The dog that I am singing for is barking.'

which has the deep structure:
which has the deep structure:

(46)

Relative connection between the head and object of PP is acceptable. We might say briefly that the relation is well-formed only in the case of (45) and others like it. There exists in Navajo another phrase type—which we will refer to as the Enclitic Phrase (EP), see below—whose head cannot function as the lower NP in a well-formed relative connection. In (45) forward deletion occurred, but backward deletion is also possible, giving:

(47) (Shí) bá hashtaaž -í:gilí žééchaq'í naháil'in.
     ((I) for:it imp:1:sing-REL dog imp:3:bark)

'The dog that I am singing for is barking.'

(Although the pronoun /ší/ is part of the underlying structure, (47) is grammatical, in fact, preferred without it. This "pronoun deletion" is optionally applied in the above but in parts (b) of (48) and (49) deletion is obligatorially applied to impre
applied to improve the sentence stylistically. Other sentences derived from trees similar to (46) are here given:

\[(48)\]
(a) \(\text{Shf})\) baa níyá -(h)\(\text{4}\) naalnish.
((I) boy to:him perf:l:walk-REL imp:3:work)  
'The boy to whom I \text{walked} is working.'

(b) \(\text{Shf})\) baa níyá -(h)\(\text{4}\) ashkii naalnish.
((I) to:him perf:l:walk-REL boy imp:3:work)  
'The boy to whom I \text{walked} is working.'

\[(49)\]
(a) \(\text{Shf})\) hastiin bich'\(\text{4}\) ninlyA -(h)\(\text{4}\) aZhosh.
((I) man to:him perf:l:arrive-REL imp:3:sleep)  
'The man to whom I \text{arrived} is sleeping.'

(b) \(\text{Shf})\) bich'\(\text{4}\) ninlyA -(h)\(\text{4}\) hastiin aZhosh.
((I) to:him perf:l:arrive-REL man imp:3:sleep)  
'The man to whom I \text{arrived} is sleeping.'

1.5 \text{Lower NP as Possessor}

That a relative connection is possible between the head NP and lower NP when the latter is a possessor can be shown by structure (50) in which /\(\text{tēchq}a\text{4}^4/) is the possessor in the expression /\(\text{tēchq}a\text{4}^4\text{ bitsee}/ 'the dog's tail':

\[(50)\]

Forward deletion applied to (50) will give rise to

(51) \( \text{tse} \ bi\text{-}tsee' \ k'\text{ni}\text{gizh} - \text{z} \ naha\text{z}in. \)
\( \text{dog} \ its\text{-}tail \ 3\text{:perf}:3\text{:cut}\text{-off} \text{-dog imp}:3\text{:bark} \)

'The dog whose tail I cut off is barking.'

Here, as in previously illustrated examples, relative connection is acceptable. Other examples exemplifying forward deletion in structures similar to structure (50) follow:

(52)(a) \( \text{tse} \ bi\text{-}tsiigha' \ yish\text{e} - \text{z} \ naalgeed. \)
\( \text{horse its-mane 3\text{:perf}:1\text{:shear}-REL imp}:3\text{:buck} \)

'The horse whose mane I sheared is bucking.'

(b) \( \text{dib\text{e} } bi\text{-woo' haalt's}id - \text{z} \ n\text{as'ah}. \)
\( \text{sheep its-tooth perf}:3\text{:fall}\text{-out}-REL perf}:3\text{:butchered} \)

'The sheep whose tooth fell out has been butchered.'

(c) \( \text{hastiin bi-gaan k'\text{e}'}\text{ltq'} - \text{z} \ naalnish. \)
\( \text{man its-arm perf}:3\text{:break}-REL imp}:3\text{:work} \)

'The man whose arm broke is working.'
Backward deletion is also possible in structures of the type represented by (50), thus,

(53) Bi-tsee' k'inigizh -å- ñéch'q shí' naahít'in.
(its-tail 3:perf:3:cut:off-REL dog imp:3:bark)
'The dog whose tail I cut off is barking.'

1.6 Lower NP as deeply embedded subject

In principle, there is no upper limit to the number of S-nodes which may intervene between the head NP and the lower NP. That is to say, a relative connection can hold between a head NP and a lower NP which is indefinitely deeply embedded. This fact is exemplified by sentences of the type represented by the structure (54):

(54)

This structure underlies (55), derived by forward deletion of the head NP (and deletion of independent pronouns):
(55) Chidi dilwo' nisin ni -(n)q yíchxq'.
'The car he said he thought was fast is broken down.'

and (56) derived by backward deletion:

(56) Dilwo' nisin ni -(n)q chidi yíchxq'.
'The car he said he thought was fast is broken down.'

Structure (54) is constructed in the following way. The most deeply embedded sentence is:

(57) Chidi dilwo'.
(car imp:3:fast)
'The car is fast.'

This is embedded as a complement to the verb /ni-zin/ 'to think'
(first person /nisin/ ) to form the following structure:

(58) Shi S57 nisin.
(I S57 imp:l:think)
'I think S57.'

And this, in turn, is embedded as a complement to the verb /ni/ 'to say' to form:

(59) Bi S58 ni.
(he S58 imp:3:say)
'He said S58.'

Finally, this is embedded as a relative clause modifier to the NP /chidi/ 'car'.
It should perhaps be pointed out that verbs of saying, like /-ni/ 'to say', and certain verbs of thinking or desire, like /nĩ-zin/ 'to think want', take what one might call direct discourse complements in Navajo. Thus, in Navajo, one says:

(60) Naashnish nĩ.
    (imp:1:work imp:3:say)

to render he said he was working or he says he is working. That is, one says literally he said "I am working." Similarly, one says:

(61) Ndeeshnish nizin.
    (fut:1:work imp:3:want)

to render he wants to work. Again, the literal translation would be something like he thinks "I will work". So-called 'indirect discourse' is not used with these particular verbs. It is precisely this class of verbs which provides the clearest cases of the phenomenon we have just illustrated--i.e., relative connection between a head NP and deeply embedded lower NP. A strictly literal (though ungrammatical) English translation of (55, 56) would be something like the following: *the car which he said, "I think 'is fast'" is ruined. It is worthy of note that Navajo, unlike English, seems to allow the relative connection to penetrate into direct discourse. We will see shortly that while, in principle, there is no limit to the distance between a head NP and a lower NP in a well-formed
relative connection. There are nonetheless clearly defined limits on the structures into which the relative connection may penetrate—sentences like (55, 56) show that direct discourse is not such a case, however.

1.7 Lower NP as deeply embedded object

Structure (54), and the sentences derived from it, illustrate the relative connection between a head NP and a deeply embedded subject NP. The following structure is one in which the lower NP functions as the object:

(62)

\[
\begin{array}{c}
\text{NP} \\
\text{V} \\
\text{S} \\
\text{S} \\
\text{NP} \\
\text{NP} \\
\text{NP} \\
\text{NP} \\
\text{V} \\
(\text{bí}(\text{shí}) \text{ hastiin } \text{zééchqą́'į́ yiztaž nisin ní -ęę zééchqą́'į́ nahal'in} \\
(\text{he})(\text{I}) \text{ man dog 3:perf:3:kick imp:1:think perf:3:say-REL dog bark})
\end{array}
\]

This underlies (63), derived by forward deletion (and deletion of the independent pronouns):

(63) Hastiin zééchqą́'į́ yiztaž nisin ní -(n)ęę nahal'in.

(\text{man dog 3:perf:3:kick imp:1:think perf:3:-REL imp:3:bark})

'\text{The dog which he said he thought the man kicked is barking.}'
In literal (albeit ungrammatical) English translation, this would be: *the dog which he said, "I think 'the man kicked'" is barking. Again, the Navajo relative connection extends into a direct discourse complement. Sentence (63) is constructed in the same way (55) and (56) are. The most deeply embedded sentence is

(64) Hastiin tsééchaa'í yiztaaž.
    (man dog 3:perf:3:kick)

'The man kicked the dog.'

and it is the object /tsééchaa'í/ 'dog' which stands in the relative connection with respect to the head NP.

1.8 Lower NP as deeply embedded object of the Postpositional Phrase

In the following structure, constructed after the same fashion as (54) and (62), the lower NP is the object of a postposition:

(67)
Structure (67) underlies

(68) \[ \text{The dog whose leg he said he thought was broken is barking.} \]

(Or, literally: *the dog whose leg he said "I think 'is broken" is barking.)*

1.9) -go Complements

Structures (54), (62), (65), and (67) share the property that the embedding verbs belong to the class which might appropriately be called 'direct discourse complement verbs'. We have assumed here that the complements of such verbs are simply S, without so-called complementizers. Thus, sentence (60), for example, has the underlying structure.

