MATERIALS - I

STRUCTURE OF NAVAJO

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1) Lįį’ dzaanéez yiztal  'The horse kicked the mule.'
horse  mule  kicked

2) Tl’izí dibé yizgoh  'The goat buttcd the sheep.'
goat  sheep  butted

3) Ashkii at’ééd yizts’qs  'The boy kissed the girl.'
boy  girl  kissed

4) Lééchąą’í másí yishxash  'The dog bit the cat.'
dog  cat  bit

5) Hastiin asdzání yiyiiltsé  'The man saw the woman.'
man  woman  saw

6) Hastiin ashkii yizloh  'The man roped the boy.'
man  boy  roped

7) Mą’ii dibé yiyiissí  'The coyote killed the sheep.'
coyote  sheep  killed

8) Másí lęéchąą’í yizghas  'The cat scratched the dog.'
cat  dog  scratched

NOTE: These sentences are all of the type N_s N_0 Yi-V, where N_s is the subject, N_0 is the object and V is the verb.

1') Dzaanéez lįį’ biztal  'The mule was kicked by the horse.'
mule  horse  kicked

2') Dibé tl’izí bizgoh  'The sheep was butted by the goat.'

3') At’ééd ashkii bizts’qs  'The girl was kissed by the boy.'

4') Másí lęéchąą’í bishxash  'The cat was bitten by the dog.'

5') Asdzání hastiin biilts’ę  'The woman was seen by the man.'

6') Ashkii hastiin bizloh  'The boy was roped by the man.'

7') Dibé mą’ii biissí  'The sheep was killed by the coyote.'

8') Lééchąą’í másí bishxash  'The dog was scratched by the cat.'
NOTE: The 'primed' sentences are hypothesized to be variants of the unprimed sentences (1-8). We derive the primed sentences by a transformation called subject-object-inversion.

Subject-Object-Inversion (SOI): Given any sequence of the form N N yi-V, invert the order of the N's and changed yi to bi.

More formally, we use the following statement:

\[
\begin{array}{cccc}
N & N & yi-V \\
1 & 2 & 3 & 4 \\
2 & 1 & bi-4 \\
\end{array}
\]

The next sentences force us to state SOI more precisely.

9) \textit{li\textquoteleft i} tsé yizt\textquoteleft al
   horse rock kicked

10) Másí abe' yîlch'al
    cat milk is lapping

11) Léécháá'í leets'aa' yiłnaad
    dog dish/plate lick

12) Másí naaltsoos yizghas
    cat paper scratch

13) Dibé tlo'oh yiłchozh
    sheep grass eat(browse on greens)

14) Ashkii naaltsoos yizhjih
    boy book/letter grabbed, siezed

NOTE: The primed versions of sentences 9-14 are unacceptable to Navajo speakers. An unacceptable (ungrammatical) sentence is marked with an asterisk (*).

9') *Tsé li\textquoteleft i bizt\textquoteleft al

10') *Abe' másí biłch'al

11') *Leets'aa' léécháá'í bilnaad

12') *Naaltsoos másí bizghas

13') *Tlo'oh dibé biłchozh

14') Naaltsoos ashkii bizhjih
NOTE: A means for blocking the unallowed sentences are conditions of the following type.

Condition 1: If the object is inanimate, don't apply SOI.

or

Condition 1': Only apply SOI if the second N is animate.

\[ N \quad N \quad yi-V \quad [+an] \]

NOTE: The following set of sentences will allow us to sharpen the formulation of SOI.

15) Ashkii tsé'édq'ii yik'idiiltáál
   boy fly stepped on

16) Ashkii biįh yiskah
   the boy deer shoot(with an arrow) shafted

17) At'ééd dibé yizlooh
   girl sheep roped

18) Ashkii gah yisił
   boy rabbit caught

15') *Tsé'édq'ii ashkii bik'idiiltáál

16') *Biįh hastiin biskah

17') *Dibé at'ééd bizlooh

18') *Gah ashkii bisił

NOTE: At this point we might assume that Navajo nouns are ranked into the following hierarchy

<table>
<thead>
<tr>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
</tr>
<tr>
<td>Animal</td>
</tr>
<tr>
<td>Thing</td>
</tr>
</tbody>
</table>

Condition (Improved): If the object noun is lower in the hierarchy than the subject N, don't apply SOI.

The next sentence will now require some additional adjustments in our analysis.
19') *Tsah asdzání yishish
   needle woman stuck (pricked)
   (O.K. is Tsah is someone's name.)

19') Asdzání tsah bishish
   (Sentence not good unless tsah is flying around.)

19) Corrected to: *Tsah asdzání yaa'íjil
   needle woman stick
   **like an insect?**

19') Asdzání tsah baa'íjil

20) *Béésh ashkii yizghish
    knife(metal)boy cut

20') Ashkii béésh bizghish
    boy knife cut

21) *Wóláchíí hastiin yishish
    red ant man stung

21') Hastiin wóláchíí' bishish

22) *Ts'í'ii lįį' yiyiits'óóz
    mosquito horse sucked on

22') Lįį' ts'í'ii biíts'óóz

NOTE: At this point it appears that even more steps in the hierarchy must be made. Before the categories 'insect' and inanimate object are added some additional sentences must be considered.

23) *Dichin dibé yiyiišį
    hunger sheep

23') Dibé dichin biísxį

24) *Dikos awéé' yídoolna'
    dough baby affected

24') Awéé' dikos bidoolna'

NOTE: For the time being we shall assume that the hierarchy has two poles, human and abstraction. We can fill in the categories at a later time. This would be a good research topic for a Navajo speaker.
Additional fact:
[personification of objects puts them on an equal status with humans]

Abstractions

NOTE: There are now (at least) two methods to handle the yi/bi alternations.

1) SOI applies freely (all the time). The sentences are then subject to the following output constraint:

   Output Constraint - Star any sentence in which the second noun outranks the first (rule as ungrammatical).

2) Subject-Object-Inversion:

   Given a sentence of the form N N yi-V, invert the order of the Ns and change the yi to bi.

   SOI

   Condition:  (a) Optional if the subject and object are equal in the hierarchy.
               
               (b) Blocked if subject outranks object.
               
               (c) Oblig. if object outranks subject.

We next consider some simple syntactic properties of some Navajo sentences.

Lįį' dzaanéez yiztal + Dzaanéez lįį' biztal

Díí lįį' niléí dzaanéez yiztal + Níléí dzaanéez díí lįį' biztal

This horse that mule

NOTE: The sequences Díílįį', and niléí dzaanéez move as units. We label a sequence of Det(erator) + noun as a noun phrase. A noun phrase will have at least the following structures.

```
NP
  Det  N
  NP  N
```
Determiners

díí - 'this', eii lìì - 'that' (close to you, near addressee),
níléí - 'that' (distant, but visible), naghái - 'that' (approximate), éí - 'that' (distant, referential, evocative).

For sentences, we assume the following minimal structures.

There are other possibilities for the expansion of the NP.

\[ NP \rightarrow NP \ (dòó \ NP)^n \]

This structure satisfies our test as a constituent since it moves in one piece.

A) Ashkii dóó at'édéd hastiin yiyiiltsą
   boy and girl man saw

B) Hastiin ashkii dóó at'édéd biiltsą

NOTE: The change between (A) and (B) can also be shown as a change in sentence structure.
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(A)

\[ S \]

\[ NP \]

\[ NP \]

\[ N \]

\[ ashkii dóó at'éd hastiin yiyižtsą \]

\[ V \]

\[ NP \]

\[ NP \]

\[ N \]

\[ hastiin ashkii dóó at'éd bižtsą \]

---

**Carl's Question:** Can dóó conjoin NP's of unequal rank, and if so, how do you apply SOI?

**Test Sentences:**

Asdzání hastiin dóó líl' yiyižtsą (O.K.)

woman man and horse saw

25) Hastiin ashkii dóó léé'chą́'i yinoolchéeł man boy and dog is chasing

25') Ashkii dóó léé'chą́'i hastiin binoolchéeł (O.K.)

26') *Hastiin lééchą́'i dóó ashkii yinoolchéeł

For 26', the violation is in the order *lééchą́'i dóó ashkii.

This is shown more easily with the following sentence:

*Lééchą́'i dóó ashkii ahinoolchéeł

dog and boy are running

Thus there is now prima facie evidence for the first treatment of the yi/bi alternation. Let SOI apply freely, but then have a condition which blocks cases in which NP's in construction violate the hierarchy. This condition will have to be studied in more detail because of the apparent grammaticality of 25'.

It looks like linear order is what crucial.
I  Internal Structure of the Navajo Verb

Complex forms exhibiting the yi-/bi- alternation.

(1) a. Ashkii at'éd yizts'qs
   The boy kissed the girl.

    b. At'éd ashkii bizts'qs
       The girl was kissed by the boy.

(2) a. Ashiiké at'éd yizts'qs
   The boys kissed the girl.

    b. Ashiiké ndilt'éego at'éd yizts'qs
       The boys being-two the girl kissed.

(3) a. Ashiiké at'eed deizts'qs
   The boys the girl4 kissed (pl.)

    b. At'éd ashiiké dabizts'qs
       The girl (by)the boys (was) kissed.

NOTE: The plural is indicated with the prefix da in 3b. One would then hypothesize that dei in 3a results from a parallel sequence of da + yi. Some additional examples follow in (4) and (5).

(4) a. Hastiin ashkii yilhozh
   The man is tickling the boy.

    b. Hastóí ashkii deilhozh
       The men are tickling the boy.

  a'. Ashkii hastiin bilhozh
      The boy is being tickled by the man.

  b'. Ashkii hastóí dabilhozh
      The boy is being tickled by the men.

(5) a. Hastiin lii' yizlozh
   The man roped the horse.

    b. Hastóí lii' deizlozh
       The men roped the horse.
(5) a'. At'ééd ashkii bizlo8
The girl was roped by the boy.

b'. At'ééd ashiiké dabizlo8
The girl was roped by the boys.

NOTE: Hypothesizing a uniform morphology, a plural da may be added to verbs exhibiting the yi-/bi- alternation. The next step is to account for the resulting sequences de from underlying da + yi.

First alternative:

a) y drops between vowels (da + yi + da + i)

b) a becomes e before i (da + i + de + i)

* (but iiyiisxi 'he killed it' occurs)

Second alternative:

a) a becomes e before y (da + yi + de + yi)

b) y drops between vowels (de + yi + de + i)

Third alternative:

a) ay + e (da + yi + de + i)

The next set of examples (6-10) will illustrate the iterative form of the verb.

(6) a. Hastiin ashkii yilhozh
The man is tickling the boy.

b. Hastiin ashkii néiłhoosh
The man usually tickled the boy.

tickles

a'. Ashkii hastiin bilhozh
The boy is being tickled by the man.

b'. Ashkii hastiin ná Bílhoosh
The boy was usually tickled by the man.

tickles

(7) a. Béhé dibé yiit'o'
The lamb is suckling on the sheep.

b. Béhé dibé néít'o'
The lamb usually suckles on the sheep.
(7) a'. Dibé béhé biłt'o'.
b'. Dibé béhé nábílt'o'.

(8) a. Asdzání hastiin yiłtlah.
The woman is anointing the man.
b. Asdzání hastiin néiłtlah.
a'. Hastiin asdzání biłtlah.
b'. Hastiin asdzání nábíltlal

(9) a. Hastiin ashkii néiłhosh
The man usually tickled the boy.
b. Hastói ashkii néîeilhosh.
a'. Ashkii hastiin nábílhosh.
b'. Ashkii hastói nídabílhosh.

(10) a. Asdzání hastiin néiłtlah
The woman usually anoints the man.
b. Sánii hastiin nééeiltlal
The women
a'. Hastiin asdzání nábíltlal
b'. Asdzání hastiin nídabíltlal

NOTE: From the preceding example sentence we establish the following order of constituents in the Navajo verb.

<table>
<thead>
<tr>
<th>Iterative</th>
<th>Plural</th>
<th>Yi</th>
<th>Stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>ná</td>
<td>da</td>
<td>bi</td>
<td></td>
</tr>
</tbody>
</table>

We now hypothesize the following set of informally stated phonological rules.

a) Tone Raising: A prefix immediately between the stem and a preceding high tone becomes high tone.

b) y-dropping: y drops (is elided) between two short vowels.

c) a-fronting: a becomes e before i

d) ná becomes ní before da (more specifically, before prefixes beginning with d, n, j and s). The sequence ní is an orthographic convention for a syllabic nasal (n).
The next examples illustrate the adverbial prefix yisdá ('safety').

(11) a. Hastiin ashkii yisdéílteeh
The man carries the boy to safety.

b. Hastói ashkii yisdádeilteeh

a'. Ashkii hastiin yisdábílteeh

b'. Ashkii hastói yisdádabilteeh

Sample derivation for verb in (11a).

yisdá+yi+lteeh
yisdá+yí+lteeh (by Tone Raising)
yisdá+i+lteeh (by y-dropping)
yisdé+i+lteeh (by a-fronting)

(12) a. Hastiin at'éd yisdéílóós
The man lead the girl to safety.

b. Hastói at'éd yisdádeilóós

a'. At'éd hastiin yisdábílóós

b'. At'éd hastói yisdádabilóós

The following sentences illustrate the relative positions of the adverbial yisdá-, the iterative ná-, and the plural da-:

Hastiin at'éd yisdánéíltééh
yisdá+ ná + yi + îtééh
adv + iterative + yi + stem

Hastói at'éd yisdánideiltééh
yisdá + ná + da + yi + îtééh
adv + iterative + plural + yi + stem

The following sentences introduce an additional iterative prefix náa(ná)-:

(13) a. Ashkii at'éd yizts'qs
The boy kissed the girl.

b. Ashkii at'éd náánéízts'qs
The boy kissed the girl again.
(13) a'. At'ééd ashkii bizts'qs.
    b'. At'ééd ashkii nábízts'qs

(14) Hastói at'ééd yisdánáánideińtééh
    Hastói at'ééd yisdánináádeińtééh
    The man usually saves the girl and is doing it again.

There are two forms for the iterative náá(ná):
    nááná    before vowels and/or the stem
    náá      before a prefix that begins in a consonant

**SUMMARY CHART:**

<table>
<thead>
<tr>
<th></th>
<th>Adverbial</th>
<th>Iterative</th>
<th>Plural</th>
<th>Stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>yisdá-</td>
<td>ná-</td>
<td>da-</td>
<td>yi-</td>
<td>. .</td>
</tr>
<tr>
<td></td>
<td>nááná-</td>
<td></td>
<td>bi-</td>
<td></td>
</tr>
</tbody>
</table>
The Organization of the Verb

Navajo Sentence Types

Transitives: Ashkii łįį' yizloh
   The boy roped the horse.

Intransitives:
   Hastiin naalnish
   The man is working
   Ashkii hataal
   The boy is singing
   At'eed yálti'
   The girl is speaking
   Hastiin Na'nízhoozhíí naalnish
   The man in Gallup works
   Ashkii tsékooh góyaa (h)adáátlizh
   boy canyon down into fell down
   At'ééd Kinyañígoó naayá
   girl Flagstaff to went

NOTE: The last 3 sentences contain enclitic phrases. These particular phrases contain a noun which refers to a place and an attached particle.

-đi  'at, in'
-góó  'to'
-góyaa  'down into'
NOTE: We distinguish enclitic phrases from post positional phrases and assign the following different structures.

```
   S
   /\  
  NP  EP  V
   /\  /\  /\ 
  N  N  E  -di  naalnish
```

```
   S
   /\  
  NP  P(ost) P(ositional) Phrase  V
   /\  /\  /\  /\  /\ 
  N  N  P(ost) P(osition)  yi-ch'i'  yalti'
```

NOTE: Two reasons for the difference can be given now.

1) There is a closer physical attachment between the enclitic particle and the noun.

2) A post position can be stranded. The following sentences are related by Subject Object Inversion.

At'eed ashkii yich'i' yalti
The girl is speaking to the boy.

Ashkii at'eed bich'i' yalti
The boy is being spoken to by the girl.

The alternation is demonstrated by the contrast between sentences (a-c) and sentences a'-c').

a. Ashkii hastiin ya naalnish
   The boy is working for the man.

b. At'eed ashkii yich'i' yalti'
   The girl is speaking to the boy.

c. Ashkii asdzani yiighahi sizi
   The boy is standing by the woman.
a'. Hastiin ashkii bá naalnish
b'. Ashkii at'éd bich'i yálti'
c'. Asdzání ashkii bíighahgi sizí

The following is a sentence with a true post positional phrase.

Ashkii liz' tl'óól yee yizloh
boy horse rope with roped

We turn now to the study of the verb particles in the positions in front of the stem.

