Chapter 4

CONSTRAINTS ON REORDERING TRANSFORMATIONS

4.0.   In this chapter and the next one, I will propose a set

of constraints, some universal, some language-particular, which I

will show to have roughly the same effect as the A-over-A principle.

That is, I will show that with these constraints, it is possible to

account for the six constructions in § 2.2 which constitute evidence

for the principle, while avoiding the counter-examples of § 2.1.

The A-over-A principle was postulated to be a constraint on trans-

formational operations of all kinds, but I will attempt to show, in

Chapter 6, that the constraints of Chapters 4 and 5 (and hence, the

principle as well) should only apply to transformations which exhibit

certain well-defined formal properties. The constraints of Chapter 4

only affect what I will refer to informally as <u>reordering transformations</u> --

transformations which have the effect of moving one or more terms of the

structural description around some other terms of it. (The precise

definition of this notion will not be given until Chapter 6.) Two

examples of reordering transformations are the <u>Question Rule</u> and the

<u>Relative Clause Formation Rule</u>, which are stated very schematically

in (4.1) and (4.2) below.

(4.1)   Question

Q – X – NP – Y

1   2   3   4 $\xRightarrow{\text{OBLIG}}$

1   3+2   0   4

Condition: 3 dominates   WH + <u>some</u>

(4.2)   <u>Relative Clause Formation</u>

$$W \ - \ \left[_{NP} \ NP \ - \ [_S \ X \ - \ NP \ - \ Y]_S\right]_{NP} \ - \ Z$$

1   2   3   4   5   6 $\xRightarrow{\text{OBLIG}}$

1   2   4+3   0   5   6

Condition: 2 = 4

I will use ungrammatical questions and relative clauses
to illustrate the effects that the constraints of this chapter have on
all reordering transformations.   In Chapter 6, I will present a list
of all the other reordering transformations I know of, and show that
they obey the same constraints.

4.1.   The Complex NP Constraint

4.1.1.   It is to Edward S. Klima that the essential insight
underlying my formulation of this constraint is due.   Noticing that
the NP <u>that man</u> could be questioned in (4.3b), but not in (4.3a)
(cf. (4.4)), Klima proposed the constraint stated in (4.5):

(4.3) a. I read a statement which was about that man.

b. I read a statement about that man.

(4.4) a. * The man who I read a statement which was

about is sick.

b. The man who I read a statement about is

sick.

(4.5) Elements dominated by a sentence which is

dominated by a noun phrase cannot be

questioned or relativized.

If Klima's constraint is used in conjunction with the

principle for S-deletion stated in (3.6), it can explain the difference

in grammaticality between (4.4a) and (4.4b), for it is only in (4.3a)

that the NP that man is contained in a sentence which is itself

contained in an NP: when (4.3a) is converted into (4.4b) by the

Relative Clause Reduction Rule, the node S which dominates the clause

which was about that man in (4.3a) is pruned by (3.6).

Although I do not believe it is possible to maintain

(4.5), for reasons I will present immediately below, it will be

seen that my final formulation of the Complex NP Constraint makes

crucial use of the central idea in Klima's formulation: the idea

that node deletion affects the potential of constituents to undergo

reordering transformations. This hypothesis may seem obvious, at the

present stage of development of the theory of grammar, but when Klima

first suggested it, when the theory of tree-pruning was much less

well-developed than it is at present, it was far from being obvious.

In fact, this idea is really the cornerstone of my research on variables.

4.1.2. As I intimated above, however, I find that (4.5) must

be rejected, in its present form. For consider the NP that man

in (4.6): as (4.7) shows, it is relativizable,

(4.6) I read $\left[_{NP} \left[_{S} \text{that the police were going to}\right.\right.$

interrogate that man$\left.\left.\right]_{S}\right]_{NP}$.