(69)
And sentence (61) has the underlying structure

(70)

\[
S \rightarrow NP \rightarrow S \rightarrow V \\
(bf) (shf) ndeeshnish nízin \\
(he) (I) fut:l:work imp:3:think
\]

The surface structures indicate that there is no complementizer on the embedded sentences here and we have no reason to posit an abstract complementizer which deletes. We have also assumed that the complements here are S rather than NP over S, i.e., rather than:

(71)

\[
NP \rightarrow S
\]

The reasons for this are two-fold. First, we will see later on that certain true noun phrase complements behave differently from the direct discourse complements under relativization. Secondly, we notice that the inflections of the verb /ní-zin/ 'to think/want' in sentence (72) indicates that its complement is not an NP—this verb can also take NP objects, in which case the object prefix /yi-/- appears in the verb when both subject and object are third person:

(72) Hastiin atsì' yi-nízin. 
\(\text{man meat it-imp:3:want}\)

'The man wants meat.'
One might be tempted to associate penetration of the relative connection into lower embedded sentences with the occurrence or non-occurrence of a complementizer on the lower sentence. However, it happens that certain 'marked' complements can also be penetrated. Consider, for example, one of the Navajo equivalents of the English verb to claim: one says, literally, to walk around saying S. The complement, if this is the appropriate term, to the verb /náa-(gh)á/ (imp:3:walk) 'to walk around (singular)' is marked by the complementizer /-go/. So, for example, structure

(73)

\[
\begin{array}{c}
\text{S} \\
\text{NP} \\
\text{Adv} \\
\text{S} \\
\text{NP} \\
\text{V} \\
\text{S} \\
\text{COMP} \\
\text{NP} \\
\text{V} \\
\text{hastiin hastiin bééghashii dilwo' ni -(i)go naaghá.} \\
\end{array}
\]

underlies the sentence

(74) Hastiin bééghashii dilwo' ni -(i)go naaghá.

\[
\text{(man } \text{cow imp:3:fast imp:3:say-IMP:3:walk)}
\]

'The man claims that the cow is fast.'

or literally: the man walks about saying "the cow is fast".

Now, it happens, that the relative connection can penetrate into the direct discourse complement (itself embedded in the complement of /náa-(gh)á/, which is marked by the complementizer /-go/.) So
for example, consider the structure

(75)

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

\[(\text{shí})(\text{shí}) \text{lééchaq'í} (\text{shí}) \text{shishxash dishnį-(1)go naashá} \]

\[(\text{dog} \quad \text{1:perf:3:bite imp:3:say- imp:1:walk)} \]

which underlies

(76) \text{lééchaq'í shishxash dishnį-(1)go naashá.} \\
\text{(dog 1-perf:3:bite imp:1:say-COMP imp:1:walk)}

'I claim that the dog bit me.'

or literally: \text{I walk around saying "the dog bit me". It is possible for (76) to be embedded as a relative clause modifying /lééchaq'í/ 'dog':}

(77)

\[
\begin{array}{c}
S \\
| \downarrow \ \\
S \\
| \downarrow \\
NP \\
| \downarrow \\
NP \\
S \\
| \downarrow \\
REL \\
\text{lééchaq'í shishxash} \\
\text{dishnį-(1)go naashá -igii} \\
\text{lééchaq'í nahal' in}
\end{array}
\]
structure (77) underlies

(78) 166chaq'1 shishxash dishni-(1)go naasha-(h)igif
     (dog  l:perf:3:bite imp:l:say-COMP
     naasha-(h)igif naha'zin.
     imp:l:walk-REL imp:3:bark)

'The dog I claim bit me is barking.'

or literally: *The dog which I am walking about saying "bit me" is barking.

2. Ill-formed relative connections

Up to this point we have illustrated structures in which the relative connection between a head noun phrase and a lower noun phrase is well-formed—that is to say, structures which underlie well-formed relative clauses.

It was also shown that the material which intervenes between the head NP and lower NP is a true variable in the sense of Ross (1967). This is shown by the type of structure just examined, in which a lower noun phrase can in principle be indefinitely deeply embedded. The question now is whether there are constraints on the Navajo relative connections. For example, does the Navajo relative connection, regardless of the direction of deletion in deriving the surface forms of relative clauses, conform to the constraints on variables described by Ross.

2.1 Lower NP in Coordinate Structure

Let us examine the coordinate structure first. The following
structure shows that the coordinate structure constraint holds in Navajo:

(79)

\[
\begin{array}{c}
S \\
-|-|
\downarrow & \downarrow \\
NP & V \\
\uparrow & \uparrow \\
NP & REL \\
\uparrow & \uparrow \\
NP & NP \\
\end{array}
\]

\[\text{žééchą́́́j'í döö móší ažhígá -(n)é}_q \text{ žééchą́́́j'í nahal'ín}
\]

\[\text{dog and cat recip:imp:3:fight-REL dog imp:3:bark}
\]

for which there is no well-formed output. Sentence (80) below results from forward deletion

(80) \*žééchą́́́j'í döö móší ažhígá -(n)é}_q nahal'ín.
\[\text{(dog and cat recip:imp:3:fight-REL imp:3:bark)}\]

\*'The dog which and the cat were fighting is barking,' or literally: \*The dog which and the cat were killing each other is barking. The ungrammaticality of (80) shows that penetration into a coordinate structure is not allowed. Only ungrammatical sentences are generated from (79). It is possible, of course, to construct sentences in Navajo in which the conjoined noun phrases share a single verb in the main matrix sentence. For example, in the following, the conjuncts, dog and coyote, share \underline{bark}--in Navajo all caninees bark:
The subject of (81) can be relativized—the point here is that /naháž'in/ (imp:3:bark) 'barks' is the verb held in common by the conjuncts.

However this is not germane to our discussion on relative connections in coordinate structures. The truth of the matter is no connection exists between the head noun phrase and one of the conjuncts. This was pointed out in (80) when forward deletion was tried. Suppose that backward deletion were tried, the result would take roughly the following form:

Consequently the coordinate structure constraint holds—that is, the relative connection cannot penetrate into coordinate structures. (It might be said that penetration is blocked by a configuration of the type . When no well-formed relative connection exists; the badness is indicated by . Henceforth, all relative connections that yield ungrammatical derivations will be shown as illustrated.)
Another example drawn from a deep structure similar to (79) is given:

(84) *Ashkii d66 at'éd siké-(h)gé yigaá. 
   (boy and girl imp:3dual:sit-REL imp:3sg:walk) 
   '*The girl who the boy and were sitting is walking.'

It should be pointed out that the relative connection is also ill-formed in structure of the type represented by:

(85)

in which the connection is between the head noun phrase and a lower NP in a conjoined sentence.

2.2 Lower NP in Complex NP Structure

Another of Ross' constraints, namely the complex NP constraint, can also be shown to apply in Navajo. In this case, the relative clause is a complex NP structure of the form and violation of the constraint occurs when a relative connection penetrates into such a structure, regardless of the direction in which deletion applies. Operations within a complex NP structure are, of course, permissible; what is not permitted is an operation involving the head NP and the lower NP where a complex NP structure
intervenes. This will be made clear in what follows. The following is a well-formed relative clause

\[(86)\]

\[\begin{array}{c}
\text{hastiin } \text{žééchaq'i} \text{ bishxash} \-\text{é} \text{ hastiin be'eldōqh nēidiitaq} \\
\text{man} \text{ dog 3:perf:3:bite} \text{ man} \text{ gun 3:perf:3:pick:up}
\end{array}\]

As you will recall, (86) is similar to (3) in which the relative connection was well-formed and furthermore deletion in either direction yielded grammatical outputs. When (86) is itself embedded in a relative clause, we get roughly the following deep structure:

\[(87)\]

\[\begin{array}{c}
\text{hastiin } \text{žééchaq'i} \text{ bishxash} \-\text{é} \text{ hastiin be'eldōqh nēidiitaq} \\
\text{man} \text{ dog bite} \text{ man} \text{ gun pick:up gun fire}
\end{array}\]

In this structure \(S_2\) is modifying /hastiin/ 'man' in \(S_1\) which in turn is modifying /be'eldōqh/ 'gun'. This gives rise to
Sentence (88) is well-formed. The reason that structure (87) gives rise to grammatical sentences is because neither relative connection penetrates a complex noun phrase.