In the last session the following positions were established:

<table>
<thead>
<tr>
<th>Adv.-</th>
<th>Iterative</th>
<th>Plural</th>
<th>Stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>yisdá</td>
<td>ná</td>
<td>da</td>
<td>yi</td>
</tr>
<tr>
<td>'into safety'</td>
<td></td>
<td></td>
<td>bi</td>
</tr>
<tr>
<td>ha</td>
<td>náá(ná)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'up &amp; out'</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following sentences show surface forms of verbs with attached prefixes.

Hastiin ashkii yisdéíltteeh (< yisdá+yí…l-teeh)
man boy carry to safety

Hastiin ashkii ch'ílteeh (<ch'í-yí-l-teeh)
man boy carrying out horizontally

Ashkii hastiin ch'ibílteeh (<ch'í-bí-l-teeh)

Hastiin ashkii heilteeh (<ha+yí+l-teeh)
man boy up & out is carrying

Ashkii hastiin habílteeh (<ha+bi+l-teeh)

To test whether ha- is an adverb we make the verb iterative. This leads to an abstract structure like the following:

ha+ná+yí+l+tééh (high tone added to root when iterative)

The resulting surface form is:

hanéíltééh

The bi form is as one would predict.

hanábílítééh
With the ch’i- prefix one has the next forms:

yi-form: ch’énéiltéeh
    'repeatedly carry out horizontally'

bi-form: ch’ínábiltéeh

Hastiin askkii yisdéilóós
The man is leading the boy to safety.

Hastiin askkii ch’íiloós
The man is leading the boy out horizontally.

Ashkii hastiin ch’íbilóós
The boy is being lead out horizontally by the man

Ashkii liß’ hailóós (heilóós)
The boy leads the horse up and out.

*Liß’ ashkii habilóós (The bi-form violates the hierarchy.)

The next sentence contains the iterative prefix.

Ashkii liß’ hanéidloós
The boy usually lead the horse up and out.

^ na- prefix also occurs with the meaning 'around'.

yi-form: Hastiin askkii neilte
    The man is carrying the boy around.

plural yi-form: Hastóí askkii ndeilte (<na+da+yi+1-té)

bi-form: Ashkii hastiin nabiitó

plural bi-form: Ashkii hastóí ndabiitó (<na+da+bi+1-te)

Questions: What does a verb look like that contains both the iterative ná and the na meaning 'around'?

The man usually carries the boy around.

ninéiltéeh (<na+ná+yi+lteeh)

The form ninéiltéeh establishes the initial position of the prefix na-.

Examples of Prefixes on Intransitives:

Liß’ naalgeed
The horse is bucking around.
Lįį' ch’ilgééd
The horse is bucking out (like out of a chute).

Lįį' haalgééd
The horse is bucking up and out.

Lįį' ch’ínágo'
The horse usually bucks out.

Lįį' ninálgo' (<na+ná+1go’)
The horse usually bucks around.

Rule: An adverbial or plural prefix with a low tone will lengthen its vowel if no prefix containing a vowel appears between it and the stem.

Taking the stems as a starting point we now try to discover the properties of the slots immediately to the left of the stem.

Ashkii naané The boy is playing.
Ashkii naalnish The boy is working.
Ashkii naałchid The boy is gesturing.
Ashkii naa’na’ The boy is crawling.

We now consider the iterative and plural forms of these sentences:

Iterative
Ashkii niná’neeh
Ashkii ninálnish
Ashkii nináłchi’
Ashkii niná’nah

Plural
Ashkii ndaané
or Ashiiké ndaané
Ashiiké ndaalnish
Ashiiké ndaalchid
Ashiiké ndaa’na’

Iterative & Plural
Ashiiké ninádaa’neeh
Ashiiké ninádaalnish
Ashiiké ninádaałchi’
Ashiiké ninádaa’nah
These sentences exhibit the four verb classifiers of Navajo. The classifiers no longer have productive semantic significance. They are merely part of the verb. They are:

- θ-
- i-
- l-
- d-

na-θ-né
na-i-nish
na-l-chid
na-d-na' (The effect of the 'd' is to glottalize the following n.)

yimas 'he is rolling along'
yii'mas 'we are rolling around' (The underlying 'd' causes the glottalization of the following nasal.)

naa'na' 'crawling around' (<na+d+na')
niná'nah

naniná 'You are walking around.' (<na+ni+ná)

At one time the classifier system was used to mark transitivity. Navajo still preserves some relics of this process.

tó yibéézh The water is boiling.
tó yilbéézh He is boiling water.
Ashkii niiltlah The boy stopped.
Hastiin ashkii niiniiltlah The man stopped the boy.

We turn now to the non-third person pronouns.

Subject Pronouns
shí 'I' 1st person singular
ni you 2nd person singular
shí dóó askii
ni dóó askii
shí dóó askii
nihí First or Second Non-singular
shí dóó askii

The following are sentences with 1st & 2nd person subjects.

Shí naashné I play.
Ni naniné You play.
Shí dóó askii neii’né I and the boy play.
Ni dóó askii naahné You and the boy play.
(naohné)

Shí dóó askii néeii’né I and the boys play.

An analysis of the preceding verbs isolates the following items.

na-sh-né
na-ni-né
na-iid-né
na-oh-né
na-da-iid-né

The following rules are necessary.

d+n → 7n
a+o → a+a (in the speech of some people)

We thus establish the following subject markers:

-sh- 1st sing.
-ni- 2nd sing.
-iid- 1st non-sing.
-oh- 2nd non-sing.

With the verb 'work' we have the following forms.

Shí naasheñsh (<na+sh+nish)
Ni nanilnish (<na+ni+l+nish)
\[
\begin{align*}
\text{[shí dóó ashkii]} & \quad \text{neilnish} \quad (<\text{na+iid+1+nish}) \\
\text{ni dóó ashkii} & \quad \text{naolnish} \quad (\text{na+oh+1+nish}) \\
\text{nihi} & \quad \text{naolnish}
\end{align*}
\]

To account for the above surface forms, the following rules are necessary.

\[
\begin{align*}
h+l & \rightarrow h+l \\
h+l+c & \rightarrow l+c \\
d+l+c & \rightarrow l+c \\
sh+l+c & \rightarrow sh+c \quad \text{(where c stands for any consonant)}
\end{align*}
\]

These rules will be refined and shown to be more general in the course of our study.

We turn now to the forms of the verb meaning 'to gesture'.

\[
\begin{align*}
\text{shí/na+sh+l+chid/} & \quad \text{becomes naashchid} \\
\text{ni /na+ni+l+chid/} & \quad \text{becomes nanilchid} \\
\text{[shí dóó ashkii] /na+iid+l+chid/} & \quad \text{becomes neilchid} \\
\text{ni dóó /na+oh+l+chid/} & \quad \text{becomes naolchid}
\end{align*}
\]

Some addition rules can now be (informally) stated:

\[
\begin{align*}
l & \rightarrow l / d \\
d + l + c & \rightarrow d + l + c
\end{align*}
\]

Devoicing:

\[
\begin{align*}
\text{[c] + l} & \rightarrow \text{c + l} \\
\text{[voic] & [\text{voic}]}
\end{align*}
\]

\[
\begin{align*}
\text{na+sh+l+nish} \\
\text{na+sh+l+nish} \\
\text{sh+l+c} & \rightarrow \text{sh+c}
\end{align*}
\]

The devoicing rule has significant effects in Navajo words.

(Devoicing) Shí tl'óól naashlé \quad I'm carrying a rope around.

Ni tl'óól nanilé \quad You are carrying a rope around.

Shí dóó ashkii tl'óól neiidlé (<\text{na+iid+lé})

Ni dóó ashkii tl'óól /na+oh+le/ \quad \text{becomes na+oh+le}

(naahlé)
(Devoicing) Ashkii tl'óól /na+yí_le/ becomes neilé

In the 3rd person a-gh- can be added at the hiatus of 2 vowels.

Ashkii naaghá (/na+á/) The boy is walking around.
Shi naashá /na+sh+á/ I am walking around.

-á means 'to walk singularly'
1. Review of Prefix Positions in the Verb

Prefix Chart:

<table>
<thead>
<tr>
<th>ADVERBIAL</th>
<th>IT</th>
<th>PL</th>
<th>OBJ</th>
<th></th>
<th>SUBJ</th>
<th>CL</th>
<th>STEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>yisdá- 'to safety'</td>
<td>ná 'iterative'</td>
<td>da</td>
<td>1st shi</td>
<td>sh</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>na- 'around, about'</td>
<td></td>
<td>2nd ni</td>
<td>1st &amp; 2nd</td>
<td>ni</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ch'í- 'out horizontally'</td>
<td>náá(ná)</td>
<td>1st &amp; 2nd nihi</td>
<td>iid</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ha- 'up and out'</td>
<td>'again'</td>
<td>3rd yi/bí</td>
<td>oh</td>
<td>ø</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following example sentences serve to review the analysis of verb forms:

(1) Ashkii dibé neilté
    The boy is carrying the sheep about.
    na - yi - l - té
    ADV OBJ CL STEM
    na - i - l - té by Y-dropping: y⇒Ø/V_iC
    ne - i - l - té by A-fronting: a⇒e/_i

(2) Ashkii dibé neijaah
    The boy is carrying the sheep (PL) about.
    na - yi - Ø - jaah (jaah = suppletive stem for plural object)
    ADV OBJ CL STEM
    na - i - Ø - jaah by Y-deletion
    ne - i - Ø - jaah by A-fronting

(3) Shi dibé naashté
    I am carrying a sheep about.
    na - sh - l - té
    ADV SUBJ CL STEM
    naa - sh - l - té by Lengthening: Ca⇒Caa/Co Stem
    naa - sh - Ø - té by CL-deletion: l⇒Ø/sh_C
(4) Shí dibé naashjaah
I am carrying sheep (PL) about.
na - sh - Ø - jaah
ADV SUBJ CL STEM

When the subject is non-third person, the object markers yi and bi do not appear in the verb.

(5) Ni dibé nanilté
You are carrying the sheep (SG) about.
na - ni - l - té
ADV SUBJ CL STEM

(6) Ni dibé nanijaah
You are carrying sheep (PL) about.
na - ni - Ø - jaah
ADV SUBJ CL STEM

(7) Niihí dibé neiihil té
We (2) are carrying the sheep (SG) about.
na - iid - l - té
ADV SUBJ CL STEM
ne - iid - l - té by A-fronting
ne - iid - l - té by CL-Voicing: l+1/3_
ne - ii - l - té by D-deletion: d+Ø/1_C

(8) Niihí dibé neiijaah
We (2) are carrying the sheep (PL) about.
na - iid - Ø - jaah
ADV SUBJ CL STEM
ne - iid - Ø - jaah by A-Fronting
ne - ii - Ø - jaah by D-deletion

(9) Niihí dibé naolté
You (du.) are carrying the sheep (SG) about.
na - oh - l - té
ADV SUBJ CL STEM
na - o - l - té by H-deletion: h+Ø/1_C
(10) Nihí dibé naohjaah
    You (du.) are carrying sheep (PL) about.
    na - oh - Ø - jaah
    ADV SUBJ CL STEM

(11) Ashiiké dibé ndeilté
    The boys are carrying a sheep about.
    na - da - yi - l - té
    ADV PL OBJ CL STEM
    na - da - i - l - té by Y-deletion
    na - de - i - l - té by A-fronting
    ni - de - i - l - té by Na-reduction: na+ni/__dV

    NOTE: reduced ni stands for a syllabic nasal

(12) Ashiiké dibé ndeijaah
    The boys are carrying sheep (PL) about.
    na - da - yi - Ø - Ø - jaah
    ADV PL OBJ SUBJ CL STEM

    NOTE: recall that the subject marker for 3rd person subjects is Ø

(13) Ashkii shí naashté
    I am carrying the boy about.
    na - sh - l - té
    ADV SUBJ CL STEM

(14) Shí ashkii nashiilté
    The boy is carrying me about.
    na - shi - l - té
    ADV OBJ CL STEM

(15) Shí ni nanishté
    I am carrying you about.
    na - ni - sh - l - té
    ADV OBJ SUBJ CL STEM
(16) Ashkii ni naniłté
The boy is carrying you about.
na - ni - ɬ - té
ADV OBJ CL STEM

NOTE: the form naniłté can also mean 'You are carrying him about':
na - $-$ ni - ɬ - té
ADV OBJ SUBJ CL STEM

Recall that the object markers yi/bi do not appear when the subject is non-3rd person.

(17) Ashkii nihí nanihijaah
The boy is carrying about more than one of us.
na - nihí - $-$ jaah
ADV OBJ CL STEM

(18) Ashiiké shí ndashilté
The boys are carrying me around.
na - da - shí - ɬ - té
ADV PL OBJ CL STEM

(19) Shí ni nanishté
I am carrying you about.
na - ni - sh - ɬ - té
ADV OBJ SUBJ CL STEM

(20) Shí nihí nanihishjaah
I am carrying you (PL) about.
na - nihí - sh = $-$ jaah
ADV OBJ SUBJ CL STEM

(21) Nihí shí nasholté
You (du.) are carrying me about.
na - shí - oh - ɬ - té
ADV OBJ SUBJ CL STEM

na - sh - oh - ɬ - té by Vowel-deletion: v+$+$+v
na - sh - o - ɬ - té by H-deletion
NOTE: In general, the boundaries from OBJ position to the right are "tighter" than which separates OBJ position from positions to the left of OBJ.

(22) Nihí ni naniilté
We (2) are carrying you (SG) about.
na - ni - iíd - ì - té
ADV OBJ SUBJ CL STEM

(23) Nihí nihí nanihohjaah
You (2) are carrying us (2) about.
na - nihí - oh - Ø - jaah
ADV OBJ SUBJ CL STEM

(24) Nihí nihí nanihiijaah
We (2) are carrying you (2) around.
na - nihí - iíd - Ø - jaah
ADV OBJ SUBJ CL STEM

(25) Ni shí nashílté
You (SG) are carrying me about.
na - shí - ni - ì - té
ADV OBJ SUBJ CL STEM
na - shí - Ø - ì - té by the rule of Ni-absorption: \( \text{Ci}+\text{ni}+\text{Ci}/\_\_\_\text{CoStem} \)
The prefix ni deletes, leaving a high tone on the previous ì.

(26) Ni nihí nanihíjaah
You (SG) are carrying us (2) about.
na - nihí - ni - Ø - jaah
ADV OBJ SUBJ CL STEM
na - nihí - Ø - Ø - jaah by Ni-Absorption

2. Discovering New Prefix Positions

(27) Ashkii dibé neiniłkaad
The boy is herding sheep.
The rules we already have will give us the surface form of the verb from the following underlying structure:

\[
\begin{align*}
\text{na} & - \text{yi} - \text{ni} - \text{l} - \text{kaad} \\
\text{ADV} & \quad \text{OBJ} \quad ? \quad \text{CL} \quad \text{STEM} \\
\text{na} & - \text{i} - \text{ni} - \text{l} - \text{kaad} \\
\text{ne} & - \text{i} - \text{ni} - \text{l} - \text{kaad}
\end{align*}
\]

What is the prefix \text{ni} occurring between \text{OBJ yi} and the classifier? Since the sentence has a 3rd person subject, we know that \text{ni} is not a 2nd person subject marker.

We begin by trying to determine where the new \text{ni} occurs with respect to subject markers. Examine the following:

(28) Shí dibé nanishkaad
I am herding the sheep.