Now let us consider what would happen if /lééchaq'i/ were head and /nahal'in/ 'barks' were the main verb in the matrix; the underlying structure would have roughly the following appearance:

What we want to test for is whether /lééchaq'i/ of the deeply embedded sentence can have relative connection with the head noun phrase in (89). By forward deletion, we get:
(90) *Hastiin ʒééchą́ą́'į bishxash-ęį be'eldqoqh
   (man  dog  3:perf:3:bite-REL gun
   néidiitą-(n)ęį nahal'in.
   3:perf:3:pick:up-REL imp:3:bark)
*"The dog that the man who was bitten by picked up
the gun is barking."

and by backward deletion:

(91) *Hastiin bishxash-ęį be'eldqoqh néidiitą-(n)ęį
   ʒééchą́ą́'į nahal'in.
   dog imp:3:bark)
*"The dog that the man who was bitten by picked up
the gun is barking."

Sentences (89-91) clearly show that Ross' Complex NP Constraint
applies in Navajo; regardless of the direction in which deletion
applies. There is no grammatical result from deep structures
in which the relative connection penetrates into a complex NP
structure. So long as grammatical operations are performed
within an island defined by this constraint, then well-formed
sentences will be generated. Thus, (87) and its output (88) are
well-formed, while (89) and its corresponding surface forms are
ill-formed.

It was shown that the Complex NP Constraint holds in Navajo
in the corresponding fashion as English. As in English, complex
noun phrases form islands as defined by Ross.

2.3 Lower NP in Sentential Subject

Another structure which forms an island in English is the
sentential subject. This is one of the many areas in linguistics where much interest has been generated by "modern students of Navajo" who differ in opinion. These differences in opinion stem from the fact that impeccable sentences which illustrate the sentential subject are not easy to come by. For example,

\[
\begin{align*}
(92) & \quad \text{NP \ P \ V} \\
& \quad \text{NP \ S \ NOM \ V} \\
& \quad \text{NZéchä'í iisx'-} (n) \ gíí \ (shí) \ shí-ž beéhózin} \\
& \quad \text{dog perf:3:kill(something)-NOM (I) me-with is:known}
\end{align*}
\]

In (92) above, /NZéchä'í iisx'/ 'the dog killed (something)' is the sentential subject of /shí beéhózin/ 'is known to me'. This tree generates:

\[
(93) \quad \text{NZéchä'í iisx'-} (n) \ gíí \ shí-ž beéhózin.} \\
\quad \text{(dog perf:3:kill (something)-NOM me-with is:known)}
\]

'I know the fact that the dog killed (something).'</p>

The question might arise at this point whether what is really happening is that /NZéchä'í/ is the head noun phrase and that (92) is simply a relative clause, i.e., that the meaning of (93) in reality is 'the dog that killed (something) is known to me.' This cannot be, for the sentence

\[
(94) \quad *\text{NZéchä'í shí-ž beéhózin.} \\
\quad \text{(dog me-with is:known)}
\]

'I know the dog.'
is ill-formed. Thus, /Zéécháq'í/ cannot be the head NP in (93). Therefore, /Zéécháq'í iisxí-nígíí/ must be interpreted as a sentential subject. The literal translation looks something like this: The fact that a killing was carried out by the dog is known to me. Now let us embed (92) itself as a relative clause modifying /Zéécháq'í/, giving the following:

(95)

By forward deletion the following emerges:

(96) ? Zéécháq'í iisxí-(n)ígíí shí-z bééhózin-ígíí nahaž'ín.

'The dog that I know to have killed (something) is barking.'

To some native speakers of Navajo (96) is acceptable. To others it is of questionable grammaticality. The question is still open, therefore, as to whether the sentential subject
constraint is operative in Navajo.

It should be pointed out, however, that it is probably not really the sentential subject constraint which is at issue here. Rather, it is a question of whether or not the relative connection can penetrate into a nominalized sentence at all. Thus, consider sentences like

\[(97) \text{"I heard about the dog biting you." or ''I heard about the fact that the dog bit you.'}
\]

whose underlying structure is:

\[(98)
\]

In (98), the nominalized sentence is functioning as an object, not a subject. Still, it is questionable whether a relative connection can penetrate into the nominalized sentence here:
The result of forward deletion applied to (99) would be

\[
(100) \text{dog 2:perf:3:bite-NOM perf:1:hear-REL imp:3:bark}
\]

'The dog I heard bit you is barking.'

This is at least as questionable as (96).

The results of this inquiry are by no means firm. But let us assume for the moment that (96) and (100) are ungrammatical. If this is the case, then we might be able to generalize the complex NP constraint to cover them. Notice that we have assumed that the nominalized sentences in

\[
(93) \text{dog perf:3:kill-NOM me-with is known)}
\]

'(The fact) that the dog killed is known to me.' and
are in fact dominated by the NP node:

```
NP
  \__ S
```

This is not an entirely vacuous assumption in as much as they appear to function as true noun phrases, unlike the quotation-type complements of verbs like /nǐ-zin/ 'to think/ want' and /-ni/ 'to say'. One thing that supports this assumption is the fact that the third person object marker /yi-/ appears in the verb-word of sentences like:

(101) Hastiin kéékchi nishxash-īgīf yi-yī'nīi'.
    (man dog 2:perf:3:bit-NOM 3:perf:3:hear)
    'The man heard about the fact that the dog bit you.'

just as it does in any transitive sentence of the form subject-object-verb in which the subject and object are third person. Notice, by contrast, that the quotation complement of /nī-zin/ does not require this object prefix in the verb:

(102) Hastiin kéékchi nishxash nī-zin (*yī'nīzin).
    'The man thinks the dog bit you.'

However, the very same verb does require the /yi-/ prefix if its object is a true NP:
(103) Hastiin atsɁ' y'i-nízin (*nízin).
\[(\text{man meat } 3\text{-perf:3:want (perf:2:think))}\]
'The man wants meat.'

Now, assuming that it is correct to say that the nominalized sentences in (93) and (97) are true noun phrases, and if it is also true that they cannot be penetrated by the relative connection, we can generalize the constraint as follows:

(104) A relative connection cannot penetrate into a noun phrase.

This will cover both relative clauses

(105)(a)

and nominalized complements:

(b)
3. **Enclitic Phrases**

Constraints on variables such as those discussed by Ross, and exemplified above for Navajo are well known to linguists. The possibility that they are universal is supported by the Navajo evidence. We were able to test the constraints and determine that they hold in Navajo also, i.e., no relative connection is possible between the head NP and the lower NP where an island-forming configuration intervenes.

There is one possible island-forming structure which does not apparently exist in English or other languages yet studied. These are what we will term Enclitic Phrases (EP). Enclitic Phrases have a structure of roughly the following form:

(106)

```
EP
\---\---
NP  E
  tsékooh  -gó'ne'.
canyon    in
```

Although they are semantically quite similar, Enclitic Phrases differ from Postpositional Phrases in that enclitics, unlike postpositions, are **suffixed** to their objects. A postpositional phrase of roughly the same meaning as (106) is:

(107)

```
PP
\---\---
NP  P
  tsékooh  b-ii'.
canyon    1b-in
```

in which the postposition is a separate word, containing a prefix
in agreement with its noun phrase object. We will see shortly that there is another difference as well. Recall that a relative connection between a head NP and the NP object in a PP is well-formed (45)

\[(45) \text{čéčqá'í bá hastaaž-ígíí naház'íin.} \]
\[(\text{dog for:it imp:1:sing-REL imp:3:bark})\]

'The dog that I am singing for is barking.'

But not all relative connections between head NP and the NP object in a EP are well-formed. Consider the sentence:

\[(108) \text{Hastiin kin-ðí sidá.} \]
\[(\text{man house-at imp:3:sit})\]

'The man is sitting at the house.'

Suppose this were embedded as a relative clause modifying /kin/ 'house'.

\[(109)\]

This yields only ungrammatical results:
The house the man is sitting in collapsed.'