Our rules allow us to derive the surface verb form from the following underlying structure:

\[
\begin{align*}
\text{na} & - \text{ni} - \text{sh} - \text{l} - \text{kaad} \\
\text{ADV} & \quad ? \quad \text{SUBJ} \quad \text{CL} \quad \text{STEM}
\end{align*}
\]

The examples (27)-(28) show that the new \text{ni} occurs in a slot between object markers and subject markers. Other confirming examples:

(29) Ni dibé nanı́lkaad
You are herding sheep.

\[
\begin{align*}
\text{na} & - \text{ni} - \text{ni} - \text{l} - \text{kaad} \\
\text{ADV} & \quad ? \quad \text{SUBJ} \quad \text{CL} \quad \text{STEM}
\end{align*}
\]

\[
\text{na} - \text{ni} - \emptyset - \text{l} - \text{kaad} \quad \text{by Ni-absorption}
\]

(30) Níhí dibé nanołkaad
You (2) are herding sheep.

\[
\begin{align*}
\text{na} & - \text{ni} - \text{oh} - \text{l} - \text{kaad} \\
\text{ADV} & \quad ? \quad \text{SUBJ} \quad \text{CL} \quad \text{STEM}
\end{align*}
\]

Both H-deletion and Vowel-deletion apply:

\[
\begin{align*}
\text{na} & - \text{ni} - \circ - \text{l} - \text{kaad} \\
\text{na} & - \text{n} - \circ - \text{l} - \text{kaad}
\end{align*}
\]
The examples (27-(30) lead us to postulate a new prefix position, in between the OBJ & SUBJ slots. This position has traditionally been referred to as the "ASPECT" position:

\[ \text{ADV - IT - PL - OBJ - "ASPECT" - SUBJ - EL - STEM} \]

Now consider a new verb set to analyse:

(31) 'to shout'

1st: shí dishwosh \(\text{di-sh - 1-wosh} \)
2nd: ni dílwosh \(\text{di-ni - 1-wosh (Ni-absorption)} \)
3rd: ashkii dílwosh \(\text{di- ø - 1-wosh} \)
1st: nihí(2).dilwosh \(\text{di-iid - 1-wosh} \)
2nd: nihí(2).dilwosh \(\text{di- oh - 1-wosh} \)

What is the new prefix di? We know it is positioned to the left of the subject slot, but we don't know where to the left of the subject it belongs. The following shows its position with respect to plural da:

(32) Ashiiké dadilwosh
The boys are shouting.

da - di - ø - 1 - wosh
PL ? SUBJ CL STEM

The new di shows up in between the PL slot and SUBJ slot, it turns out that di is also in the "ASPECT" slot and shows up in verbs of 'vocal sounds'.

Notice now the "inceptive" form of the verb 'to work':

(33) 'to start working' (note stem change to níísh)

1st: dishníísh \(\text{di - sh - 1 - níísh} \)
2nd: dílníísh \(\text{di - ni - 1 - níísh} \)
3rd: dílníísh \(\text{di - ø - 1 - níísh} \)
1st: (2)dílníísh \(\text{di - iid - 1 - níísh} \)
2nd: (2)dòlníísh \(\text{di - oh - 1 - níísh} \)
3rd: (PL)dadílníísh \(\text{da-di - ø - 1 - níísh} \)

Example (33) illustrates the "inceptive" di, which also occurs in the "ASPECT" column:


OBJ ASPECT

ni- ?
di- 'inceptive'
di- 'vocal sounds'

The examples in (34) show that inceptive di follows object markers:

(34) 'to start weaving it'

1st: dishtl'óóh
2nd: dítl'óóh
3rd: yiditl'óóh
1st: (2)diitl'óóh
2nd: (2)dohltl'óóh

OBJ-ASP-SUBJ-CL-STEM
Ø - di- sh - Ø-tl'óóh
Ø - di- ni - Ø-tl'óóh
yi - di- Ø - Ø-tl'óóh
Ø - di- iid - Ø-tl'óóh
Ø - di- oh - Ø-tl'óóh

PROBLEM: consider the following data:

(35) Shi ashkii yishxozh 'I am tickling the boy.'
Ni ashkii nilhozh 'You are tickling the boy.'
Hastiin ashkii yiilhozh
Nihí(us) ashkii yiilwozh
Nihí(you) ashkii wolhozh
Ashkii shi shihhozh 'The boy is tickling me.'
Ashkii ni nilhozh
Ashkii nihí nihåihozh
Shí ni nishhozh 'I am tickling you.'
Ni shí shílhozh 'You are tickling me.'
Nihí(2) ni niilwozh 'We are tickling you.'
Nihí(2) shi sholhozh 'You (du) are tickling me.'

Based on the examples we have dealt with so far, give an analysis of the following verb forms:

(a) yishxozh
(b) yiilwozh
(c) wolhozh
1. Motivation for and discussion of Navajo phonological rules.

We have so far established the following verb slots:

<table>
<thead>
<tr>
<th>ADV</th>
<th>IT</th>
<th>PL</th>
<th>OBJ</th>
<th>ASP</th>
<th>MODE</th>
<th>SUBJ</th>
<th>CL</th>
<th>STEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>na</td>
<td>ná</td>
<td>da</td>
<td>shi</td>
<td>ni</td>
<td>(See 2. of</td>
<td>sh</td>
<td>l</td>
<td>y</td>
</tr>
<tr>
<td>ha</td>
<td>nááná</td>
<td>ni</td>
<td>di</td>
<td>this hand-</td>
<td>ni</td>
<td>l</td>
<td>y</td>
<td></td>
</tr>
<tr>
<td>ch'í</td>
<td>nihi</td>
<td>hi</td>
<td>i</td>
<td>out.)</td>
<td>iid</td>
<td>d</td>
<td>y</td>
<td></td>
</tr>
<tr>
<td></td>
<td>yi</td>
<td>ii</td>
<td>bi</td>
<td></td>
<td>oh</td>
<td>Ø</td>
<td>y</td>
<td></td>
</tr>
</tbody>
</table>

We begin with the following paradigm of the imperfective of the verb meaning 'tickle'.

yishhozh  
I tickled him.

niłhozh  
You tickled him.

yiłhozh  
He tickled him.

Yiilwozh  
We tickled him.

Wołhozh  
You tickled him.

Under our current analytical procedures we end up with the following underlying structure.

(yi) - sh - l - hozh

ni - l - hozh

? yi - - l - hozh

(yi) - iid - l - hozh

(w) - oh - l - hozh

The yi- which is present in the 1st singular conflicts with an earlier 'observation'. The yi objective marker for the 3rd person appeared to be mutually exclusive with the 1st and 2nd person subject markers.
We hypothesize that the yi's in the non-third person forms result from the following prosthetic rules.

\[
\emptyset \rightarrow w / \text{##} ___ c \\
\emptyset \rightarrow y / \text{##} ___ i \\
\emptyset \rightarrow yi / \text{##} ___ C_o \text{ Stem}
\]

These rules lead to the prediction that the 'yi's' will not occur in the iterative. The 'real' yi- will leave its effect in the 3rd person. This prediction is borne out in the next forms.

náshhosh (The yi doesn't appear here.)
nánílhosh
néílhosh
néiilwosh
náólíhosh \sim náalhosh

The appearance of the \( \emptyset \rightarrow yi \) rule may be the result of a principle that Navajo verbs must be at least disyllabic.

Another verb whose surface forms are consistent with this principle is -cha 'cry'.

yishcha I cry. \(</ \text{sh-cha} />\)
nicha You cry. \(</ \text{ni-cha} />\)
yicha He cries. \(</ \text{-cha} />\)
yiicha We cry. \(</ \text{iid-cha} />\)
wohcha You cry. \(</ \text{oh-cha} />\)

As before, the iterative is further evidence for the 'phonological' nature of certain 'yi's'. In this case a yi does not occur in the 3rd person because the verb is intransitive.

**Iterative**
náshchah I usually cry.
naníchah
náchah
néiichah
náóhchah
The following forms exhibit an alternation between gh and h in the stem. They differ phonetically only in terms of voicing (gh is voiced, h is voiceless).

yishháád  
\( < / sh-gháád / \)  
I shake it.

nigháád  
\( < / ni-gháád / \)  
You shake it.

yigháád  
\( < / yi-gháád / \)  
He shakes it.

The change from gh to h is the result of the devoicing rule.

Devoicing: \([\text{Segment}] \rightarrow [\text{Voiceless}] / [\text{Voiceless}]\)

In the 1st non-singular form the gh becomes g by the d-effect. (See rule handout.)

\(-i\text{-iíd-gháád/}

g  \quad (by the d-effect)

yiigáád  \quad (by a prosthesis rule)

The 2nd person non-singular has the following derivation.

oh-gháád

woh-gháád (prosthesis)

woh-háád (devoicing)

2. Items in the 'mode' position. (Label 'mode' is merely classificatory and is not descriptive).

Types of modes: imperfective, perfect, progressive (really an aspect), optative

Items that fill mode slot:

\( g : \)  \( (\)zero perfective\( )\)

ni: imperfective

ni-\( i : \) perfective

si-(í): perfective

ghi-í: \( (\)this is called yi-perfective\( )\)

ó: optative

The future is a combination of di from the 'aspect' slot and ghi- from the 'mode'.
Some examples of the optative paradigm:

Woshcha  Oh, let me cry.
Wóócha   Oh, let you cry.
Wóochu
Woocha
Wohcha

or

Woshcha lágo  I hope I don't cry.

NOTE: Items from the mode slot are mutually exclusive with ná from the iterative slot.

3. Using the Young and Morgan dictionary (The Navaho Language) example verb 'to eat separable, isolatable objects'. Verb will be listed alphabetically under the future stem.

dil- 'to eat separable isolatable objects'

Example listing

F.  (future) deesh-dil (dííl, yidool, jidool, etc.)
The first person form is given first, other persons in parentheses.

C.I. (continuous imperfective) yish-deel (nil, etc.)
P.  (perfective)
R.  (repetitive, term used instead of iterative)
O.  (optative)

4. Exercise to acquaint student with Young and Morgan dictionary.

Goal: To locate another position in the Navajo verb. Locate the element which is sometimes referred to as the 4th person. The pronoun form hó has a prefix ji in the Navajo verb.

Example of ji-in a verb:

doó tin ji’aal da   One doesn't chew ice.

The ji- can appear as -zh- if a vowel precedes and an n or d follows.

Hint: Look at imperfective and iterative forms.
Additional Tasks

Analyze (Get underlying forms):

(1) The continuous imperfective and iterative form verb meaning to talk, to speak p. 206.

(2) The imperfective and repetitive 'to break it up' p. 206. This will introduce a new prefix, whose behavior we haven't seen yet -hi- (add some rules if necessary).

(3) Do the C.I. and R. of 'to coach him', 'to give him instructions' (p. 209-10).

(4) Imp. & R. forms to stop or finish weaving it (p. 124), rule must be added.

5. Linguistics—One of the central goals of the field is to discover a theory which will represent the native speaker's ability to construct and understand the sentences of his language.

The following novel sentence is understood by any Navajo speaker although it is highly unlikely they have heard it before.

Chííh yee' idilohii shíl yíldoozh
I have just arrived by elephant.

Question to be covered: What is the nature of the evidence that a classifier is 'present' in verbs which don't show it in their phonetic forms?

For example, the verb naashnish 'I work' has been analyzed as being basically: na-sh-l-nish. The l must be removed by a classifier deletion rule. Thus, the cost of the underlying regularity is a phonological rule.

An alternative theory for the presence of classifier may use the following statement.

Don't use a classifier in the 1st person singular of any verb.

To choose between these theories one consults additional data:

yishháád
nighbáád
yishlééh  I become.
nileeh   You become.
K'i'dishlé I plant it.
K'idíle   You plant it.
Dishshah I am spitting.
Dizhah   You are spitting.
Dissééh I am belching.
Dizééh   You are belching.

These forms exhibit the following alternations.

\[
\begin{align*}
z & \rightarrow s \\
zh & \rightarrow sh \\
l & \rightarrow l \\
gh & \rightarrow h
\end{align*}
\]

The change is caused by the devoicing rule.

To eat meat.

nilghal You eat meat. (The voiced form appears after voiced segments.)

Some 2nd person non-singular forms of the above are listed next.

wohháád
wohleeh
k'i'dohhé
dohshah
dohsééh

The 'w' is a voiced velar continuant (fricative) with rounding.

Note the following alternations between w and h. The 'h' follows voiceless segments.

Awée' yiwozh The baby is ticklish.
Ashkii awée' yilhozh The boy tickles the baby.
yiilwozh We tickle him.
We now turn to some apparent counter examples to the devoicing rule.

<table>
<thead>
<tr>
<th>First Person Singular Forms</th>
<th>Second Singular Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>naashzheeh</td>
<td>I am hunting.</td>
</tr>
<tr>
<td>sodiszin</td>
<td>I am praying.</td>
</tr>
<tr>
<td>yishghal</td>
<td>I am eating meat.</td>
</tr>
<tr>
<td>ádíshzhééh</td>
<td>I am trimming my hair.</td>
</tr>
<tr>
<td>ádíshzhóóh</td>
<td>I am combing myself.</td>
</tr>
<tr>
<td>nanilzheeh</td>
<td>sodílzin</td>
</tr>
<tr>
<td>nilghal</td>
<td>ádílzhééh</td>
</tr>
</tbody>
</table>

To account for the failure of devoicing to apply to the stem initial consonant we must make some additional hypothesis. From the second person forms we see that the classifier is 1. The underlying form for the 1st singular of hunt would thus be:

\[ na - sh - 1 - zheeh \]

There are two rules which are applicable to the medial consonantal cluster. Fricative devoicing and classifier deletion. The rules must apply in the above order, otherwise the wrong surface form will result.

\[ na - sh - 1 - zheeh \]

Classifier deletion: \[ na - sh - zheeh \]

Fricative Devoicing: \*na - sh - Sheeh

The other order for these two rules will generate the correct surface form provided that fricative devoicing only apply once. That is, the devoiced 1 (\(\lambda\)) cannot in turn act as the environment for an additional application of fricative devoicing.

Assignment: For the following paradigms provide an explanation for the alternations in the stem initial consonant. Try to maintain the following hypothesis:

**ALL STEM INITIAL CONSONANTS ARE BASICALLY VOICED.**

<table>
<thead>
<tr>
<th>'to break a horse'</th>
<th>'to blow on it'</th>
</tr>
</thead>
<tbody>
<tr>
<td>yishshqoq</td>
<td>yisoq</td>
</tr>
<tr>
<td>nishqoq</td>
<td>nisoq</td>
</tr>
<tr>
<td>yishqoq</td>
<td>yisoq</td>
</tr>
<tr>
<td>yiilshqoq</td>
<td>yiilzolo</td>
</tr>
<tr>
<td>wohshqoq</td>
<td>wohsolo</td>
</tr>
</tbody>
</table>
Conclusion of discussion of the Navajo verb prefixal morphology.

1. In the last lecture two hypotheses were proposed
   
   A) All stem initial fricatives are voiced in underlying representation
   
   B) The fricative devoicing rule accounts for all cases of stem initial devoicing.

   **Fricative Devoicing:** \([\text{fricative}] \rightarrow [-\text{voice}] / [-\text{voice}]\)

   Forms which appear to contradict these hypotheses are the following:

   ```
   yishshééh  I cut hair  yissoł  I blow on it
   nishhééh  you cut hair  nisool  you blow on it
   yishhééh  he cuts hair  yisool  he blows on it
   yiilzhééh  we cut hair  yiilzoł  we blow on it
   wohshééh  you cut hair  wohsoł  you blow on it
   ```

   The problem is in the 2nd person singular. A devoiced segment appears in stem initial position. This is an apparent counter example. A clue to this problem is to be found in the 1st person plural forms. An \(l\) appears. This then suggests that the verb has a classifier \(l\), which is deleted in certain environments.

   **Classifier Deletion:** \(l \rightarrow \emptyset / \rightarrow \{sh\}\)

   The derivation of the 1st plural form is:

   ```
   iid - \(l\) - zhééh
   iid - \(l\) - zhééh  Classifier Voicing
   iid - zhééh  D-deletion
   yiil - zhééh  Prosthesis
   ```

   With the classifier deletion rule the lack of the classifier is accounted for.

2. Determining the relative position of the 4th person marker.

   The first form considered is

   ```
   ni jihi tíih  'someone is breaking it up'
   ```
This form demonstrates that the ji morpheme is the right of the adverbial slot. We next test for the relative position of the ji with the plural form of the verb nish 'to work'

\[
\text{ndajilnish} < \text{na+da+ji+1+nish}
\]

The question remains as to the relative position of the ji and object morphemes. This is decided with the form which means 'someone is tickling me'

\[
\text{shijilhozh} < \text{shi+ji+1+hozh}
\]

Four items which occur in this deictic position are

Deictic

ji- 4th person subject
'i- indefinite object
ho- 4th person object
ho- area (concord)

Examples of the 'i-' indefinite

'i-' a in some environments, so

\[
\text{'i-sh-å-'ashå} \quad \text{'I am eating something'}
\]

The complete paradigm is

\[
\text{'ashå} < \text{'i-sh-å} \quad \text{'I am eating'}
\]
\[
\text{'iyå} < \text{'i-ni-yå} \quad \text{'you are eating' (ni-absorption)}
\]
\[
\text{'ayå} < \text{'i-yå} \quad \text{'you are eating'}
\]
\[
\text{'iidå} < \text{'i-iid-å} \quad \text{'you are eating'}
\]
\[
\text{'ohså} < \text{'i-oh-så} \quad \text{'you are eating'}
\]

The 'i can show up merely as a glottal stop.

\[
\text{shi'niižį} \quad \text{'I am being killed' (Someone is killing me.)}
\]
\[
\text{shi'diiltsa} \quad \text{'I was seen' (Someone saw me.)}
\]

The ho morpheme may show up as hw as the following form demonstrates.

\[
\text{Meksigo t'ahdoo hwiiistsée} \downarrow \text{da}
\]
\[
\text{agreement with area}
\]

The shape of the ho is determined by the following rules

- ho remains / — CV C₀ Stem
- ho becomes ha / — C₀ Stem
- ho becomes hó / in Ni-absorption
The lexical entry for 'sing' is ho . . . ʘ-taal. The verb has a zero classifier,

- hashtaal < / ho-sh-taal / 'I sing'
- hótaal < / ho+ni-taal / 'you sing'
- hataal < / ho+taal / 'he sings'
- hwitaal < / ho+iid+taal / 'we sing'
- hohtaal < / ho+oh+taal / 'you sing'

The ji morpheme became zh under certain conditions.

ji→zh/V—CV . . CO Stem

di-ji-di-l-jeeh+dizhdiljeeh

di-i'-di-l-jeeh+dizh'diljeeh

What is the analysis of the following verbal paradigm?

**PRINCIPLE RULES WHICH APPLY**

<table>
<thead>
<tr>
<th>ninishtl'óóh</th>
<th>'I stop weaving it'</th>
</tr>
</thead>
<tbody>
<tr>
<td>ninítl'óóh</td>
<td>(Ni-absorption)</td>
</tr>
<tr>
<td>niyítl'óóh</td>
<td>(Ni-absorption)</td>
</tr>
<tr>
<td>nijítl'óóh</td>
<td>(Ni-absorption)</td>
</tr>
<tr>
<td>niniidtl'óóh</td>
<td>(V-deletion, D-deletion)</td>
</tr>
<tr>
<td>ninohtl'óóh</td>
<td>(V-deletion)</td>
</tr>
</tbody>
</table>

The above paradigm is displayed below with its constituents in underlying representation.

<table>
<thead>
<tr>
<th>ADV</th>
<th>OBJ</th>
<th>MODE</th>
<th>SUB</th>
<th>CL</th>
<th>STEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>ni</td>
<td>ni</td>
<td>sh</td>
<td></td>
<td></td>
<td>tl'óóh</td>
</tr>
<tr>
<td>ni</td>
<td>ni</td>
<td>ni</td>
<td></td>
<td></td>
<td>tl'óóh</td>
</tr>
<tr>
<td>ni</td>
<td>yi</td>
<td>ni</td>
<td></td>
<td></td>
<td>tl'óóh</td>
</tr>
<tr>
<td>ni</td>
<td>ji</td>
<td>ni</td>
<td></td>
<td></td>
<td>tl'óóh</td>
</tr>
<tr>
<td>ni</td>
<td>ni</td>
<td>oiid</td>
<td></td>
<td></td>
<td>tl'óóh</td>
</tr>
<tr>
<td>ni</td>
<td>ni</td>
<td>oh</td>
<td></td>
<td></td>
<td>tl'óóh</td>
</tr>
</tbody>
</table>
SOME PHONOLOGICAL RULES OF NAVAJO

Devoicing: 1 → 1 / [voiceless] __ (generalized in notes of 9/23

Classifier deletion: 1 → ⌀ / sh___C

h-Deletion: h → ⌀ / __h___C

Classifier voicing: 1 → l / d___C

na-Reduction: na → ni / ___dV, nV

Tone assimilation: V → V̆ / V̆C___C Stem

y-Deletion: y → ⌀ / V___iC

a-Fronting: a → e / ___i

Lengthening: Ca → Caa / ___C Stem

The "d-Effect":

\[ d + n \rightarrow 'n \]
\[ d + m \rightarrow 'm \]
\[ d + t \rightarrow t' \]
\[ d + z \rightarrow dz \]
\[ d + zh \rightarrow j \]
\[ d + l \rightarrow dl \]
\[ d + gh \rightarrow g \]

\[ d \rightarrow ⌀ / ___C \]

V-deletion: V → ⌀ / ___+v

ni-Absorption: Ci + ni → Ci / ___C Stem

Prosthesis: ⌀ → yi / ##___C Stem

�� → y / ##___i

�� → w / ##___o
REGULAR VERB PARADIGMS IN NAVAJO

(1) O-Imperfective

<table>
<thead>
<tr>
<th>Initial</th>
<th>Conjunct</th>
<th>ii-Conjunct</th>
<th>Disjunct</th>
</tr>
</thead>
<tbody>
<tr>
<td>yish-</td>
<td>CVsh-</td>
<td>-iish-</td>
<td>CVVsh-,</td>
</tr>
<tr>
<td>ni-</td>
<td>CV'-</td>
<td>-ii-</td>
<td>CVni-,</td>
</tr>
<tr>
<td>yi-</td>
<td>CV-</td>
<td>-ii-</td>
<td>CVV-,</td>
</tr>
<tr>
<td>yiid-</td>
<td>Ciiid-</td>
<td>-iid-</td>
<td>CViid-,</td>
</tr>
<tr>
<td>woh-</td>
<td>Coh-</td>
<td>-ooh-</td>
<td>CVoh-,</td>
</tr>
</tbody>
</table>

(2) ni-Imperfective

<table>
<thead>
<tr>
<th>Initial</th>
<th>Conjunct</th>
<th>Disjunct</th>
</tr>
</thead>
<tbody>
<tr>
<td>nish-</td>
<td>CVnish-</td>
<td>CVnish-,</td>
</tr>
<tr>
<td>ni-</td>
<td>CVni-</td>
<td>CVni-,</td>
</tr>
<tr>
<td>yi-</td>
<td>Cee- (CV-)</td>
<td>CVV-,</td>
</tr>
<tr>
<td>niid-</td>
<td>CVniid-</td>
<td>CVniid-</td>
</tr>
<tr>
<td>noh-</td>
<td>CVnoh-</td>
<td>CVnoh-</td>
</tr>
</tbody>
</table>

NOTES:

(a) Conjunct forms are those in which a OBJ, DEIC, or ASP prefix immediately precedes the mode. Where OBJ or DEIC conjunct forms differ from ASP conjunct forms, they are given in parentheses.

(b) Disjunct forms are those in which a ADV, IT, or PL prefix immediately precedes the mode. The first column gives the forms in which the disjunct prefix has basic low tone, the second those in which the disjunct prefix has basic high tone.

(c) Initial forms are those in which no prefix precedes the mode.

(d) In perfective paradigms, given on the following pages, the classifier plays a role in determining prefixal forms. One set of forms occurs with l- and 0-, while a slightly different set occurs with l- and d-.
### (3) yi-Perfective

<table>
<thead>
<tr>
<th>Initial</th>
<th>Conjunct</th>
<th>ii-Conjunct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/0 1/d</td>
<td>1/0 1/d</td>
<td>1/0 1/d</td>
</tr>
<tr>
<td>yí- yish-</td>
<td>Cií- Ceesh-</td>
<td>-ii- -iish-</td>
</tr>
<tr>
<td>yíní- yíní-</td>
<td>Ciíní- Ciíní-</td>
<td>-ini- -ini-</td>
</tr>
<tr>
<td>yí- yi-</td>
<td>Ciíd- Ciíd-</td>
<td>-iid- -iid-</td>
</tr>
<tr>
<td>yiid- yiid-</td>
<td>Ciíd- Ciíd-</td>
<td>-iid- -iid-</td>
</tr>
<tr>
<td>woo- wooh-</td>
<td>Coo- Coooh-</td>
<td>-oo- -oooh-</td>
</tr>
</tbody>
</table>

### Disjunct

<table>
<thead>
<tr>
<th>1/0 1/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVV-, CVV-</td>
</tr>
<tr>
<td>CVíni-, CVíni-</td>
</tr>
<tr>
<td>CVí-, CVí-</td>
</tr>
<tr>
<td>CViid- CViid-</td>
</tr>
<tr>
<td>CVoo- CVoo-</td>
</tr>
</tbody>
</table>

### (4) ni-Perfective

<table>
<thead>
<tr>
<th>Initial</th>
<th>Conjunct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/0 1/d</td>
<td>1/0 1/d</td>
</tr>
<tr>
<td>ní- nish-</td>
<td>CVni- CVnish-</td>
</tr>
<tr>
<td>yíní- yíní-</td>
<td>Ciíni- Ciíni-</td>
</tr>
<tr>
<td>ní- yi-</td>
<td>Cee- (CVni-) Cee- (CV-)</td>
</tr>
<tr>
<td>niiid- niiid-</td>
<td>CVniid- CVniid-</td>
</tr>
<tr>
<td>noo- nooh-</td>
<td>CVnoo- CVnooh-</td>
</tr>
</tbody>
</table>
### Disjunct

<table>
<thead>
<tr>
<th>1/0</th>
<th>1/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVnī-, CVnī-</td>
<td>CVnīš-, CVnīš-</td>
</tr>
<tr>
<td>CVnī-, CVnī-</td>
<td>CVnī-, CVnī-</td>
</tr>
<tr>
<td>CVV-, CV-</td>
<td>CVV-, CV-</td>
</tr>
<tr>
<td>CVniid-, CVniid-</td>
<td>CVniid-, CVniid-</td>
</tr>
<tr>
<td>CVnoo-, CVnoo-</td>
<td>CVnoo-, CVnoo-</td>
</tr>
</tbody>
</table>

### Initial

<table>
<thead>
<tr>
<th>1/0</th>
<th>l/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>se-</td>
<td>sis-</td>
</tr>
<tr>
<td>siní-</td>
<td>siní-</td>
</tr>
<tr>
<td>si-</td>
<td>yis-</td>
</tr>
<tr>
<td>siid-</td>
<td>siid-</td>
</tr>
<tr>
<td>soo-</td>
<td>sooh-</td>
</tr>
</tbody>
</table>

### Conjunct

<table>
<thead>
<tr>
<th>1/0</th>
<th>1/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ce- (CVsē-)</td>
<td>Česh- (CVsis-)</td>
</tr>
<tr>
<td>Cíní- (CVsini-)</td>
<td>Cíní- (CVsini-)</td>
</tr>
<tr>
<td>Cees/z- (CVa/z-)</td>
<td>Ceos- (CVs-)</td>
</tr>
<tr>
<td>Coed- (CVsiid-)</td>
<td>Ceed- (CVsiid-)</td>
</tr>
<tr>
<td>CVsoo- ~ siCooh-</td>
<td>CVsooh- ~ siCooh-</td>
</tr>
</tbody>
</table>

### Disjunct

<table>
<thead>
<tr>
<th>1/0</th>
<th>1/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVsē-, CVsē-</td>
<td>CVsis-, CVsis-</td>
</tr>
<tr>
<td>CVsini-, CVsini-</td>
<td>CVsini-, CVsini-</td>
</tr>
<tr>
<td>CVVs/z-, CVVs/z-</td>
<td>CVVs-, CVs-</td>
</tr>
<tr>
<td>CVsiid-, CVsiid-</td>
<td>CVsiid-, CVsiid-</td>
</tr>
<tr>
<td>CVsoo-, CVsoo-</td>
<td>CVsooh- ~ siCooh-</td>
</tr>
</tbody>
</table>
(6) Optative

<table>
<thead>
<tr>
<th>Initial</th>
<th>Conjunct</th>
<th>ii-Conjunct</th>
<th>Disjunct</th>
</tr>
</thead>
<tbody>
<tr>
<td>wósh-</td>
<td>Cósh-</td>
<td>-oosh-</td>
<td>CVósh-, CVósh-</td>
</tr>
<tr>
<td>wóó-</td>
<td>Cóó-</td>
<td>-óó-</td>
<td>CVóó-, CVóó-</td>
</tr>
<tr>
<td>wo-</td>
<td>Có-</td>
<td>-oo-</td>
<td>CVo-, CVó-</td>
</tr>
<tr>
<td>wood-</td>
<td>Coood-</td>
<td>-ood-</td>
<td>CVood-, CVood-</td>
</tr>
<tr>
<td>wooh-</td>
<td>Cooh-</td>
<td>-oooh-</td>
<td>CVooh-, CVooh-</td>
</tr>
</tbody>
</table>

(7) Progressive

<table>
<thead>
<tr>
<th>Initial</th>
<th>Conjunct</th>
<th>Disjunct</th>
</tr>
</thead>
<tbody>
<tr>
<td>yish-</td>
<td>Geesh-</td>
<td>CVVsh-, CVVsh-</td>
</tr>
<tr>
<td>yi-</td>
<td>Gii-</td>
<td>CVV-</td>
</tr>
<tr>
<td>yi-</td>
<td>Coo-</td>
<td>CVV-, CVV-</td>
</tr>
<tr>
<td>yiid-</td>
<td>Giid-</td>
<td>CViid-, CViid-</td>
</tr>
<tr>
<td>wo(o)h-</td>
<td>Cooh-</td>
<td>CVooh-, CVooh-</td>
</tr>
</tbody>
</table>

(8) Future

The future is identical to the progressive conjunct formed with the ASP prefix di-. Hence: deesh-, di-š-, doo-, diid-, dooh-. However, when the ASP prefix ni- also appears, it follows di- and a high tone appears on di-. This high tone carries over to the following vowel. Hence: dínóosh-, dínii-, dínóo-, díniiid-, dínóoh-.

(9) Iterative

The Iterative is formed by using na- in IT position together with the O-Imperfective.

RELATIVE ORDER OF PREFIX POSITIONS:

<table>
<thead>
<tr>
<th>ADV</th>
<th>IT</th>
<th>FL</th>
<th>OBJ</th>
<th>DEIC</th>
<th>ASP</th>
<th>NODE</th>
<th>SUBJ</th>
<th>CL</th>
<th>STEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>yisdá-</td>
<td>na-</td>
<td>da-</td>
<td>shi-</td>
<td>ji-</td>
<td>di-</td>
<td>O-Imperf</td>
<td>sh-</td>
<td>l-</td>
<td></td>
</tr>
<tr>
<td>na-</td>
<td>našaná-</td>
<td></td>
<td>ni-</td>
<td>'i-</td>
<td>ni-</td>
<td>ni-Imperf</td>
<td>ni-</td>
<td>l-</td>
<td></td>
</tr>
<tr>
<td>ha-</td>
<td></td>
<td></td>
<td>nahi-</td>
<td>ho-</td>
<td>hi-</td>
<td>yi-Perf</td>
<td>iid-</td>
<td>d-</td>
<td></td>
</tr>
<tr>
<td>ch'i-</td>
<td></td>
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<td></td>
<td></td>
<td>il-</td>
<td>ni-Perf</td>
<td>oh-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ni-</td>
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<td></td>
<td></td>
<td></td>
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<td>ai-Perf</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Optative</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conjunct prefixes

Disjunct prefixes

Progressive
The following are words containing (1) the first person singular possessive prefix /shi-/ and (2) the verbal prefix /si-/ (appearing in the neuter forms of verbs derived from s-perfectives). Assume that the underlying forms of these prefixes are /shi-/ and /si-/ respectively. Notice, however, that the possessive prefix /shi-/ sometimes appear phonetically as [si-] and that the verbal prefix /si-/ sometimes appears phonetically as [shi-]. Study the examples and attempt to state the principle which governs the alternations you observe:

possessional-  

<table>
<thead>
<tr>
<th>Possessive</th>
<th>S-perfective verb form</th>
</tr>
</thead>
<tbody>
<tr>
<td>shi-má</td>
<td>si-dá 'he sits'</td>
</tr>
<tr>
<td>shi-béézh</td>
<td>si-gan 'It is dry'</td>
</tr>
<tr>
<td>si-ziiz</td>
<td>shi-jaa' 'they are lying (plural granular objects)'</td>
</tr>
<tr>
<td>shi-taa'</td>
<td>si-tí 'it is lying (animate)'</td>
</tr>
<tr>
<td>shi-gaan</td>
<td>shi-jéé' 'they are lying (plural animate)'</td>
</tr>
<tr>
<td>si-k'is</td>
<td>shi-téézh 'they are lying (dual animate)'</td>
</tr>
<tr>
<td>si-dziil</td>
<td>si-tsooz 'It is lying (flat flexible object)'</td>
</tr>
<tr>
<td>si-tsiits'iin</td>
<td>shi-béézh 'it boiled'</td>
</tr>
<tr>
<td>si-tse'</td>
<td>si-do 'it is hot'</td>
</tr>
<tr>
<td>shi-cheii</td>
<td>si-k'az 'it is cold'</td>
</tr>
<tr>
<td>shi-doh</td>
<td>si-ts'il 'it shattered, broke'</td>
</tr>
<tr>
<td>shi-tl'izh</td>
<td>si-zí 'it stands erect'</td>
</tr>
<tr>
<td>si-tsii'</td>
<td>si-tä 'it lies (slender stiff object)'</td>
</tr>
<tr>
<td>shi-bid</td>
<td>si-'eez 'I stepped on it'</td>
</tr>
<tr>
<td>shi-da'</td>
<td></td>
</tr>
<tr>
<td>si-wos</td>
<td></td>
</tr>
<tr>
<td>shi-ch'hui</td>
<td></td>
</tr>
<tr>
<td>si-k'os</td>
<td></td>
</tr>
<tr>
<td>shi-lah</td>
<td></td>
</tr>
<tr>
<td>shi-t logits</td>
<td></td>
</tr>
<tr>
<td>si-log</td>
<td></td>
</tr>
<tr>
<td>si-zóó</td>
<td></td>
</tr>
<tr>
<td>si-zóó</td>
<td></td>
</tr>
</tbody>
</table>
possessive
si-tsóí 'my grandchild (maternal)'

s-perfective verb form
si-t'é 'cooked, baked'

si-tléé' 'object at rest (mushy matter)'

si-kå 'object at rest (plural in an open container)'

si-lá 'object at rest (slender flexible object)'

si-síí' 'to be piquant'

si-äh 'object at rest (bulky hard object)'

si-yâ 'object at rest (anything bundled or loaded together)'

shi-jool 'object at rest (non-compact matter)'

shi-zhooz 'object at rest (slender objects in parallel position)'

shi-jizh 'it crushed'

shi-zhah 'to be bent (horse-shoe like)'

Ashkii naalnish    'The boy is working.'
Díí hastiin hataał  'This man is singing.'
Ashkii dóó át'éd naané    'The boy and the girl are playing.'
Díí awéé' bimá naalnish    'This baby's mother is working.'