This shows that relative connection is ill-formed. One might suppose that the enclitic phrases are island-forming structures. However, this cannot be so because in some cases lower noun phrases in enclitic phrases can bear the relative connection with the head, giving perfectly grammatical sentential outputs. For example consider:

(111) Ashkii t'iis yi-yaa-di sidá-(h)ìq naa'ìíkèèz. (boy tree it-beneath-at perf:3:sit-REL perf:3:fall) 'The tree under which the boy was sitting fell over.'

which is underlain by:

(112)

So what is the answer? Why is the EP different from PP? Notice that the NP-object of PP is a true noun phrase since it can

appear with a demonstrative determiner:
appear with a demonstrative determiner:

(113) (Sh) díí tsékooh b-ií' sédá.
     ((I) this canyon it-in imp:l:sit)
     'I am sitting in this canyon.'

The PP structure is roughly

(107')

```
PP
   NP
   Det NP díí tsékooh b-ií'
       this canyon it-in
```

This is not the case with the corresponding EP:

(106')

```
EP
   NP E
   Det NP *díí tsékooh -góne'
       this canyon in
```

Correspondingly, the sentence

(114) *Shí díí tsékooh-di sédá.
     (I this canyon-at imp:l:sit)
     *I am sitting at this canyon.'

is ungrammatical.

So, possibly the explanation is that the objects of enclitics are not full noun phrases, but nouns, or perhaps simply place-names. This would cause a failure of identity between head NP
and lower NP. If this explanation is correct, then the offending EP structures do not involve a true relative connection, since the object of the enclitic is not a noun phrase.

4. Conclusion

This chapter has been concerned mainly with well-formed and ill-formed relative connections. In the process it was illustrated that certain constraints must be recognized. The suggestion is that these are not to be understood as constraints on any movement rule, because it is evident that no movement is involved in relative clause formation in Navajo. Nor can it be that the constraints are on deletion, because identical NP deletion by itself--i.e., other than in association with relative clauses--does not conform to the constraints. Consider the sentence:

(115) Ashkii yah-iflayá dóó kééchar-lá bishxash-éé aho'nii'hín.
    (boy in-perf:3:walk and dog 3:perf:3:bite-REL
        imp:3:bark)

'The boy walked in and the dog that he was bitten by started barking.'

which is derived from the deep structure
In deriving (115) from (116), the NP /ashkiyi/ 'boy' of the first conjoined sentence deleted /ashkiyi/ in the relative clause of the second of the conjoined sentences. The well-formedness of (115) shows that the complex NP constraint does not prevent deletion of an NP which is under identity with an NP outside that clause. Similarly, Identical NP Deletion is not prevented from erasing an NP within a coordinate structure. Consider in this connection, the sentence

(117)  Ashkii sh-aa niya-(a)go zeecha'i nabi'in
       (boy  me-to perf:3:come-COMP dog 3:perf:3:bark)

d66 aw66' haacha-igii yiinii'.
and baby imp:3:cry-NOM perf:1:hear)

'When the boy came to visit me, I became aware of the fact that the dog was barking at him and the baby had started to cry.'

This is derived, by Identical NP Deletion from an underlying structure of approximately the following form:
Here, the initial occurrence of /ashkii/ 'boy' deleted the second occurrence, even though the latter is in a conjoined structure.

Apparently, the complex NP constraint and the coordinate structure constraint come into play in Navajo in relation to a particular kind of linkage between identical NP's--namely, the relative connection as defined in Chapter I. The anaphoric connection which holds in structures like (116) and (118) is not subject to the constraint. We might formulate the Navajo constraint in roughly the following way:

(119) If a relative connection penetrates into an island, the structure is ill-formed.

This is a filtering device which rejects certain underlying
structures, and it is independent of the deletion rule which is responsible for deriving the surface forms of sentences with multiple occurrences of an identical NP.
0. **Introduction**

Any well-formed relative clause in Navajo involves the essential use of the deletion rule formulated in Chapter I. That is, for example, structure

\[
(3)
\]

\[
(3)
\]

must undergo the Identical NP Deletion to give either

\[
(4)
\]

by provision (b), or
by provision (a). Precisely the same alternatives are to be observed when deletion is used for "pronominalization". Thus, the following structure

may undergo Identical NP Deletion either by provision (a), that is, by forward deletion as in

(121) Ashkii yah-iiyá-(a)go źéčačä'í bishxash.
(boy into-perf:3:walk-COMP dog 3:perf:3:bite)

'When the boy walked in, he was bitten by the dog.'
or by provision (b) (i.e., backward deletion), in which case the following results:
The interesting property of Navajo relative clauses is that the head may delete—in fact, this is preferable. This fact allows us to use the same rule for both kinds of deletion. The purpose of this chapter is to explore the constraints on deletion itself. This is different from the topic of Chapter II which dealt with constraints on a certain aspect of the structure of relative clauses, namely the relative connection holding between the head and the lower NP.

Throughout Chapter II, forward deletion was applied in the illustrative sentences—giving rise to grammatical relative clauses. Forward deletion, which was so amply illustrated in Chapter II, was never blocked—there are, apparently, no constraints on forward deletion in the formation of Navajo relative clauses. Although deletion of the lower noun phrases (more commonly referred to in this paper as "backward deletion") exists in Navajo, not all applications of it give grammatical results. It would appear, therefore, that there are constraints on backward deletion.

We will see in this chapter that the apparent constraints on backward deletion in relative clauses extend also to the deletion used in "pronominalization".

Before we get into the details of deletion, let me point out that it is merely an assumption on my part that it is in
fact deletion that is involved in both cases. It could be argued that something else is involved in relative clause formation. There is at least one observation that might be used to argue that deletion in relative clauses is different in kind from the deletion in "pronominalization". That is, that the deletion in relative clause structures is of the type described in Chapter II, in which deletion is obligatory, while deletion of the type involved in structure like (120) is not obligatory though it is stylistically more preferred. Thus, the structure represented in (120) as it stands, without deletion, is a possible surface structure, although it is not stylistically the best. However, in a relative clause like

(123)

deletion of one or the other of the coreferential noun phrases is obligatory. Accordingly, forward deletion gives rise to

(124) Ashkii1 shich'1' yáážiti' -č1 ashkii1 yééchág'1 bishxash.
     (boy me:to perf:3:talk-REL dog 3:perf:3:bite)

'The boy who spoke to me was bitten by the dog.'
and by backward deletion the following results:

(125) Shich'ii' yááztii' -éé ashkii Zéécháa'í bishxash.
      (me:to perf:3:talk-REL boy dog 3:perf:3:bite)
      'The boy who spoke to me was bitten by the dog.'

Without deletion, i.e., if it is left as in the structure (123),
the sentence is extremely marginal in its grammaticality, if
acceptable at all. The preference for (124) and (125) over
the form in which no deletion has occurred is extremely strong
here. Despite this difference between relative clauses and
"pronominalization", let us continue to assume that the same
deletion is involved in both cases, and assume further that it
is the structural configuration

(126) \[ \text{NP} \quad \text{S} \quad \text{NP} \]

that is responsible for the special behavior of relative
clauses in Navajo--i.e., we propose that the obligatoriness or
optionality of coreferential noun phrase deletion is conditioned
by the configuration in which the coreferential NPs appear. We
are encouraged in this assumption by the observation that when
the relative clause is extraposed to the end of the sentence,
thereby destroying the \[ \text{NP} \quad \text{S} \quad \text{NP} \quad \text{NP} \] structure, deletion is
optional in the same sense as in (120) above. Thus, (127a)
without deletion is acceptable although less preferred than
(127b) in which deletion has occurred.
It is not fully understood why it is sometimes possible to leave coreferential noun phrases undeleted. Nonetheless, it appears to be true even in the case of structures which derive from relative clauses. This line of argument is weakened somewhat by the observation that not all Navajos agree in the grammaticality of (127a). I myself judge them weakly acceptable. Some other native speakers agree with me while others reject it. There are two aspects of such sentences that remain questionable. The first is the question of why it is possible to leave the coreferential NPs undeleted, and the second is the question of the acceptability or grammaticality of extraposition itself. It is not fully understood when extraposed relative clauses are stylistically acceptable. It is quite possible that further research on deletion will demonstrate the opposite of what will be assumed here—namely, that a deletion rule is operative in relative clause formations and in "pronominalization", and moreover, that the same rule is involved in both.

Let us turn now to a consideration of the constraints on the deletion rule.
1. Deletion of the first NP

Consider the following deep structure:

(128)

```
NP S NP S REL NP NP V
```

```
ashkii at'éd yiyiṣtság -(n)éq ashkii yalti'
boy girl 3:perf:3:see boy imp:3:speak
```

By backward deletion, (128) gives the following:

(129) At'éd yiyiṣtság-(n)éq ashkii yalti'.
     (girl 3:perf:3:see-REL boy imp:3:speak)

'The boy who saw the girl is speaking.'

It is interesting that sentence (129) is not ambiguous. We must ask why (129) could not have arisen from the structure

(130)

```
NP S NP S REL NP NP V
```

```
at'éd ashkii yiyiṣtság -(n)éq ashkii yalti'
girl boy 3:perf:3:see boy imp:3:talk
```

in which backward deletion deleted the object of the embedding rather than the subject. The fact is, apparently, in structures
like these, only the 1st NP in the embedding can be deleted—this constraint prevents backward deletion from creating ambiguity. Thus, the only output one could get from (130) would be by forward deletion (which incidently creates its own ambiguity, but one which is tolerated).

Evidently, what is at work is the following principle of surface structure interpretation, applying in transitive sentences in which the subject and object are third person.

\[ (131) \text{Surface Interpretation Principle} \]

(a) An NP immediately followed by a verb which has the object prefix /yi-/ is interpreted as the deep object (or patient).

(b) An NP immediately followed by a verb which has the object prefix /bi-/ is interpreted as the deep subject (or agent).

This conforms with the surface ordering of uninverted and inverted transitive sentences.

\[ (132) \]

(a) ...NP yi-verb, NP is deep object

\[
\text{'The horse kicked the mule.'}
\]

(b) ...NP bi-verb, NP is deep subject

\[
\text{'The mule was kicked by the horse.'}
\]

The principle embodied in (131) comes into play whenever a
noun phrase is deleted from a third person transitive sentence—
thus, whichever NP survives the deletion will be interpreted as
subject or object according to the principle.

Now let us reconsider structure (130). If backward deletion
applies to that structure, the result would be

(133) At'éd yiyiilt's-q-(n)ø'ø ashkii yálti'.
(girl 3:perf:3:see-REL boy imp:3:talk)

whose meaning, according to the surface interpretation principle,
is in conflict with that of the deep structure. The surface
interpretation principle designates /at'éd/ "girl" as the object
of /yiyiilt's/ (3:perf:3:see) while the deep structure asserts
that it is the subject of the verb. This sort of conflict between
depth and surface structures is avoided by the constraint on
backward deletion in relative clauses—i.e., the requirement that
only the first noun phrase may be deleted.

It should be pointed out that this constraint is not
limited to backward deletion in relative clauses alone; in fact,
it is not limited to relative clauses, but is a general fact
about deletion of noun phrases functioning as subjects or
objects. Consider, for example, the structure

(134)

\[
\begin{array}{c}
S \\
\text{NP} \\
\text{V} \\
\text{NP} \\
\text{V} \\
\text{NP} \\
\text{NP} \\
\text{V} \\
\end{array}
\]

ashkii ch'énádzid d66 ashkii at'éd yizts'qs
boy perf:3:wake and boy girl 3:perf:3:kiss
In this structure, only forward deletion can apply, and it does not involve relative clauses. When deletion applies, it gives

(135) Ashkii ch'énádzid d66 at'élid .yizts'qs.
     (boy perf:3:wake and girl 3:perf:3:kiss)
     'The boy woke up and (he) kissed the girl.'

This sentence is unambiguous and has the reading according to which /at'élid/ 'girl' is interpreted as the object of the second conjoined sentence.

By comparison, consider the structure

(136)

Here deletion cannot apply because it would give rise to a surface structure whose interpretation, according to the surface interpretation principle, would conflict with the deep structure. In other words the result would be

(137) Ashkii ch'énádzid d66 at'élid .yizts'qs.
     (boy perf:3:wake and girl 3:perf:3:kiss)
     in which /at'élid/ must be interpreted as the object of the second conjunct in direct conflict with its function in the deep structure.

In other words, the "First Noun Phrase Constraint" (1st
(138) **First Noun Phrase Constraint**

In transitive sentences of the form

\[ NP_1 \; NP_2 \; V \]

only the first may be deleted.

This constraint will insure the correct operation of the surface interpretation principle.

Let us consider structure (136) again. Deletion will be prevented from applying to that structure by the First-NP Constraint. However, there is a possible surface structure deriving from (136). Recall, to begin with, that in conjoined structures of this type, it is possible to forego deletion—i.e., (136) itself is a possible surface structure, though not preferred. However, it is also possible to construct a derivation from (136) which uses deletion. Thus, if subject-object inversion first applies to the transitive conjunct, a derived structure will be created to which deletion will be allowed to apply

(139) 

```
S   S
  / \  /  
NP  V  NP NP V
ashkii ch'énadzid dō6 ashkii at'ēēd bizts'qs
```
(140) Ashki11 ch'énádzid d6é at'éd bi-zts'qs.
(boy perf:3:wake and girl 3-perf:3:kiss)
'The boy woke up and he was kissed by the girl.'

whose meaning, is determined by the surface interpretation principle, conforms with the deep structure. That is, /at'éd/ 'girl' is interpreted as deep structure subject because it is immediately followed by a verb which has the object prefix /bi-./

Although the First-NP Constraint seems strict, there are some cases where the second noun phrase can be deleted--this is especially true when the subject (and first) NP is either first person or second person. Consider the following

(141)

in which /lééchqa'1/ 'dog' is the second noun phrase in the embedding. Backward deletion is possible here, giving:

(142) SConsulta l'éqz lééchqa'1 na ház'in
(3:perf:1:kick-REL dog imp:3:bark)
'The dog that I kicked is barking.'
Apparently, this is allowed because the inflection on the lower verb (/sētaʔ/ 3:perf:1:kick) insures recoverability of the object-subject relation. Therefore, the constraint must be limited to transitive sentences in which both the subject and object are third person:

\[(143) \text{First Noun Phrase Constraint} \]

In transitive sentences of the form

\[\text{NP}_1 \quad \text{NP}_2 \quad V\]

in which both NPs are third person, only the first may be deleted.

In pursuing the question further, we find that additional refinement of the First-NP Constraint must be considered. It happens that the ranking which governs the application of subject-object inversion, together with verbal selection, may permit violations of the First-NP Constraint.

Consider, first, the following structure, which will be used to exemplify the way in which nominal ranking interacts with the First-NP Constraint:

\[(144)\]
In this case, it is possible for the head NP /Zeëchq4'1/ 'dog' to cause the lower NP to delete, because of the ranking principle. The surface interpretation principle (131) will interpret /ashkii/ 'boy' as the object, but that will require /Zeëchq4'1/ 'dog' to be subject—but this will conflict with the ranking principle which disallows NP1 NP2 yi-V in which NP2 outranks NP1. The principle is sufficiently strong here to permit the underlying subject-object relation to be recovered—the NP /Zeëchq4'1/ must be interpreted as object, because the underlying sequence /Zeëchq4'1 ashkii yiyiiks4/ 'the dog saw the boy' is unacceptable, according to the ranking principle. Thus, we must refine the deletion constraint so that it operates only when NP1 and NP2 are equal in rank and, therefore, equally capable of being in first or second position in transitive sentences. But this will not be sufficient, as will be seen below.

When the coreferential NPs are equal in rank, the deletion rule may apply if the verbal selection helps to recover the grammatical relations. Consider, for example, the structure (145), and its accompanying sentence.

(145)
Normally, and according to the First-NP Constraint, the deletion of the embedded object noun phrase /bëhé/ 'lamb' would be forbidden; however, backward deletion gives rise to a sentence which is acceptable:

(146) Dibëtsa'ii yishchî-(n)ëë bëhé nizhóní.
(ewe 3:perf:3:bare-REL lamb imp:3:cute)
'The lamb that the ewe gave birth to is cute.'

Here, the verbal selection helps to recover the deleted NP--ewes give birth, while lambs do not. To say this differently, the surface interpretation principle (131) would interpret /dibëtsa'ii/ 'ewe' as the object and the other noun phrase /bëhé/ 'lamb' as the subject because /dibëtsa'ii/ immediately precedes the /yî-/ form of the verb. However, the probability of a little lamb giving birth to a full size ewe is non-existent. Therefore, the only possible semantic interpretation is that the ewe gave birth and that it was the lamb that was given birth to. Although the First-NP Constraint is violated, the verb meaning 'give birth to' insures recoverability of the grammatical functions of the deleted noun phrase in (146).