We begin by hypothesizing that the above sentences consist of a subject and a verb. The above sentences can be associated with the following structures.

```
S
   NP
      N
        Ashkii
   V
      naalnish

S
   NP
      Det
         N
          hastiin
   V

S
   NP
      Det
         N
          bimá
   V
      naalnish

S
   NP
      N
        át'éd
   V
      naané

S
   NP
      N
        awéé'
```

Even more complex trees are possible. The following string is ambiguous. The ambiguity is made explicit by the fact that it represents two different phrase markers.

Díí ashkii dóó ńléí at'éd bimá naalnish.
Two NP structures are theoretically possible for the next sentence.

Díí ashkii dóó at'éd bimá. 'This boy and girl are working.'

Ellavina's interpretation favors structure A. Thus one concludes that one can conjoin noun phrases in Navajo, but not nouns.

To generate the previous structures the following phrase structure rules are required. These generate phrase markers (or trees).

<table>
<thead>
<tr>
<th>Phrase Structure Rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>S → NP V</td>
</tr>
<tr>
<td>NP → NP (dóó NP)^n</td>
</tr>
<tr>
<td>NP → NP N</td>
</tr>
<tr>
<td>NP → Det N</td>
</tr>
<tr>
<td>NP → N</td>
</tr>
</tbody>
</table>
The second rule is needed because an indefinite number of conjoined NP can occur in Navajo sentences.

Díí ashkii dóó níléí at'éd dóó naghái hastiin . . .


In addition to rules which create structures, we also require a lexicon (list of the words).

The following words indicate the type of information contained in lexical items.

![Diagram of lexicon with examples]

To fill in phrase markers use the following lexical rule.

**Lexical Rule**

Replace the terminal symbols in phrase markers by corresponding lexical items.
An important question is whether yi is part of the lexical representation, or could possibly be inserted in certain transitive sentences.

Ashkii dibé neiniłkaad  'The boy is herding sheep.'

Níléí hastiin díí ashkii bilįį yizloń 'That man roped this boy's horse.'

Díí ashkii níléí at'éd yizts'qs  'This boy kissed that girl.'

Níléí asdzání biyáázh díí hastiin bitsi' yizts'qs  'That woman's son kissed this man's daughter.'

Ashkii dóó at'éd dibé dóó tl'ízi neiniłkaad  'The boys and the girls are herding sheep and goats.'

If the -yi- is part of the lexical representation, then the following lexical structure will be necessary for 'to herd'.

```
V
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adv</td>
<td>Obj</td>
<td>Sp</td>
<td>Cl</td>
</tr>
<tr>
<td>na</td>
<td>yi</td>
<td>ni</td>
<td>l</td>
</tr>
</tbody>
</table>
```

Our next problem is to block the following sentence.

*Ashkii at'éd naalnish  'The boy is working the girl.'

(but, Ashkii at'éd yinaalnish  'The boy is working on the girl.'

```
S
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NP</td>
</tr>
<tr>
<td>Det</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>na-yi-ni-l=kaad</td>
</tr>
</tbody>
</table>
```

In order to insert lexical items properly, the local environment of the phrase another must be considered. This is done by the strict subcategorization of lexical items.

A transitive verb will require that at least 2 NPs appear to the left. This is written as follows: NP NP
Nouns may be marked as NP — or (Det) —.

3. The Postpositional Phrase.

Ashkii hastiin yá naalnish. 'The boy is working for the man.'
Hastiin asdzání yich'į' yálti 'The man is talking to the woman.'
Ashkii hastiin yił naalnish 'The boy is working with the man.'
Ashkii hastiin yiłghah yığáał 'The boy is walking beside the man.'
Ashkii hastl'ish yił yitlizh 'The boy fell into the mud.'

This requires a new set of P.S. rules.

PP + NP - P
P + Obj - Stem

An important property of the postpositional phrase is that it reflects the same yi-/bi- alternation found in transitive verbs. A natural hypothesis is that the yi-/bi- alternation arises from the SOI rule.

If it can be shown that PP is a separate constituent and not part of the verb, then this will support the existence of the SOI rule. An alternative analysis would require that the postpositions have both yi and bi prefixed in the lexicon, and the proper insertion of the yi- or bi-form would require knowledge of the 'logical subject'. A preferred analysis would be one in which a bi- replaces a yi- whenever the subject and object shifts. This single process avoids the duplication of information in both the verb and postposition.
1. **Review of last time.**

**A. Phrase Structure Rules**

\[
\begin{align*}
S & \rightarrow \ NP \ (NP) \ (PP) \ V \\
PP & \rightarrow \ NP \ P \\
NP & \rightarrow \ NP \ (doo) \ NP \\
NP & \rightarrow \ \{ NP \ Det \} \ N
\end{align*}
\]

**B. Lexicon**

Examples of lexical entries.

- **Noun:**
  - [\( N \)]
  - `ashkii`
  - [\( \text{[Det—]} \)]

- **Preposition:**
  - [\( P \)]
  - `bi`
  - `ma`
  - [\( \text{chǐ} \)]

- **Verb:**
  - [\( V \)]
  - `ya`
  - `ti`

- **Selectional Restriction:**
  - [\( \text{[NP \ (PP)—]} \)]

2. **Da-Plural Agreement.**

Consider the following sentences:

- `Ashkii naalnish` 'The boy is working.'
- `Ashiiké naalnish` 'The boys (DU) are working.'
- `Ashiiké ndaalnish` 'The boys (PL) are working.'
- `Ashkii doó at'eed naalnish` 'The boy and the girl are working.'
- `Ashkii doó at'eed ndaalnish` 'The boy and the girl are working.'
- `Ashiiké doó at'eed ndaalnish` 'The boys and the girls are working.'
- `Ashiiké doó at'eed ndaalnish` 'The boys and the girls are working.'
- `Ashkii doó at'eedkí ndaalnish` 'The boy and the girls are working.'
- `At'eedkí doó ashkii ndaalnish` 'The boy and the girls are working.'
*Ashkii dóó at'ëké naalnish  'The boy and the girls are working.'
Ashkii dibé neiniłkaad  'The boy is herding the sheep.'
Ashkii dibé dóó t'íizí neiniłkaad  'The boy is herding the sheep and the goats.'
Ashkii at'ëké yoo'ï  'The boy sees the girl.'
*Ashkii at'ëké dayoo'ï  'The boys sees the girl.'
Ashiiké dibé \{ndeiniłkaad \}  'The boys (PL) are herding sheep.'
\{neiniłkaad \}  'The boys (DU) are herding sheep.'
Ashiiké dóó at'ëké dibé ndeiniłkaad  'The boy and the girl are herding sheep.'
*Ashiiké dóó at'ëké dibé neiniłkaad  'The boy and the girl are herding sheep.'
Ashkii hastiin yá naalnish  'The boy is working for the man.'
Ashiiké hastiin yá \{ndaalnish \}  'The boys (PL) are working for the man.'
\{naalnish \}  'The boys (DU) are working for the man.'
Ashkii hastiin yá naalnish  'The boy is working for the man.'
*Ashkii hastóí ya ndaalnish  'The boy is working for the man.'
Ashkii bilah naalnish  'The boy's sister is working.'
Ashkii bilahkéi naalnish  'The boy's sisters (DU) are working.'
Ashkii bilahkéi ndaalnish  'The boy's sisters (PL) are working.'
Ashiiké bilah naalnish  'The boys' sister is working.'
*Ashiiké bilah ndaalnish  'The boys' sister is working.'

The above sentences lead us to posit the following verb agreement rule.

Plural Agreement Rule: If the first noun phrase is plural (more than 2), then the verb will have da in it. If the verb has da-, then the first noun phrase is plural.

The plural agreement rule is immediately violated by the following sentence.

*Ashiiké bilah ndaalnish

This we cannot say that the first NP determines plurality.
We will now refer to the 'first and highest NP' instead of just the 'first NP'. This will be a general principle. In analyzing a string, always take the highest node of a particular category. Thus, in the structure below, the circled NP will be the domain of the rule and not the NP underneath it.

![Diagram showing syntactic structure with 'NP' as the root node, branching to 'S', 'NP', 'N', 'Adv', 'Cl', 'Stem', and the words 'ashiike', 'bilih', 'na', 'l', 'nish'.]

To account for the S: *ashiike bilih ndaalnish we will require the additional principle that the head noun determines the number of the highest NP. Thus, the number of the circled NP is determined by bilih.

A more formal statement of da-plural agreement is

\[
\begin{align*}
\text{NP} & \quad \text{[+PL]} & X \ (\text{It}) & \quad (\text{Obj}) & Y & \text{Stem} \\
\text{1} & \quad \text{2} & \quad & \quad & \quad & \quad
\end{align*}
\]

The 'highest NP principle' (also called the A-over-A principle) ensures that a sequence such as ashkii döö at’ée ké will always occur with a plural form of the verb.

The next set of forms shows that we will require additional assumptions to account for da-plural agreement.

- Ashiiké at’ée d dayoo’í
  'The boys see the girl.'
- At’ée d ashiike daboo’í
  'The boys see the girl.'
  (The girl is seen by the boys.)
- Ashkii at’ée ké yoo’í
  'The boy see the girls.'
- Ashkii at’ée ké d yoo’í
  'The boy see the girls.'
- At’ée ké ashkii boo’í
  'The girls are seen by the boy.'
- *At’ée ké ashkii daboo’í
  'The girls are seen by the boy.'
The current form of da-plural agreement can be 'salvaged' if SOI were to precede da-plural agreement.

The next set of sentences show yet another violation of da-plural agreement.

*Ashkii hastóí yá ndaalnish 'The boy is working for the men.'
*Ashkii hastóí yich'í' yádaalti 'The boy is speaking to the men.'
*Ashkii hastóí yiláahgo ndaalnsih 'The boy is working more than the men.'
*Ashkii hastóí yikéeldéé ndaalnish 'The boy is working behind the men.'
*Ashkii hastóí yilágji' ndaalnish 'The boy is working in front of the men.'

Ashkii hastóí yil ndaalnish 'The boy is working with the men.'
The final sentence here violates our principle, since the second NP helps to determine da-plural agreement in the verb.

Plural agreement has another wrinkle in Navajo. A number of verbs have suppletive forms for the singular, dual and plural number. (No da- need occur in the plural in such cases.)

Ashkii yigáal 'The boy is walking along.'
Ashiiké yi'ash 'The boys (DU) are walking along.'
Ashiiké yikah 'The boys (PL) are walking along.'
At'ééd \{ nidaah \{ sidá \} 'The girl is seating herself.'
' 'The girl is seated.'
At'ééké níikeeh 'The girls (DU) are sitting down.'
At'ééké siké 'The girls (DU) are in a sitting position.'
At’ééké nibíjh 'The girls (PL) are sitting down.'
At'ééké naháaztá 'The girls (PL) are in a sitting position.'
(Awéé' naaghá 'The baby is walking.'
Ashkii awéé' nayíilá 'The boy is walking the baby.')
*Ashiiké yigáal 'The boys (are) walking along.'
*Ashiiké nidaah 'The boys are seating themselves.'
*Ashkii yi’ash
'The boy (are) walking along.'

*Ashkii yikah
'The boy (are) walking along.'

*Ashkii nibijih
'The boy are sitting down.'

The suppletive stem selection is a general feature of Navajo. Different stems may occur with different spatial configurations of the subject.

Ashkii sidá
'The boy is sitting.'

Ashkii sitij
'The boy is lying.'

Ashkii si’zi
'The boy is standing.'

Tl’óótl silá
'The rope is 'situated'.'

Beeldléi si’gé
'The blanket is in position.'

Beeldléi sikaad
'The blanket is lying spread out.'

Beeldléi shijool
'The blanket is heaped.'

Beeldléi siltsooz
'The blanket is lying flat.'

Beeldléi sighi
'The blanket is bundled.'

The verb number suppletion is handled by stem selection in the base. The verb will be inserted in the tree if its number features match those of the subject.

![Tree diagram]

S

NP

[-Sg]

[-Pl]

V

si

Perfective

Stem

ké

(condition: subject is)

[-Sg]

[-Pl]
Ashkii atʼééd yiíghah yígááł 'The boy is walking beside the girl.'

* yiʼash

Ashkii atʼééd yíl̈ą́ą́jįʼyígááł 'The boy is walking in front of the girl.'

* yiʼash

Ashkii atʼééd yíl yiʼash 'The boy is walking with the girl.'

Ashkii atʼééd yíl yígááł (the girl is not walking)

There are three types of theories which can be proposed to account for the interpretation of the last two sentences.

(1) The sentences with the dual stem may have a more abstract source. Namely the comitative PP's come from conjoined expressions.

(2) Comitative phrases are compounds of a type. \( NP \rightarrow NP NP yíl \)

(3) Stem selection and da-plural are governed by strictly semantic considerations. What matters is how may entities participate in the action of the verb.
The da-plural can show a distributive object or subject.

Ashkii hastói yiláahgo ndaaldinsh 'The boy is working more than the men.'
Ashkii hastói yil ndaaldinsh 'The boy is working with the men.'

Besides number agreement there is person agreement.

Shí naashnish
Shí dibé nanishkaad
Shí hastiin bich'i'yáshti'
*Shí nanilnish
Shí dóó ashkii neiilnish

<table>
<thead>
<tr>
<th>Subject</th>
<th>Person</th>
<th>Agreement</th>
<th>Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP</td>
<td>[x-person]</td>
<td>(C1) Stem</td>
<td>=&gt; 1</td>
</tr>
<tr>
<td></td>
<td>[y-number]</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

Our present theory predicts that verbs will be 'bad' if there is a conflict between the person or the subject and the person of the stem.

yish'ash  
| dual stem |
|_________|
| 1st sg. subject |

ndaashnish  
| 1st sg. subject |
|_________|
| plural |

*Shí ndaashnish
*Shí yish'ash
*Shí yishkah

naalnish (It can't be naashnish. Thus, the person features of the head are copied onto the highest NP.)
*Shí séké
*Shí nishkeeh
*Shí nishbiįh

But such verb forms occur.

(Shí) ashkii bił yish'ash    'I am walking along with the boy.'
(Shí) ashiiké bił yishkah    'I am walking along with the boys.'
(Shí) at'ééd bił séké        'I am sitting with the girls.'

Shí hastói bił ndaashnish

The last set of sentences show that theory two cannot be correct.
If the features of the highest NP were an amalgamation of the feature of the lower constituents there would be no way to select both the proper subject marker and the correct verb stem.
1. Conclusion of Discussion of Agreement Rules in Navajo.

Conditions on well-formedness of structures. If a S does not conform to the following rules (i.e. (a-e) below), assign a star to it.

(a) Da-plural agreement. If and only if V contains the prefix da, it appears in a structure of the form

\[
\begin{array}{c}
\text{NP} \\
\text{X} \\
\text{V} \\
[+\text{pl}] \\
\end{array}
\]

(Exception: unless V is intransitive and its stem is marked [+pl].)