2. A reconsideration of the deletion constraint

In the foregoing, we have been concerned mainly with the constraints on the deletion rule. It is evident from the data already presented that any such condition will require a considerable amount of refinement, amounting, as we shall see, to a "piling up" of ancillary conditions. Notice that if we
continue to assume the necessity of adding conditions on the
deletion rule, then the First-NP Constraint will now be required
to mention a number of things in addition to the simple linear
order of noun phrases. The revised constraint will now look
like the following:

(147) First Noun Phrase Constraint

In transitive sentences of the form

\[ \text{NP}_1 \text{ NP}_2 \text{ V} \]

only the first NP may be deleted if:

\begin{enumerate}
\item[(a)] both NPs are third person, and
\item[(b)] the NPs are equal in rank, and
\item[(c)] the verb is one which could select either \text{NP}_1 or \text{NP}_2 as the subject or object.
\end{enumerate}

It is evident that this is no longer merely a constraint
involving the first noun phrase. It is much more than that.
The assumption that a rule condition is involved here becomes
even more questionable when we consider other facts.

The original constraint (138), as we have seen, can be
violated if the string which results from deletion can be
interpreted in a way which is consistent with the structure
existing before deletion—this is possible where the subject
or object is other than third person or where selection and
ranking permit recovery of underlying grammatical relations.
However, the constraint (138) is not sufficient. There are
cases in which the first NP may not be deleted from third
person transitive sentences even where they satisfy the total
complement of conditions in (147). Thus, consider the underlying structure

(148)

\[
\begin{array}{c}
S \\
\quad \quad NP \\
\quad \quad \quad NP \\
\quad \quad S \\
\quad \quad \quad NP \\
\quad \quad \quad \quad V \\
\quad \quad \quad S \\
\quad \quad \quad \quad NP \\
\quad \quad \quad \quad \quad V \\
\quad \quad \quad \quad \quad NP \\
\quad \quad \quad \quad \quad \quad V \\
\frac{\text{ashkii} \quad \text{at'66d} \quad \text{hastiin} \quad \text{yizta}=\phi \quad \text{at'66d} \quad \text{yizts'qs}}{	ext{boy} \quad \text{girl} \quad \text{man} \quad 3:\text{perf}:3:\text{kick} \quad \text{girl} \quad 3:\text{perf}:3:\text{kiss}}
\end{array}
\]

What distinguishes this tree from those considered heretofore is the fact that the relative clause modifies the object of the matrix rather than the subject. Forward deletion of the head NP /at'66d/ 'girl' would give

(149) Ashkii at'66d hastiin yizta=\phi yizts'qs.
    (boy girl man 3:perf:3:kick-REL 3:perf:3:kiss)

'The boy kissed the girl who kicked the man.'

which is acceptable, though somewhat difficult to process due to the center embedding. However, if backward deletion is applied, even though it would do so in conformity with (147), the surface structure cannot be interpreted in a way which corresponds to the underlying structure. Backward deletion would give

(150) Ashkii hastiin yizta=\phi at'66d yizts'qs.
    (boy man 3:perf:3:kick-REL girl 3:perf:3:kiss)

'The boy who kicked the man kissed the girl.' or
'The man whom the boy kicked kissed the girl.'

This surface structure does not have an interpretation that corresponds to the deep structure in (148). Instead, it is parsed in such a way that the substring /ashkii hastiin yiztal-\[^{'}/ \ yiztal-\[^{q}/ is the subject of the matrix and /at'\[^{e}/d is the object (i.e., as if derived by forward deletion from either (151) or (152)).

(151)

(152)

In other words the structure imposed upon the surface string is:

(153) (a) (ashkii hastiin yiztal-\[^{q}/ (at'\[^{e}/d) (yizts'\[^{q}/s) (boy man 3:perf:3:kick-REL) (girl) (3:perf:3:kiss)
rather than

(b) (ashkii) (hastiin) yiztaξ-€ε at'€€d (yizts'qs). 6
(boy) (man 3:perf:3:kick-REL girl) (3:perf:3:kiss)

Thus (150), means either the boy who kicked the man kissed the
girl (corresponding to (151) or the man whom the boy kicked
kissed the girl, (corresponding to (152)). It cannot mean the
boy kissed the girl who kicked the man (corresponding to (148)).
The same problem arises when the embedded relative clauses are
inverted. Thus, the structure

(154)

\[
\begin{array}{c}
S \\
NP \quad NP \quad V \\
S \quad REL \\
NP \quad NNP \quad V \\
ashkii \quad hastiin \quad at'€€d \quad biztaξ-€ε \quad hastiin \quad yizts'qs
\end{array}
\]


gives rise to (155) by backward deletion.

(155) Ashkii at'€€d biztaξ-€ε hastiin yizts'qs.
(boy girl 3:perf:3:kick-REL man 3:perf:3:kiss)

The surface interpretation of (155) is the boy who was kicked
by the girl kissed the man. That is to say, it is parsed as

(156) (a) (Ashkii atNF€€d biztaξ-€€) (haNPlin) (yiztv'qs).
(Ashkii at'€€d biztaξ-€€) (hastiin) (yizts'qs).
rather than

(b) (Ashkii) (at' ééd biztaž-è̈ hastein) (yizts'qs)

The same problem arises in "pronominalization" when the surface interpretation principle interprets the NP remaining after deletion in a way which conflicts with the deep structure. Consider, for example

(157)

hastiin yah-ìiyá áąd66 at'ééd hastein 1ìî' yizloh ni man in-perf:3:walk and:then girl man horse roped say

from which the following results by forward deletion.


The natural parsing of this sentence is the one corresponding to the meaning the man entered and then (he) said the girl roped the horse. This is clearly in conflict with the deep structure (157). Parsing was done in roughly the following way:

(159) (a) S (Hastiin yah-ìiyá) áąd66 (at' ééd 1ìî' yizloh) (ni). instead of
Consider what these facts would require us to do to the First-NP Constraint (147)

\[
\text{(160) First Noun Phrase Constraint} \\
\text{In transitive sentences of the form} \\
NP_1 \ NP_2 \ V
\]

only the first NP may be deleted if:

(a) both NPs are third person, and
(b) the NPs are equal in rank, and
(c) the verb is one which could select either \( NP_1 \) or \( NP_2 \) as the subject or object.

Exception: The first NP in an embedded clause may not delete if that embedded clause is preceded by an NP belonging to the next clause up.

The exception clause of (160) places a constraint on the deletion of the first noun phrase in structures of the type represented by (148), (154), and (157)--in these sentences, the embedded clauses are such that an initial NP should be capable of being deleted; in order to account for the unacceptability of deletion, the exception clause of (160) is required. It should be pointed out at this juncture that the exception clause of (160) pertains not only to deletion of an initial NP in a transitive clause but to deletion of an initial NP in an intransitive clause as well. Thus, for example, the subject of the embedded clause in
cannot delete, without giving rise to a surface structure whose interpretation will be in conflict with the deep structure. Thus,

\[(162)\quad \text{Hastiin deezgo'–q at'áed yoo'í.} \quad \text{(man perf:3:trip-REL girl 3:perf:3:see)}\]

is parsed in such a way as to associate the main clause subject /hastiin/ with the embedded verb--i.e., as follows:

\[(163)\quad \text{NP NP V} \quad \text{(Hastiin deezgo'–q) (at'áed) (yoo'í)}\]

However, there are sentences which contain verbal elements that violate (160) as it now stands. Selectional restrictions sometimes allow deletion of the first noun phrase, in direct contradiction to the exception clause. This can be exemplified by the deep structure
Deletion of /tl'66l/ 'rope' in the embedded sentence gives rise to the weakly acceptable sentence (165).

(165) Hastiin náádéél -éę tl'66l náyoo'áád.
(man perf:3:fall-REL rope 3:prog:3:unravel)

'The man is unraveling the rope that fell.'

To some speakers of Navajo, (165) would be totally unacceptable. That is, for them, there is no way in which (165) can be ambiguous—i.e., with both a semantically good and a semantically anomalous reading. But others are able to get a reading corresponding to the deep structure (164). For those who reject this interpretation of (165), the linear order of terminal constituents (NP) NP V so strongly influences their understanding of the sentence that the NPs appearing to the left of it, despite contrary semantic considerations. That is to say, these speakers respond to the (NP) NP V string, and thereby parse sentence (165) in the following way:
'The man who fell rope-like is unraveling the rope that fell.'

And they do not revise their analysis on the basis of the semantic cues.

Even where there is equality in rank, selection will, for some speakers, allow deletion in contravention of the exception clause of (160). For example, where a sentence involves clear and well-known facts of nature—e.g., the details of procreation—strict observance of the selectional restrictions will allow violation of (160). Consider, for example, the following deep structure along with its accompanying sentence (168):

(168) Shizh6'6 b4h6 yishcht-(n) (dibgtsaii yinoolch644)
     'My father is chasing the ewe that gave birth to the lamb'.

Again this sentence is weakly acceptable for the same reason
that (165) was—that is, some speakers reject it as readily as they do (165). For those speakers who accept the intended interpretation of (165) and (168), it is clear that the amended version of the First NP Constraint is inadequate to describe the acceptability facts associated with coreferential noun phrase deletion.

It is perhaps not irrelevant to mention at this point that an audible pause before and after the medial relative clause strengthens the acceptability of (165) and (168), and moreover, even helps to recover the intended meaning in cases of the type represented in (150) and (155). The pausing helps to indicate how constituents are to be grouped in interpreting the sentences

\[
\text{(150')} \quad \text{Ashkii PAUSE hastiin yiztal-} \text{éé} \text{d PAUSE yizts'es.}
\]

\[
\text{(155')} \quad \text{Ashkii PAUSE at'ëéd biztal-} \text{éé} \text{ hastiin PAUSE yizts'es.}
\]

This fact makes it seem unlikely that deletion can be ruled out at all in the problem cases which the exception clause of (160) is intended to cover. This shows that whatever effort might be made to strengthen (160), its weaknesses will surface when further data are considered, as illustrated in our most recent examples above.

The complexity of the conditions which would be needed are further illustrated by sentences of whose underlying structure is of the following form
according to the exception clause of (160), the first noun phrase of the embedded sentence here should not be capable of deletion. However, the natural way to derive a surface structure from this tree is to allow the subject noun phrase of the main clause to "pronominalize" (i.e., to delete) the subject of the embedded clause. This deletion together with the deletion of the head of the relative clause gives the perfectly grammatical sentence (170)

(170) Hastiin nil' biztal -e yil-adeesdqoh.  
(man horse 3:perf:3:kick-REL with-perf:3:shoot)  
'The man shot the horse that kicked him.'

In order to accommodate the indefinitely many sentences of the type represented by (170), the exception clause of (160) would require further amendment.

It has become obvious that further refinements of the Constraint (160) will merely lead to a rule padded with cumbersome conditions which miss the generalization lurking in the data. The question is still open as to the best way to formulate an adequate rule for the phenomena discussed.
The failure of the attempt to place conditions upon the deletion rule itself stem from the fact that it is not possible, prior to deletion, to characterize succinctly and exhaustively those structures which could be involved in faulty derivations. The most general characterization of faulty derivations cannot be made until deletion has applied—i.e., until the entire derivation is available. By now, it should be relatively obvious that the derivations which we have designated as faulty all have the following characteristics in common:

(171) A derivation is faulty if the interpretation which derived surface strings receive is at variance with that determined by the underlying structure.

This has been the prevailing feature of the derivations which we have attempted to exclude by means of Constraints on the deletion rule.

The above considerations suggest that we abandon the attempt to place constraints on the deletion rule and that we return to the original formulation of it which was given in (22). This rule will then operate to produce both the derivations we have identified as well-formed and those we have identified as ill-formed. Under this proposal, the rules of the grammar will not themselves distinguish the two types of derivations—they will produce both types without differentiation. However, it is clear that the description of the Navajo sentences involved does not end, here, for it is possible to differentiate the two types
in rather general terms. But in order to differentiate them, it is necessary to call into play certain principles which speakers appear to use in interpreting sentences. One of these principles, or strategies, was mentioned earlier—it had to do with the interpretation of the grammatical function of third person noun phrases in transitive sentences. Let us refer to this as the Grammatical Relation Principle; it is reformulated in more complete form here:

(172) Grammatical Relation Principle

In a string of the form

(NP) NP V

containing only third person NPs,

the NP immediately preceding the verb is interpreted as

(a) The object if the verb-word contains the object prefix /yi-/ ,
(b) the subject if the verb-word contains the object prefix /bi-/ .

One case of the derivations which we have designated "ill-formed" can be characterized in terms of the strategy embodied in the Grammatical Relation Principle—thus, if the application of this principle yields an interpretation which is at variance with the interpretation determined by the underlying structure, the derivation is ill-formed. For example, backward deletion in a structure of the form.
yields a faulty derivation by this definition, since the output

(174) Ashkii yiyiilts4 -(n)ə at'64d yidlohh.
    (boy 3:perf:3:see-REL girl prog:3:laugh)

'The girl that saw the boy is laughing.'

receives an interpretation by (172) according to which /ashkii/ 'boy' is the object of the embedded verb /yi-yiilts4/ (yi-perf:3: see), in defiance of the underlying structure in which /at'64d/ 'girl' is the object of the verb.

It is appropriate at this point to mention that Jorge Hankammer (1973) has suggested two universal principles which will jointly achieve the same results as the above proposal--these are

(175) [his (93)] The Structural Recoverability Hypothesis

Deletion rules involving variables are universally subject to a transderivational condition which prevents them from applying in such a way as to introduce structural ambiguity. (p. 40).
(176) [his (127)] The Peripheral Gap Principle

If any interpretation is possible for an unacceptably ambiguous structure, it will be that interpretation under which the location of the deletion site is peripheral rather than internal (p. 51).

These principles, applied to (174) will insure that the only interpretation possible is that in which the peripheral, i.e., first, noun phrase is the one deleted. That is to say, it will allow only the interpretation which is consistent with an underlying structure of the form

(177)

in which backward deletion creates a peripheral deletion site.

However, sentences of the type represented by (174) are not the only ones which are involved in derivations which we have classified as ill-formed. And it is not clear whether Hankammer's principles can be extended to accommodate the class represented by (150)--Hankammer's principles perform essentially the same function as the First Noun Phrase Constraint, which we saw failed to exclude backward deletion in structure (148), repeated here for convenience:
Here, although backward deletion would create a deletion site which is peripheral in the embedded clause, the output is nonetheless interpreted in a way which is at variance with the underlying structure. The principle of surface interpretation involved here is different from the Grammatical Relation Principle, instead, what is involved, is a Parsing Principle whose effect is to assign noun phrases as clausemates to verbs in surface strings. Notice that if backward deletion applies to (148), it yields a string of the form

(150) Ashkii hastiin yiztal -6e at'eed yizts'qs.
    (boy man 3:perf:3:kick-REL girl 3:perf:3:kiss)

'The boy who kicked the man kissed the girl.'

which is parsed in such a way as to associate both /ashkii/ 'boy' and /hastiin/ 'man' as clausemates to the verb /yi-ztal/ (yi-perf:3:kick). Thus, /ashkii/ 'boy' is interpreted as the subject of that verb, and /hastiin/ 'man' is interpreted as its object; the string /ashkii hastiin yiztal-6e/ is interpreted as the subject of the main verb /yi-zts'qs/ (yi-perf:3:kiss), and /at'eed/ 'girl' is interpreted as its object—all of this is in
defiance of the underlying structure, obviously.

A precise and complete account of the strategies employed in parsing surface structures in Navajo will not be attempted here, but it is evident that an important part of the strategies can be characterized in terms of the following procedure for associating simple NPs as clausemates of Vs in the terminal string: (a) In a subsequence of the form NP NP V, both NPs are clausemates of V if the subsequence exists as a well-formed simple sentence of Navajo. (b) In a subsequence of the form NP V, the NP is a clausemate of V if the subsequence exists as a well-formed simple sentence of Navajo. Now consider a sentence of the form

(178) Ashkii žééchá'į bishxash -ęę yizloh.

This surface string allows only interpretations according to which the substring /ashkii žééchá'į bishxash-ęę/ (NP NP V) is bracketed together as a sentence. It does not allow an interpretation under which the shorter substring /žééchá'į bishxash/ (NP V) is bracketed together, excluding the initial NP /ashkii/. In order to exclude this interpretation, it is evident that the two parts of the parsing strategy must apply in the order given—in fact, if the longer analysis applies, the shorter one cannot. This suggests, therefore, that the two strategies should be expressed in a single formula by means of the parenthesis notation employed in phonology for disjunctive ordering:7
Elementary Parsing Principle

In a subsequence of the form (NP) NP V, (NP) NP is clausemate with V if the subsequence is a well-formed simple sentence of Navajo.