(b) Intransitive Stem Selection. If the stem of an intransitive verb is marked \([\text{asg} \beta_{\text{pl}}]\), then V appears in a structure of the form

\[
\begin{array}{c}
\text{NP} \\
\text{X} \\
\text{V} \\
[usg] \\
[\beta_{\text{pl}}] \\
\end{array}
\]

Examples:

- **Singular:** Ashkii yigáal
  - \([+\text{sg}] \ -\text{pl}] \\
  - \([+\text{sg}] \ -\text{pl}] \\

- **Dual:** Ashkii dóó at’eééd yi’ash
  - \([-\text{sg}] \ -\text{pl}] \\
  - \([-\text{sg}] \ -\text{pl}] \\

- **Plural:** Ashkii dóó at’eééd dóó hastiin yikah
  - \([-\text{sg}] \ +\text{pl}] \\
  - \([-\text{sg}] \ +\text{pl}] \\

(c) Subject Person Agreement. If V contains an \([\text{gI} \beta_{\text{II}} \gamma_{\text{sg}}]\) subject person marker, then V appears in a structure of the form

\[
\begin{array}{c}
\text{NP} \\
\text{X} \\
\text{V} \\
[\text{gI}] \\
[\beta_{\text{II}}] \\
[\gamma_{\text{sg}}] \\
\end{array}
\]

- I = first person \(sha-\) = \([+I, -II, +\text{sg}]\)
- II = second person \(ni-\) = \([-I, -II, +\text{sg}]\)
- sg = singular \(iit-\) = \([+I, -II, -\text{sg}]\)
- oh- = \([-I, +II, -\text{sg}]\)
These features are assigned to noun phrases as well, of course:

\[
\text{shí dóó bí}
\]

\[
\begin{array}{c}
+I \\
-II \\
-sg
\end{array}
\]  
(Note: +I in any conjunct dominates.)

Example: Shí dóó dií ashkii...diit'ash.
'I and this boy...are walking.'

(d) **Transitive Stem Selection** (depends on object). If the stem of a transitive verb is marked \([\alpha_{sg}]\), then \(V\) appears in a structure of the form:

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

\[
\begin{array}{c}
\alpha_{sg} \\
\beta_{pl}
\end{array}
\]

Examples:

Hastií \{ ashkii neíté.

\begin{array}{c}
[+sg] \\
[+sg]
\end{array}

'The men are} carrying the boy around.'

Hastiin ashkii yisdá yíilóóz.

\begin{array}{c}
[+sg] \\
[+sg]
\end{array}

'The man carried the boy to safety.'

Hastiin ashiiiké neijaah.

\begin{array}{c}
[-sg] \\
[-sg]
\end{array}

'The man is carrying the boys around.'

Hastiin ashiiiké yisdáyíí’eezh.

\begin{array}{c}
[-sg] \\
[-sg]
\end{array}  \text{ (ashiiiké can be either dual or plural)}

'The man carried the boys to safety.'

Certain transitive stems (which derive from intransitive stems) do reflect a dual:

Singular form: Shí awéé’ nabiishlá.

\begin{array}{c}
[+sg]
\end{array}

'I am walking the baby around.'
(cf. awéé' naaghá 'The baby is walking around.')

[+sg]
na bi (i)sh I á
adv object 1st cl stem(sg)

marker

Dual form: Shí awéé' nabiish'aash
[-sg]
[-pl]

'I am walking two babies around.'

(e) Object Person Agreement. If V contains a \[\begin{array}{|c|}
\hline
\alpha \ I \\
\beta II \\
\gamma sg \\
\hline
\end{array}\] object person marker, then V appears in a structure of the form:

NP NP X V

Example: Níléí hastiin shí dóó sitsilí yisdáníhidoó'ísh.

\[\begin{array}{|c|}
\hline
+I \\
-II \\
-sg \\
\hline
\end{array}\]

'That man will lead me and my brother to safety.'

General condition on the application of rules: When a rule mentions a particular phrasal category, it must apply to the maximal analysis of such a category. (Chomsky's A-over-A.)

2. Refining Navajo Agreement Rules. The following sentences will force us to revise da-plural agreement (DPA). Given the above rules certain predictions on grammaticality are made. These predictions are matched with the actual judgments.

(a) DPA and SOI

<table>
<thead>
<tr>
<th>Da-Plural Agreement Predicted</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DPA and SOI</strong></td>
<td></td>
</tr>
<tr>
<td>1. ašhikií aťééd dayoo'í</td>
<td>OK</td>
</tr>
<tr>
<td>[+pl] [+sg] see</td>
<td></td>
</tr>
<tr>
<td>2. aťééd ašhikií daboo'í</td>
<td>*</td>
</tr>
<tr>
<td>[+sg] [+pl]</td>
<td></td>
</tr>
</tbody>
</table>
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DPA and SOI

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>ashkii at'éeke yoo'į [+sg] [+pl]</td>
</tr>
<tr>
<td>4.</td>
<td>at'éeke ashkii boo'į</td>
</tr>
<tr>
<td>5.</td>
<td>ashkii at'éeke dayoo'į</td>
</tr>
<tr>
<td>6.</td>
<td>at'éeke ashkii daboo'į</td>
</tr>
</tbody>
</table>

Da-Plural Agreement

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted</td>
<td>Actual</td>
</tr>
<tr>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>*</td>
<td>OK</td>
</tr>
<tr>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>OK</td>
<td>*</td>
</tr>
</tbody>
</table>

The incorrect prediction of DPA results from ordering SOI then DPA' but if order is DPA then SOI, the correct stars are assigned. Further, if the DPA rule is a condition on lexical insertion then we would automatically get the right ordering, i.e. SOI would automatically follow DPA, assuming that it is a transformational rule.

(b) Transitive Stem Selection and SOI

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Predicted</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOI</td>
<td>TSS</td>
<td>SOI</td>
<td>TSS</td>
</tr>
<tr>
<td>1. Hastiin ashkii neištė [+sg] [+sg]</td>
<td>OK</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>3. Ashkii hastiin nabilté [+sg] [+sg]</td>
<td>OK</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>5. Hastóí ashkii neištė [+sg] [-sg]</td>
<td>OK</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>6. Ashkii hastóí nabilté [-sg] [+sg]</td>
<td>*</td>
<td>OK</td>
<td>OK</td>
</tr>
</tbody>
</table>

If TSS ordered before SOI the correct grammaticality predictions are made.

If TSS is a condition on lexical insertion, then SOI (if it is a transformation) would automatically follow TSS.

(c) DPA and Conjunct Movement

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Predicted</th>
<th>Fact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ashkii hastóí ya naalnish.</td>
<td>OK</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>2. Ashkii hastóí yíl ndaalnish</td>
<td>*</td>
<td>OK</td>
<td></td>
</tr>
</tbody>
</table>
Navajo - Lecture 9

DPA and Conjunct Movement

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The incorrectly starred sentences could be reanalyzed such that the deep structure (using (2) as an example) is:

```
S
  /\  \\
 NP  V
/\   \   \ \\
NP  dóó  NP  ndaalnish
|      |      |
ashkii hastói
```

and assuming that this structure undergoes a rule—call it Conjunct Movement (CM)—which derives the following surface structure:

```
S
  /\   \\
 NP  PP
/\   \\
NP  P  V
|   |
ashkii hastói yíl ndaalnish
```

Da-Plural Agreement applies to the DS and then Conjunct Movement applies—i.e. the ordering is as follows:

Da-Plural Assignment

Conjunct Movement

But if (4) is reanalyzed in that fashion, there is a problem.
The appearance of the subject marker /sh-/ is bad, theoretically. The sentence is, however, correct in regard to the appearance of /da-/.

The expected person agreement would be as follows:

Shí dóó hastóí ndeiiłnish.

[+I]  
[-sg]  

[-I]  
[-sg]

Rule ordering can solve this problem. The ordering

Da-Plural Agreement
Conjunct Movement
Subject Person Agreement

will give the correct result. Thus, evidently, Subject Person Agreement differs from DPA in that /sh-/ agrees with shí and /da-/ agrees with /shí hastóí bił/ (< shí dóó hastóí).

We can now consider how Subject Person Agreement interacts with stem selection. Consider the sentence

Shí ashkii bił yish'ash

dual

'I am walking with the boy.'

This sentence will be correctly generated with the following rule ordering:

ISS (Intransitive Stem Selection)
CM (Conjunct Movement)
SPA (Subject Person Agreement)

Can we get nonsingular subject marking with a singular stem?

Níhi na'nízhoozhigóló diit'ash  'We (2) are going to Gallup.'
Níhi na'nízhoozhigóló diikah  'We (pl) are going to Gallup.'
Níhi na'nízhoozhigóló *diiddááł  'We (sg) are going to Gallup.'
Evidently not. However, the verb form /diidáá/ can occur in grammatical sentences, for example:

Nihí la' Na'nízhoozhigóó diidáá.
[-sg]

'One of us will go to Gallup.'

Our rules predict that this sentence is ungrammatical. We could save the rule by assuming a rule of Quantifier Floating (Q-Float), which derives (b) below from (a):

(a)

\[
\text{S} \\
\text{NP} [+\text{sg}] \\
\text{NP} \\
nihí la' \\
\text{EP} \\
Na'nízhoozhigóó \\
\text{V} \\
di-ááá \\
[-\text{sg}][+\text{sg}]
\]

(b)

\[
\text{S} \\
\text{NP} \\
nihí la' \\
\text{NP} \\
\text{EP} \\
Na'nízhoozhigóó \\
\text{V} \\
di-ííd-ááá
\]

The deep structure (a) would allow the correct stem selection, and the derived structure following Q-Float (i.e. (b) above) would allow the correct subject agreement. We thus have the following rule ordering:

Stem Selection
Q-Float
Subject Person Agreement.

The same facts can be constructed with transitive verb stem selection.

Hastiin nihí la' yisdáníhilóó.
object [-sg][+sg]

'The man is leading one of us to safety.'
We now have three blocks of ordered rules

\[
\begin{align*}
\text{A.} &\quad \begin{cases} 
\text{Da-Plural Agreement (DPA)} \\
\text{Intransitive Stem Selection (ISS)} \\
\text{Transitive Stem Selection (TSS)}
\end{cases} \\
\text{B.} &\quad \begin{cases} 
\text{Subject-Object Inversion (SOI)} \\
\text{Conjunct Movement (CM)} \\
\text{Quantifier Float (QF)}
\end{cases} \\
\text{C.} &\quad \begin{cases} 
\text{Subject Person Marking (SPM)} \\
\text{Object Person Marking (OPM)}
\end{cases}
\end{align*}
\]

Summary

1. Person agreement behaves differently from number agreement. Number agreement is early, while person agreement is late.

2. It appears that number agreement is selectional, i.e. a condition on lexical insertion, while person agreement is a late transformational rule.

An alternative conception of these facts holds that the two types of rules consistently look at different things.

(a) **Person Agreement** is, in fact, structurally governed, while

(b) **Number Agreement**, on the other hand, is concerned with aspects of meaning.
Conclusion of Discussion of Agreement in Navajo:

In the previous lecture a theory was proposed to account for sentences such as the following:

(A) (Shí) hatchtín bil yish'ash. 'I am walking with the man.'

(B) (Shí) hastóí bil ndaashnish. 'I am working with the men.'

The theory which accounted for these sentences used ordered transformational rules.

(A) DPA, ISS, TSS  
(B) QF, CM  
(C) SPA, OPA  

(Da-Plural Agreement, .....)
(Quantifier Float, .....)
(Subject Person Agreement, .....)

1. Structural change associated with Quantifier Float. The source of the sentence /Nihí la' diidáal/ is (a); the resulting structure is (b):

(a)  

(b)  

2. Structural change associated with conjunct movement. The source of sentence /Hastiin ashkii yil naalnish/ is (a), the resulting structure is (b):
Statement of Conjunct Movement Transformation.

NP - dóó NP - Δ - yił - X ->
1, 2, 3, 4, 5, 6
1, ∅, ∅, 3, 5, 6

The rules of CM and QF are motivated by the two separate agreement processes. The next set of sentences will be problematic for the above theory. We will eventually formulate agreement in terms of the logical form of sentences.

Ashkii tó dilchxoshí bił likan
"The boy likes soda pop."

(Shí) tó dilchxoshí shíl likan.
"Soda pop is sweet to me."

Ashkii at'éd bił nizhóní.
"The boy regards the girl as pretty."

At'éd (shí) shíl nizhóní.
"The girls are pretty to me."

*(Shí) ashkii bił nishzhóní.
"The boy likes me."

*Linishkan.
'I am pretty to the boy.'

Yá'ànísht'ééh.
'I am sweet.'

Ashkii at'éd bił nizhóní
"The girl is pretty to the boy."
'Affection' verbs always occur with the 'bi-forms' of the postposition.
*At'ééd ashkii yil nizhóní. 'The boy likes the girl.'

The semantic object of affection verbs must be third person.
*Ashkii bił yá'ánísht'ééh. 'That boy likes me.'

However, the semantic object is evidently the subject, in structural terms. The structure of /tó dilchxoshi (shí) shił likan/ is, presumably:

```
S
   /\  /
  /  \
 NP  PP
   /  /
  /   
 tó dilchxoshi  shí

V
     /\ 
    /  \ 
   P   likan
   /  
  shił
```

Consider now the plural forms:

A. Ashiiké tó dilchxoshi bil daalkan. 'The boys like soda pop.'
   Tó dilchxoshi nihíl daalkan. 'We like soda pop.'
   Ashiiké at'ééd bil danizhóní. 'The boys like the girl.'

B. Sentences with 'locative subjects' have ho-agreement in the verb.
   Tucson-di yá'áhoot'ééh. 'It is good in Tucson.'
   Tucson-di hózhóní. 'It is pretty in Tucson.'
   (Shí) Tucson-di shíl yá'áhoot'ééh. 'I like it in Tucson.'
   (Nihí) Tucson-di nihíl yá'ádahoot'ééh. 'We like it in Tucson.'

The verb agrees with locative subject, but also has da-agreement with the object of the postposition.

   Níl yá'áhoot'ééh. 'You like it (place).'

Is /nih/ part of the verb? The placement of the interrogative enclitic /-isch/ indicates that /nih/ is a separate constituent:
Nilish yá'ahoot'ééh. 'Do you like it (place)?'

The agreement with da in the following sentence is problematic—at least it is so, if /ashiiké/ is the grammatical object of the postposition:

Ashiiké tó dilchxoshi bil daalkan. 'The boys like soda pop.'

For the (A.) sentences above, how is agreement taking place? Agreement with subject, object, or both (coordinated)? Note that with a dual noun in first position da doesn't occur.

*Ashkii dóó at'ééd tó dilchxoshi bil daalkan.

'The boy and the girl like soda pop.'

Thus one cannot sum up the dual subject plus the object and get a plural. These sentences thus cast doubt on the current (structural) formulation of DPA.

The following problematic sentences also exist:

Ashkii bilī'í hóló. 'The boy has a horse.'

boy his-horse exists

(Shí) shilī'í hóló. 'I have a horse.'

Honishló. 'I exist.'

Honíló. 'You exist.'

Ashiiké bilī'í dahóló. 'The boys have a horse.'

The last sentence apparently has the following structure:

```
S
  NP
    N
      ashiiké
    V
      bilī'í
      dahóló
```

One would expect that /bilī'í/ would determine the plurality of the subject; but here, evidently, the possessor /ashiiké/ is responsible for the appearance of /da-/.
Ashkii lįį' bee hóló. 'The boy has horse(s).'

The underlying phrase marker for this sentence is presumably the following:

```
S
  / \  
 NP PP V
  /  \  /
 lįį' ashkii bee hóló
```

(with)

from which SOI derives /ashkii lįį' bee hóló/. The following sentence, however, is ungrammatical: *Shilįį dahóló. 'I have horses.' The noun /lįį'/, which could have a plural meaning, should be able to take /da-/ in the verb, but it does not here. Similarly, the sentence

lįį' shee hóló.

is ambiguous, according to the number of horses possessed. Now consider the following sentence

Ashiiké dóó at'éeéké biliį' dahóló. 'The boys and girls have (one) horse.'

Although the head is potentially singular, the verb must show da-plural agreement.

```
S
  / \  
 NP PP V
  /  \  /
 ashiiké dóó at'éeéké biliį'
```

The following sentences also show this discrepancy with da-plural agreement.

T'áá'áníit'é nihilį' dahóló. 'All of us have horses.'

'Each of us has a horse.'
T'áá' ániít'é nihíí' t'áálá'í dahóló. 'Each one of us has one horse.'

This sentence is bad without /da-/.

How do we get plural agreement on sentences such as the follow?

Ashiiké dóó at'édéé bilìì' dahóló.

Maybe /bilìì'/ is an object, and not 'a head'. But /hóló/ is not transitive, so that is unlikely. Consider also:

Ashiiké liìì' bee dahóló.

liìì' nihee dahóló.

Ashkii liìì' bee hóló.

liìì' shee hóló.

To account for the problems of DPA, a new theory will be proposed—roughly:

Assume that all verb forms are generated in the base. If V contains /da-/ then its subject in logical form must be capable of referring to a plurality.

New Version of Stem Selection:

If V is intransitive (bzw. transitive) and contains an $^{\text{sg}}_{\text{pl}}$ stem, then the subject (bzw. object) in logical form must be capable of referring to a cardinality of $^{\text{sg}}_{\text{pl}}$.

Example of formalism expressing logical form:

Ashkii naalnish: (ashkii, $\lambda$x (x naalnish))

Ashkii at'édéé yizts'qs: (ashkii, $\lambda$x (at'édéé, $\lambda$y (x, y, yizts'qs)))

The logical form of /at'édéé bi'dizts'qs/ is the same as contained in the inner parentheses of the above expression, i.e. (at'édéé, $\lambda$y (x, y, yizts'qs)) where x is not bound.

Nihí la' Na'nízhoozhigóó diidááí. 'One of us is going to Gallup.'
Stem selection will be determined by the subject in logical form (la')

\[
\lambda x \ (x \ Na'nizhoozhigóó....ááí) \ dóó \ la', \ x \ (x \ nihitah \ nilį)
\]

\[
\lambda a', \ \lambda x \ (x \ Na'nizhoozhigóó \ doogááí \ dóó \ x \ nihitah \ nilį)
\]
Navajo Problem I

Consider the following sentences.

(1)  (a) (shí) ashkii nanishtin 'I am instructing the boy.'
     (b) Ashkii (shí) nashinitin 'The boy is instructing me.'
     (c) Shí dóó ashkii na’ahiniitín 'I and the boy are instructing each other.'

(2)  (a) (Shí) ashkii yiiltsá 'I saw the boy.'
     (b) Ashkii (shí) shiiiltsá 'The boy saw me.'
     (c) Shí dóó ashkii ahiiltsá 'The boy and I saw each other.'

(3)  (a) (Shí) ashkii béehoséšiːd 'I got to know the boy.'
     (b) Ashkii (shí) shéehoosíːd 'The boy got to know me.'
     (c) Shí dóó ashkii ahééhosiilziːd 'I and the boy got to know each other.'

In the (c) sentences of (1-3), the reciprocal prefix (/ahi-/ appears in object position. This prefix can appear in a transitive verb provided that the subject is nonsingular. Now consider the following.

(4)  (a) *Shí na’ahinishtin '*I am instructing each other.'
     (b) *(Shí) ahiiltsá /*I saw each other.'
     (c) *(Shí) ahééhosisiːd '*I got to know each other.'

The verb forms in (4) a-c are internally inconsistent. The presence of the reciprocal prefix implies that the subject is nonsingular, but the subject prefix is 1st person singular. Now consider the following grammatical sentences, in which precisely these same internally inconsistent forms appear.

(5)  (a) (Shí) ashkii bił na’ahinisitin '*I am instructing each other with the boy.'
     (b) (Shí) ashkii bił ahiiltsá 'I saw each other with the boy.'
     (c) Shí ashkii bił ahééhosisiːd '*I got to know each other with the boy.'

Devise a theory of reciprocals which explains the ill-formedness of (4) a-c and the well-formedness of (5) a-c. NOTE: /ahi-/ with 1
classifier verb, 1 → 1, /ahi-/ with Ø classifier verb, Ø → d
Navajo - Lecture 11
November 4, 1976
Ken Hale/Ellavina Perkins

1. Enclitics.

\[ S \rightarrow NP (NP) \{ \{ \text{PP} \} \} \]

\[ \text{PP} \rightarrow \text{NP} \ P \]

\[ \text{EP} \rightarrow \ N \ E \]

Differences between postpositional phrases and enclitic phrases.

(A) Postpositions take NP, enclitics take N

(B) Postpositions take object prefixes

(C) Object of postpositions can be ripped out (moved by transformations)

(D) Enclitic phrases refer to places.

Examples:

Shizhé'é Kinlánídi naalnish.

Shizhé'é Kinlánígo'ó naalnish.

Shizhé'é Kinlánígo'ó deeyá.

Shizhé'é shínaáí naalnishigóó deeyá.

'My father works in Flagstaff.'

'My father is working in the direction of Flagstaff.'

'My father is going to Flagstaff.'

'My father is going to where my brother works.'

2. Sentence Negation. (doo...da)

Shizhé'é doo yaltí' da.

The favorite place for doo is second position.

Shizhé'é doo lîif' yizloh da.

Ashkii doo at'éeed yizts'qis da.

At'éeed doo ashkii bizts'qis da.

Shizhé'é bichídí yíchxé.

'My father is not speaking.'

'My father didn't rope the horse.'

'The boy didn't kiss the girl.'

'The girl wasn't kissed by the boy.'

'My father's car broke down.'
Navajo – Lecture 11
November 4, 1976

Shizhè'é bichídí doo yíchxq' da.
Doo shizhè'é yálti' da.
(Shi) doo chídí nahideeshnih da.

"My father's car didn't break down."
"It's not my father who's speaking."
"I'm not going to buy the car."

The position of /doo/ can be a focusing device. The 'negative' element /hanii/
can have the same function.

At'ééd bich'i' yáshti'.
Doo at'ééd bich'i' yáshti' da.
At'ééd bich'i' doo yáshti' da.

The second element /da/ does not appear when the relative marker /-ígií/ appears:

Lii doo naalgeedígií shil ndooldlosh.

(Horse not buck-re1 me-with around-future-walk)

'The horse that's not bucking will walk around with me.'

A possible hypothesis is that only the doo part appears in the base represen-
tation of Navajo sentences:

\[ S \rightarrow (\text{doo}) \text{ NP} \ (\text{NP}) \ldots \text{ etc.} \]

The da is then inserted by a transformation (da-insertion):

\[
\begin{array}{c}
\text{doo} - X-V \rightarrow \text{doo} - X V + \text{da} \\
1 & 2 & 1 & 2+\text{da}
\end{array}
\]

The surface position of doo is then effected by 'doo-movement':

\[
\begin{array}{c}
\text{doo} - X - \text{NP} - Y \rightarrow \\
1 & 2 & 3 & 4 \\
\emptyset & 2 & 3 & 1 & 4
\end{array}
\]

3. Question Words and Indefinites in Navajo.

a. (Who) Hastiin yálti'.
Háishíí yálti'.
Háishą́ yálti'.
Háish yálti'.
Háílá yálti'.

'The man is speaking.'
'Someone is speaking.'
'Who is speaking?'
'Who is speaking?'
These 3 are synonymous.
b. (What) Ha'át'íí-shifí shishxash. 'Something bit me.'
   Ha'át'íísh shishxash. 'What bit me?'
   Ha'át'íí-shà' shishxash. 'What bit me?'
   Ha'át'íí-lá shishxash. 'What bit me?'

c. (Where) Háá-góó-sh diniyá. 'Where are you going?'
   Háadish nanilnish. 'Where do you work?'
   Háá-déé-sh naniná. 'Where did you come from?'

The interrogatives and indefinites can be introduced by phrase structure rules.

\[
\text{NP} \rightarrow \{\text{háí} \} \{\text{ha'át'íí} \} \{\text{-sh} \} \{\text{-shifí} \}
\]

\[
\text{EF} \rightarrow \text{háá} + \text{E} \{\text{-sh} \} \{\text{-shifí} \}
\]

Shizhé'é háágóóshifí deeyá. 'My father is going somewhere.'
   háá-E-shifí

4. Indefinite Negatives.

Háíshifí vàlti'. 'Someone is speaking.'
Dóó háída vàlti' da. 'No one is speaking.'
Dóó háída yádooltih da. 'No one will speak.'

In forming these, apparently /da/ replaces /-shifí/: 

Da-Suffixation: Doo - X Q (E)-shifí - Y
   1  2  3  4
   1  2  +da  4

Háíshifí vàlti'. 'Someone is talking.'
Doo háída vàlti' da. 'No one is talking.'
Háíshifí at'ééd yízts'qs. 'Someone kissed the girl.'
Doo háída at'ééd yízts'qs da. 'No one kissed the girl.'
Ashkii háíshifí yízts'qs. 'The boy kissed someone.'
Ashkii doo háída yízts'qs da. 'The boy didn't kiss anyone.'
At'éd háíshįį bizṣ'qs.  "The girl was kissed by someone.'
At'éd doo háída bizṣ'qs da.  "The girl was not kissed by anyone.'
Háíshįį askii bizṣ'qs.  "The boy kissed someone.'
Doo háída askii bizṣ'qs da.  "The boy kissed no one.'
Ashkii háíshįį yich'i' yálti'.  "The boy is speaking to someone.'
Ashkii doo háída yich'i' yálti' da.  "The boy is speaking to no one.'
Shizhė'é háágóoshįį deeyá.  "My father is going somewhere.'
Shizhė'é doo háágóóda deeyáá da.  "My father is not going anywhere.'

(Phonological rules involving /da/ added to verb stems:  ČV + da → ČVxda
 ČVVČ + da → ČVVČda)

Doo-attraction:  doo - X - Q E da - Y
              1  2  3   4  Þ
              0  2  1  3   4

5. Direct Discourse Embedded Sentences in Navajo:
   a. Example Sentences
      (Shí) chidí nahideeshnih.  'I will buy a car.'
      Shizhė'é chidí neidiyoolnih.  'My father will buy a car.'
      Shizhė'é chidí nahideeshnih nizin.  'My father wants to buy a car.'
      (Shí) Na'nízhoozhígóó deesháál.  'I will go to Gallup.'
      Shizhė'é Na'nízhoozhígóó doogáál.  'My father will go to Gallup.'
      Shizhė'é Na'nízhoozhígóó deesháál nizin.  'My father wants to go to Gallup.'
      Shí chidí nahideeshnih nizin.  'I want to buy a car.'
      nizin < (ni + sh + zin)

   b. Embedded Sentences:
      Just a few verbs take bare tensed S complements:
      dishnįį  'I say'
nisin  'I think, want'

Shizhé’é chídí nahideesniih nízin. 'My father {wants to thinks he'll} buy a car.'
(literally: "My father thinks, 'I'll buy a car'.")

Shizhé’é (shí) chídí nizhdiyoolníh áshó'ní. 'My father {expects me thinks I'm going} to buy a car.'
4th person, refers to 1st person

Shizhé’é Jáan chídí neidiyoolníh yó'ní. 'My father thinks John is going to buy a car.'
With John in the main clause binding the 3rd person in the embedded clause.

Shizhé’é doo chídí nahideesniih da nízin. 'My father doesn't want to buy a car.'
(literally: '...wants not to buy a car', "...thinks 'I will not buy a car'.")
If /doo/ is in first position, the sentence is ungrammatical when /da/ is on the embedded verb.

*Doo* shizhé'é chídí nahideeshnih *da nizin.

Note the following variant sentence in which a prefix /i/-/ appears.

? Shizhé'é íi*nizin doo* chídí nahideeshnih *da.

'My father *thinks he won’t* buy the car.'

Now consider the case in which the main verb is negated:

Shizhé'é doo chídí nahideeshnih *nizin da.

Doo shizhé'é *chídí nahideeshnih nizin da.*

?Shizhé'é *chídí doo nahideeshnih nizin da.*

Movement of elements is restricted, however. *la* cannot move into a position before an embedded verb.

Ashliké la' Na'nízhoozhígóó deeshááí *nizin.*

One of the boys *wants to go to Gallup.*

Shizhé'é doo shínaái *bilii* deeshloñh nizin da.

'My father *doesn't* want to rope his older brother's horse.'

?Shizhé'é *shínaái doo bilii deeshloñh nizin da.*

Note the occurrences of *da* in the following sentences:

Shizhé'é doo háágóóda deeshááí *nizin da.* 'My father *doesn't want to go anywhere.*'

Shizhé'é doo háágóóda deeshááí *da nizin.* 'My father *thinks he won't go anywhere.*'
The first $S$ has the Deep Structure:

```
S
  /\   \\
/   \ /   \___
/     /     \
S     V     da
|     |      |
shizhé'é NP EP  nízin
|      |
/      /
/      /
/      /___
/      /     \
/      hágóoda deeshááł
```

While the second has the following structure:

```
S
  |       |
/  \     \\
/    /     \
/   /     \
/  /      \____
S     V     da
|     |      |
shizhé'é NP EP  nízin
|      |
/      /
/      /
/      /___
/      /     \
/      hágóoda deeshááł
```
consider the following sentences:

1) (a) Haíshíí́ yaíti'. 'Someone is speaking.'
     (b) Doo háída yaíti'ida. 'No one is speaking.'
     (c) Doo yaíti'ida.

2) (a) Haíshíí́ at'ééd yizts'qs. 'Someone kissed the girl.'
     (b) Doo háída at'ééd yizts'qsda. 'No one kissed the girl.'
     (c) Doo at'ééd yizts'qsida.

3) (a) Ashkii haíshíí́ yizts'qs. 'The boy kissed someone.'
     (b) Ashkii doo háída yizts'qsda. 'The boy didn't kiss anyone.'
     (c) Ashkii doo yizts'qsida.

4) (a) At'ééd haíshíí́ bizts'qs. 'The girl was kissed by someone.'
     (b) At'ééd doo háída bizts'qsda. 'The girl wasn't kissed by anyone.'
     (c) At'ééd doo bizts'qsida.

5) (a) Haíshíí́ ashkii bizts'qs. 'Some one was kissed by the boy.'
     (b) Doo háída ashkii bizts'qsda. 'No one was kissed by the boy.'
     (c) Doo ashkii bizts'qsida.

6) (a) Ashkii haíshíí́ yich'i' yaíti'. 'The boy is speaking to someone.'
     (b) Ashkii doo háída yich'i' yaíti'ida. 'The boy is not speaking to anyone.'
     (c) Ashkii doo yich'i' yaíti'ida.

7) (a) Hastiin háagooshi deeyá. 'The man is going somewhere.'
     (b) Hastiin doo háagoosda deeyáada. 'The man is not going anywhere.'
     (c) Hastiin doo deeyáhigóoda.

8) (a) Shizhé'é ha'át'iishíí nahideesniih nízin. 'My father thinks he will buy something.'
     (b) Shizhé'é doo ha'át'iída nahideesniiháda nízin. 'My father thinks he won't buy anything.'
     (c) Shizhé'é doo nahideesniiháca nízin.
Problems:

A. In the above sets, the (c)-sentences are synonymous with the (b)-sentences. The problem is to incorporate the (c)-sentences into our analysis of Navajo. Let us assume that the (c)-sentences are produced by means of a transformational rule which moves an element from some prefinal position into the position between the verb and the final enclitic -da. Your task is to provide arguments -- as many as you can think of -- in favor of this Transformational Hypothesis, as opposed to a Base Hypothesis according to which the (c)-sentences are produced directly by phrase structure rules.

B. Show how the Transformational Hypothesis would explain the ill-formedness of sentences (14-19) below, and how a competing Base Hypothesis could do so only with considerable loss of generality.

(14) *Do yangiyida.

(15) *Ashkii doo yáti'ida.
C. Show how the Transformational Hypothesis can, more easily than the Base Hypothesis, explain the meanings of the following sentences.

(a) Ashkii doo yizts’gsida. 'The boy didn't kiss anyone.'
(b) Doo ashkii yizts’gsida. 'No one kissed the boy.'
(c) Ashkii doo bizts’gsida. 'The boy wasn't kissed by anyone.'
(d) Doo ashkii bizts’gsida. 'No one was kissed by the boy.'
1. Problem #2 handed out. Hints for working on Problem #2.

A. Assume that all (c) sentences have an í as part of their structure.
   This í can be moved to the right by a rule (which also moves enclitics).
   \[ X \rightarrow \text{doo} \rightarrow í (E) \rightarrow Y \rightarrow \text{da} \rightarrow 1 2 0 4 3 5 \]
   Example:
   Doo í yálti' da.  Doo yálti' í da.
   'No one is speaking.'
   (There is an alternative analysis. An interrogative pronoun (which we abbreviate H) may be turned into an í when moved to the right):
   \[ X \rightarrow \text{doo} \rightarrow H (E) \rightarrow da \rightarrow Y \rightarrow da \rightarrow X \rightarrow \text{doo} \rightarrow Y í (E) \rightarrow da \]
   Example:
   Doo háída yálti' da.  Doo yálti' í da.)

B. Additional sentences

(14')  Yáshti'.  'I am speaking.'
(15')  Ashkii yálti'.  'The boy is speaking.'
(16')  Shizhé'é doo shilhozh da.  'My father is not tickling me.'
(17')  Ashkii at'ééd yizts'qs.  'The boy is kissing the girl.'
(18')  *Shizhé'é doo Kinlánígóó naalnish da.  'My father doesn't work to Flagstaff.'