In the case of a sentence of the type represented by (178) above, the longest analysis—i.e., NP NP V—applies, thereby assigning the first noun phrases as clausemates of the verb /bi-shxash/ (bi-perf:3:bite)—i.e., as its subject and object, respectively. This parsing therefore excludes the interpretation which would be determined by an underlying structure of the form:

By contrast with (178), consider the string

(181) Ashkii deezhtlizh -ęę at'ęęd yizts'qs.
    (boy perf:3:fall-REL girl 3:perf:3:kiss)

Here, the shorter analysis—i.e., NP V—applies to associate the NP /ashkii/ 'boy' as a clausemate to the verb /deeshtlish/ (perf: 3:fall). This parsing, therefore, precludes the interpretation determined by the underlying structure
The elementary and tentative Parsing Principle (179) can, like the Grammatical Relation Principle, be used to characterize a class of derivations which we have designated as faulty. Thus, if the Parsing Principle yields a result which is at variance with the underlying structure—as would be the case if backward deletion applied to (180) or to (182)—the derivation is ill-formed.

Although we cannot investigate them thoroughly here, it is evident that the strategies for parsing surface structures involve much more than (179) alone. This principle asserts that any well-formed terminal (NP) NP V subsequence will be interpreted as a sentence. However, when one considers the interpretation of the sentence as a whole, there are circumstances under which such an interpretation can be reconsidered. This is not the case in sentences like (178) and (181), but it is the case in sentences like (178). Consider, for example a sentence like (183) below in which the second clause is constructed in a manner similar to (170):
(183) At'éd yicha d66 ashkii tsé'édọ'ii
(girl imp:3:cry and boy fly
b-aa-nát'į-(n)igii nei znaleź.
3-p:imp:3:bother-REL 3:imp:3:kill)

(a) 'The girl is crying and the boy is killing the flies that are bothering him.'

(b) 'The girl is crying and the boy is killing the flies that are bothering her.'

(c) 'The girl is crying and killing the flies that are bothering the boy.'

The Parsing Principle (179) would allow only one interpretation of the second clause--namely, that in which the substring /ashkii tsé'édọ'ii b-aa-nát'į-(n)igii/ 'The boy is bothered by the flies' is bracketed together as a sentence; this is interpretation (c). However, the sentence is in fact ambiguous, allowing two interpretations in which the noun phrase /ashkii/ is not a surface clausemate to the verbal expression /b-aa-nát'į/ (3-p-imp:3:bother). Interpretation (a) corresponds to the underlying structure
and interpretation (b) corresponds to an underlying structure identical to this but with /at'ééd/ 'girl' instead of /ashkii/ 'boy' in the relative clause. Finally, interpretation (c) corresponds to an underlying structure identical to (173) but with /at'ééd/ 'girl' as the subject of the verb /naïtseed:\ na-yi-ïtseed/ (adv-yi-imp:3:kill).

Notice that in all interpretations of (183), only forward deletions have applied. One might be tempted to assume that the Parsing Principle (179) applies only to derivations in which some backward deletion has applied. However, this will not do. Recall that sentence (158), repeated here for convenience

(158) Hastiin yah-íyá áádóó at'ééd îî' yizloh ni.
    (man into-perf:3:walk and:then girl horse roped say)

cannot receive an interpretation corresponding to (157)

(157)

That is to say, forward deletion in (157) yields a surface string in the second conjunct which Parsing Principle (179) interprets in a way which is at variance with the underlying structure--so the Parsing Principle appears to apply in certain cases of forward deletion.
What is special about sentences like (170) and the second conjunct of (183) is the main verb. The main verb is transitive in these sentences and there is, so to speak, competition between the embedded verb and the main verb over the NPs in the surface string—each verb seeks to get its full complement. It is precisely in cases where there are not enough NPs to go around that ambiguity is allowed, i.e., that the elementary Parsing Principle (179) can be overruled. The "missing" NP—or the deletion site—can in such cases be located either at the periphery of the main clause or at the periphery of the embedded clause. This is precisely the ambiguity observed in (170) and the second conjunct of (183). In sentences of the type represented by (150), and (181), on the other hand, the Parsing Principle does not result in a surface string which deprives the main verb of a full complement of NPs. It is possible that it is in cases of this type that the Parsing Principle (179) cannot be overruled. Consider again sentence (178):

(178) Ashkii žééchág'í bishxash -ég' Zift' yizloh.

The Elementary Parsing Principle assigns /ashkii/ and /žééchág'í/ to the verb /bishxash/, as its object and subject respectively; and this assignment allows an interpretation of the main clause according to which the transitive verb /yizloh/ gets its full complement of NPs—i.e., /ashkii žééchág'í bishxash/ is its subject and /Zift'/ as its object. In this case, and in all similar cases so far examined, the Parsing Principle cannot be
overruled. The only interpretation allowed for (178) is that which corresponds to the underlying structure

(185)

which has as its translation 'The boy that the dog bit roped the horse.'

It is beyond the scope of this paper to suggest a detailed set of procedures for interpreting Navajo surface structures. However, we believe that it is clear that the proper characterization of the distinction between derivations which we have designated as well-formed and those we have designated as ill-formed requires an appeal to such interpretation strategies. We do not take a position on the issue of the exact status of the surface interpretation principles in the description of Navajo. However, it is unlikely that the matters discussed in this chapter have to do with conditions on the proposed deletion rule (22). Instead they have to do with more general considerations relating to the recovery of deleted elements. Thus, the matters discussed in this chapter are independent of the question as to whether the apparent deletion involved in relative clause formation is in fact the same process as that involved in
"pronominalization"—that is, the joint representation of those phenomena as (22) is neither supported nor challenged by these data. Other considerations will have to settle that issue.

The results of the present investigation do, however, highlight the importance in linguistic performance of perceptual strategy of the type studied by Fodor, Bever, and others, and briefly reviewed in Bever and Langendoen (1971).
Footnotes

1. imp:3:sleep represents the following: mode (imp-imperfective; perf-perfective; fut-future) : 3rd person subject :sleep. The verb /yi-zta/ 'kicked' is glossed as 3-perf:3:kick in which the first "3" is the third person object. Hyphens are used whenever possible to help the reader; hyphenation in the gloss corresponds to that in the Navajo. Where hyphenation is not possible, a colon is used to indicate the relevant meaningful elements. In general, the verbal glosses are arranged according to the following order of elements:

   (object prefix), (mode), (subject prefix), (stem)

2. -go complements are discussed in section 1.9 in Chapter II.

3. This rule is described in Kenneth Hale, 1970. "A Note on Subject-Object Inversion" (to appear in Festschrift, Henry and Renée Kahane) and Mary Helen Taptto, 1971, "Ranking in Navajo Nouns."

4. (42) is ambiguous, in the expected way, but the main verb helps to recover the intended meaning. However, it should be mentioned that where the embedded clause has a subject and object of equal rank and head deletion has applied, there is a strong tendency to give the sentence the interpretation according to which the first lower NP is the one which bears the relative connection with the head. Thus, in reading or hearing sentence (42), this interpretation is foremost and the reader or hearer
is 'taken aback' by the main verb, whose semantics force him to reconsider his interpretations.

5. One might be tempted to think that this is because Navajo relativization does not involve movement. However, Ellen Kaufman has shown that there is a movement rule in Navajo which allows extraction from discourse (Kaufman, 1972).

6. As we will point out later the problem represented by this type involves critically the role of perceptual strategies of the type being studied by psycholinguists. A review of this psycholinguistics research is found in Bever and Langendoen (1971).

7. For discussion on disjunctive ordering see SPE, p. 29-30.

8. However, this leaves unexplained why the second clause in (146) is regarded as unambiguous. The main verb here is not strictly speaking transitive--whether this has anything to do with it, we cannot tell. It seems much more likely that the true explanation is to be found in the fact that sentences like (158) allow ambiguity of parsing because either parsing will make the same claim about the grammatical relation which hold in the terminal NP NP V string. Thus, in (158), /hastiin/ 'man' is the semantic object of the verb /bizta\x22/ whether or not it is parsed as a clausemate with it.
Bibliography


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