(18'') Shizhé'é Kinlánígóó deeyá.  'My father is going to Flagstaff.'

(18''' Shizhé'é doo Kinlánígóó deesháaal nízin da.
   'My father doesn't think he'll go to Flagstaff.'
   (Hypothesis: í is a pronoun without a person marker, unlike /shí/ which has
   the person marker /sh-/--shí < sh + í.)

C. Example of a negative sentence with í in the deep structure.
The rule applying to this structure actually generalizes to sentences besides negatives.

\[ X - \text{doo} - A - Y - \text{da} \] (where \( A \) is a cover symbol for NP and EP)

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

D. Examples where \( i \) occurs in sentences which are not negatives.

Shizhë'é deeshááí nizinígóosh nil bééhózin?

'Do you know where my father wants to go?'

Shizhë'é deeshááí nizinígóó doo shił bééhózin da.

'I don't know where my father wants to go.'

It is also used in negative commands, though the source of \( i \) here is not well understood:

T'áadóó yáništi'í. 'Don't speak.'

2. Relative Clauses.

A. Relativized sentence without a head noun.

Ashkii deezhtlizhè yicha. 'The boy that fell down is crying.'

This sentence appears to be a combination of two sentences.

Ashkii deezhtlizh. 'The boy fell down.'

Ashkii yicha. 'The boy is crying.'

Ashkii lééchág'í bishxashhé' nahal'in. 'The dog that the boy was bitten by is barking.'

As above, two sentences appear to underlie this sentence.
Ashkii lééchą́ą́ʼí bishxash.  'The boy was bitten by the dog.'
Lééchą́ą́ʼí nahal'ìn.  'The dog is barking.'

Hypothesizing a /-éé/ relativizer, the following phrase markers can be assigned to the above complex sentences:

Properties of the relativizer.

(a) éé can become a by assimilation.
(b) The form éé is used if the tense (not aspect) refers to past time.
(c) If the tense is the same as that of speech act, -ígi is used.

The relativizer (ígi, éé) is a type of nominalizer. It also serves as a 'definite' determiner.

Examples:

Kinéé.  'The house I mentioned before.'
Ashkii naalnishigíí.  'The boy who is working.'
Ashkii lééchą́ą́ʼí bishxach -éé  'The fact the boy is working.'
i + tense element = éé
i + gií = igíí (gií makes it more specific)
ázéé'iíl'ini 'doctor' (medicine maker)
ázéé'iíl'iniqííi 'the particular one who is making medicine'

A relativized sentence is therefore a nominalized sentence.

B. Relative sentences with head but without the 'relative noun phrase'
(i.e. without coreferential NP in the subordinate clause):

Deezhtlizhée ashkii yicha. 'The boy that fell down is crying.'

Question from class: How does one know that the NP ashkii in the sentence
Ashkii deezhtlizhée yicha.
is in the embedded sentence and not in the matrix sentence?

Answer: The position of sentence adverbs can show position of NP's.

Tl'édéég' ashkii deezhtlizhée k'ad yicha.
Last night boy fell down-rel now cry

'The boy who fell down last night is crying now.'

If 'ashkii' were in the matrix sentence, /tl'édéég'/ would be the second element in the sentence, not the first. This argument is not absolute because Navajo may have an adverb fronting rule which could move /tl'édéég'/ into initial position.

C. An account of sentences in both (A) and (B) above. It is typical in languages that relative clauses have head nouns, although the head noun
may appear to the right or left of the relative clause.

**English** (head on left)

```
NP --> S
  |
NP --> the boy
  
NP --> who fell down
```

**Japanese** (head on right)

```
NP --> S
  |
NP --> watasi ga katta
  |
NP --> hon
```

I bought: a book

I bought: the book I bought

---

**Hypothesis for Navajo** (cf. P. Platero, *IJAL* 40.3 (202-246) 1974. 'The Navajo Relative Clause. ')

All relative clauses are headed in the deep structure of Navajo. Navajo will thus have a d.s. similar to Japanese, but with the difference that either coreferential NP can be deleted. (For an alternative analysis in which the headed type of relative clause is formed from the headless see Hale and Platero in *Navajo Language Review* 1.1 (9-28) 1974.):

```
NP --> S
  |
NP --> ashkii
    |
NP --> deezhtlish
      |
REL --> -éé
```

Either of the *ashkii*'s can be deleted and will thus leave 'a gap'.

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Consider the following sentence:

Ashkii at'éeéd yits'qéeq yálti'.

For this sentence there should be two interpretations: 'The boy that kissed the girl is speaking.' and 'The girl that the boy kissed is speaking.'

These two interpretations are available and are thus consistent with the hypothesis that the head noun can be deleted under identity with the relative noun.

For the headed variety, however, only one interpretation is available.

At'éeéd yizts'qéeq ashkii yálti'.

'The boy that kissed the girl is speaking.'

(*'The boy that the girl kissed is speaking.')

This fact about the interpretation suggests that there may be a constraint on backwards deletion.

**Constraint on Backwards Deletion:** Delete the first NP only.

Further evidence for the Backward Deletion Constraint is found in the next sentence.

At'éeéd bizts'qéeq ashkii yálti'.

'The boy that the girl kissed is speaking.'

After SOI, at'éeéd will be in initial position. The ashkii in first position is deleted under identity to the head. There are other cases of deletion not involving relative clauses. All involve deletion of initial noun phrases.
Forward Deletion:

Askii yah'íiya áá dóó at'ééd yizts'qos.
boy walked in and the girl kissed

'The boy walked in and kissed the girl.'

Backwards Deletion:

(A) At'ééd yizts'qos áá dóó askii dahdiyá (some speaker * this)
    (he) girl kissed and then the boy left

or Backwards and Downwards Deletion:

At'ééd yizts'qosgo askii dahdiyá.

'Having kissed the girl, the boy left.'

C. An alternative theory for understanding relative clauses.

Let us consider first the following two independent sentences.

a. Shí biyih bìl adéłdoooh. 'I shot a deer.'
   I deer shot

b. Shí biyih nísál'ah. 'I butchered a deer.'

These can be combined to form the following complex sentence.

(Shí) biyih bìl adéłdoooh nísál'ah.

'I butchered the deer I shot.'

Or, in our presumed deep structure:
The headed form of the relative clause, 'Shí bil adéldqóghé biíh níséł'ah', is not possible.

The next sentence will shoot down the first NP Backwards Deletion Constraint as well as a theory that holds only subjects can be deleted under Backwards Deletion.

Shí bil adéldqóggo biíh dahdiilwod.

'When I shot it, the deer fled.'

Now consider the following cases:

Ashkii at'ééd yizts'qségé hastiin yiyiiltsá'.

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

'The girl whom the boy kissed saw the man.'
A possible meaning for the sentence /Ashkii at'ęéd yizts'ősę́ę hastiin yiyiiłtsą́/ might be thought to be "The boy saw the man that kissed the girl." This interpretation is not possible, although a deep structure is available which is consistent with current assumptions about deletion which could yield this interpretation.

\[
S \\
NP \quad \text{ashkii} \\
S \quad \text{hastiin} \quad \text{at'ęéd} \quad \text{yizts'ős} \\
\emptyset \\
NP \quad \text{yiyiiłtsą́} \\
V \quad \text{RELC} \quad \text{hastiin}
\]

If the relative NP 'hastiin' were deleted, the sentence /Ashkii at'ęéd yizts'ősę́ę hastiin yiyiiłtsą́/ would be generated. But the deep structure meaning is not available so some other account must be given. The problem is, then given a sentence of Navajo, how is an interpretation assigned to it?

Consider the following sentence:

Ashkii at'ęéd yiyiiłtsą́néę́ yizts'ős.

(a) 'He kissed the girl that the boy saw.'
(b) 'The boy kissed the girl that he saw.'
(c) 'He/She kissed the boy who saw the girl.'

But not (d) 'The boy kissed the one who saw the girl.'

Now consider the structures that underlie these interpretations:
(a) 
S
  NP
  NP
  Δ
  S
  NP
  NP
  V
  REL
  at'éeéd
  np
  yizts'qs
  ashkii
  at'éeéd
  yiyiiłts'ąnéé

(b) 
S
  NP
  NP
  ashkii
  S
  NP
  NP
  V
  REL
  at'éeéd
  np
  yizts'qs
  ashkii
  at'éeéd
  yiyiiłts'ąnéé

(c) 
S
  NP
  Δ
  S
  NP
  NP
  V
  REL
  ashkii
  np
  yizts'qs
  ashkii
  at'éeéd
  yiyiiłts'èn
  èf
There is no way to block sentence (d) from being generated by the phrase structure rules. Thus some principle must be established to rule out these structures. Some additional sentences will help clarify the issue.

(f) can receive the same interpretation as (e) — argument against empty \( \Delta \) in PS structure of \( S \).
The /ashkii/ in the embedded sentence cannot be coreferential with the commanding Δ of the matrix sentence.

Ashkii tl’édédé’ at’édé yiyiiltsáñne yidoos’qs.

'The boy will kiss the girl he saw last night.'

In sentence (f) /ashkii/ may be coreferential with the Δ subject of yiyiiltsáñne. To handle all of the above facts we will introduce an interpretive theory of gaps.

Conditions on the Appearance of a Gap.

(a) Suppose we know there's a gap. In a string of the form X - NP - Δ - Y, then Δ must be coreferential with NP.

(b) Scan the string, if there is a violation of X - NP - Δ - Y, then star the sentence.

Interpretation of Grammatical Relations.

(I) (A) 'Object' - yi-verb

(B) 'Subject' - bi-verb

(II) (A) 'Subject' - NP yi-verb

(B) 'Object' - NP bi-verb

If (II) does not apply, insert a 'gap' and apply the above conditions on the appearance of a gap. We now can correctly interpret sentences (a-f).
Extraposition in Navajo. A study of extraposition in Navajo and how this study bears on certain claims which have resulted based on a study of extraposition in English.

1. Introduction. Navajo is basic SOV.

\[
\text{Jáan lìì' yizloh} = \text{John - horse - roped}
\]

\[
S \quad 0 \quad V
\]

The head of a relative clause is basically on the right in Navajo, on the left in English.

Navajo: \[
\begin{array}{c}
S \\
\downarrow \\
\text{NP }
\end{array}
\]

English: \[
\begin{array}{c}
S \\
\downarrow \\
\text{NP }
\end{array}
\]

Example: \[
\text{Jáan lìì' nayiisni'ëë yizloh} \quad \text{'John roped the horse he bought'}
\]

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

After extraposition we have the following structure.
Principle: After extraposition, one always deletes the relative noun.

The above structural transformation can be accomplished by a rule of extraposition.

The Extraposition Rule:

\[
\begin{array}{cccc}
X & \rightarrow & [NP \quad S \quad NP]_{NP} & \rightarrow Y \\
1 & 2 & 3 & 4 \\
\rightarrow & 1 & \emptyset & 3 & 4 & 2
\end{array}
\]

2. Additional facts relating to extraposition in Navajo.

Extraposition can take place out of either subject or object position. After the relative noun in the extraposed is deleted, ambiguity may arise.

Ashkii at'éd yoo't hashtlizh yiihyítlizhégé
boy - girl sees in the mud fell

'The boy sees the girl who fell in the mud' or 'The boy who fell in the mud sees the girl'

The structure of this sentence is the following:

Two different structures can underlie this phrase marker.
Question: For intransitive verbs, can either the relative NP or the head NP be deleted?

* alhâ̂g ashkii alhoshîgíí. For Ellavina, backwards, and upwards deletion is blocked. Some dialects (Paul Platero's) allow such sentences.

(*) alhâ̂g ashkii
(*) alhâ̂g ashkii alhoshîgíí

For dialects in which the above sentences are acceptable, the source of the 'headless relative clauses' may be a noun phrase postposition rule.

3. Verbs with three arguments.

Ashkii jool at'áéd yeiní'â hashtlîzh yiihyítlízhée
boy - ball - girl gave in the mud (which) fell
Based on earlier sentences we might guess that the above sentence would have three readings.

a) 'The boy gave the ball that fell in the mud to the girl'
b) 'The boy who fell in the mud gave the ball to the girl'
c) 'The boy gave the ball to the girl who fell in the mud'

Only the (b) and (c) sentences are available as readings since the verb yihiyítłizhè requires an animate subject. Thus the (a) sentence is ruled out by the selectional restrictions on the verb.

The (a) reading is provided by the following sentence.
Ashkii jool at'ééd yeini 'ą hashtlúzh bihiyitls'idèè

Thus selectional restrictions on the verb restrict the possible readings on extrapoosed sentences.
Ashkii tl'óól neidiilá hashtlúzh bihiyídelèè
'The boy picked up the rope that fell in the mud'
The verb stem requires something rope like.

Consider next the following sentence with three NP arguments.
Ashkii at'ééd /DD/ yeinílóóz ba'níltsoodèè
boy girl horse led to one I fed

'The boy led the horse that I fed to the girl'
'The boy led the horse to the girl I fed'
'The boy I fed led the horse to the girl'.

All are good. One can therefore extrapose out of all three NP positions.

4. Extraposition out of a postpositional phrase.
The sentential object of the postpositional phrase in the following sentence can be extrapoosed to the right.
Jool tsin ch'ë'étingi sitánèè báhátes yílts'id
ball log in the doorway it was lying over it it fell
'The ball fell over the log lying in the doorway'

\[
\text{S} \\
/ \_
/ \_
NP PP V
/ \_
Jool NP P yílts'id
/ \_
báhátes
\]

\[
\text{tsin ch'é'étingi sité èè}
\]

Extrapolation
5. Navajo and the Island Constraints.

A. Coordinate Structure Constraint:

In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.

This constraint forces a particular reading on the following sentence.

\[ \text{Léecháa'í dóó mási ba'níltsoodéé ahigé} \]

'The boy and the cat which I fed are both fighting'

The only reading which is available is one in which the coordinate structure \( \text{Léecháa'í dóó mási} \) is the head.

\[ \text{Extraposition} \]
Under the hypothesis that a relative clause could not be ripped out of one of the coordinated NPs the unique reading is explained.

*Léécháag'í dóó mási ahígha nahal'inéeq

(* The dog and the cat were fighting which was barking)

The extraposition of the embedded sentence violates the coordinate structure constraint. The correct reading requires that mási be part of the head. But this reading violates the selectional restrictions of nahal'in 'bark'.

The next sentence is also ungrammatical.

*Ashkii dóó Níbaa' ahígha ba'níltsoodéeq
Because the extraposed relative clause must refer to the entire subject conjunct, and because proper nouns cannot be heads, the sentence is ungrammatical.

B. Complex NP Constraint.

No element contained in a sentence dominated by a noun phrase with a lexical head noun may be moved out of that NP by a transformation.

Consider the following sentence.

Hastiin dibé ba'níltsoodé néis'ahéé ádeeshgish
'The man who butchered the sheep I fed cut himself'
The embedded S, when moved out of the complex NP forms an ungrammatical sentence:

*Hastiin dibé néis'anegé ádeeshgish ba'níltsoodeé

C. **Sentential Subject Constraint.**

This constraint does not appear to be obeyed in Navajo. Extraposition can take place out of the following sentence.

Léécháá'í ba'níltsoodeé iisxínígíí yá'át'ééh

'The fact that the dog I fed killed something is good'

The embedded S, when moved out of the complex NP forms an ungrammatical sentence:

*Hastiin dibé néis'anegé ádeeshgish ba'níltsoodeé*
The extrapoed form of this S is good.
Lééchą́ą́'í iisxiniįįí yá'át'ééh ba'níłtscodę́ę́ and also
Lééchą́ą́'í tl'íizi yiyiisxiniįįí ñoo yá'át'ééh da adáádíí' sizoohą́ą́
'It is terrible (not good) that the dog killed the goat that butted me yesterday'

Compare the ungrammaticality of the following English sentence.
*'That the dog killed the goat is terrible butted me yesterday'

6. The actual source of 'extrapoed' sentences.
Consider the following grammatical sentences of Navajo.
Lééchą́ą́'í mási yinookchéél ahigánę́ę́
reciprocal
*'The dog is chasing the cat which were fighting (each other)' or
Ashkii at'éeéd yizts'qs Na'nízhoozhigóó naazh'ázhą́ą́
*'The boy (sg) kissed the girl (sg) who (dual) were going to Gallup'

There is no possible embedded relative clause source for these sentences. In
the last sentence, both the subject and object are singular. Thus, the above
structures must be base generated. Since such structures must be based
generated in any case there is no longer any support for an extrapoition
transformation in Navajo.