(4.7) the man who I read that the police were going

to interrogate

and yet the that-clause which contains it would seem to be a noun

phrase, as I have indicated in the bracketing of (4.6). Presumably,

the approximate deep structure of (4.6) is that shown in (4.8),

(4.8)
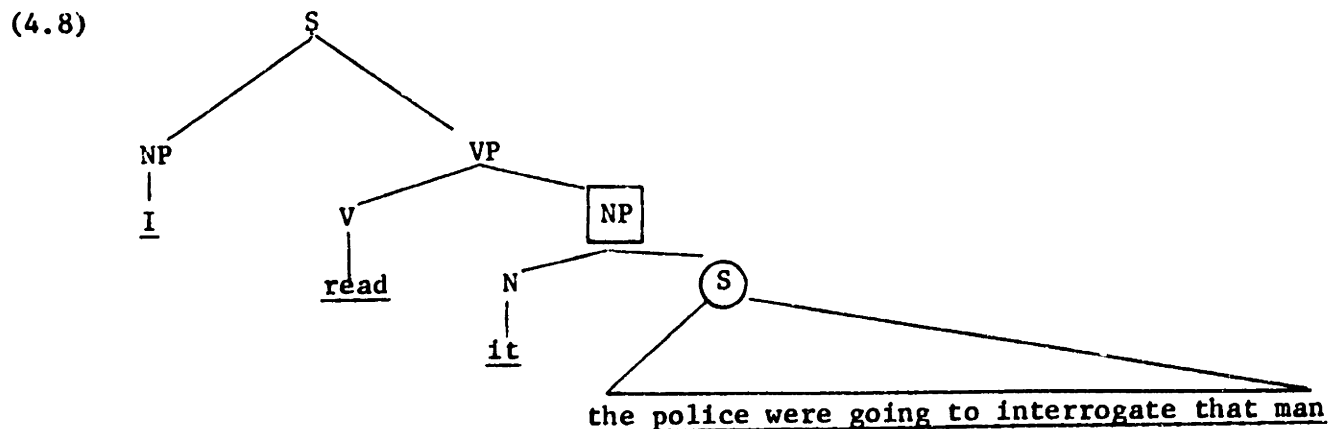
and unless some way is found of pruning the circled node S or the

boxed node NP in (4.8), condition (4.5) will prevent the relativization
of <u>that man</u>. There is abundant evidence that the first alternative
is not feasible:

(4.9) a. I read that Bill had seen me.

b. * I read that Bill had seen myself.

(4.10) a. Evidence that he was drunk will be presented.

b. Evidence will be presented that he was drunk.

(4.11) a. That $Bill_i$ was unpopular distressed him_i.[1]

b. That he_i was unpopular distressed $Bill_i$.

The <u>Reflexivization Rule</u> does not "go down into" sentences
(cf. Lees and Klima (1963), Postal (1966b)); thus the fact that (4.9a)
is grammatical, while (4.9b) is not, is evidence that <u>that</u>-clauses are
dominated by S at the time that reflexivization takes place.
Similarly, the fact that <u>that</u>-clauses may be extraposed, as is the case
in (4.10b), indicates that they are dominated by the node S at the
time that this rule applies. Finally, the fact that backward
pronominalization[2] into <u>that</u>-clauses is possible (cf. (4.11a)) also
argues that they must be dominated by the node S. So it seems
implausible that the circled node S should be deleted by some principle
which supplements (3.6), and there is no independent support for such
an additional pruning principle in any case. Therefore, the only other
way to save (4.5) is to claim that the boxed node NP must be deleted
in the process of converting (4.8) into the surface structure which
underlies (4.6).

Can the node NP be deleted? In § 3.2 above, I discussed briefly Kuroda's proposal to generalize the notion of tree-pruning in such a way that any non-branching node whose head had been deleted would be pruned. While it is <u>possible</u> to propose such a generalized version of (3.6), there is as yet no syntactic evidence which indicates that node deletion <u>must</u> prune out occurrences of NP or VP. The complex problems involving case-marking with respect to <u>amīcī</u> and <u>eius</u> on the one hand and <u>meus</u> on the other, which I discussed in § 3.1.3 above, might be solvable if use were made of some principle of NP deletion, but this has yet to be worked out in detail; and unless some other evidence can be found for NP pruning, invoking it to delete the boxed NP in (4.8) is merely <u>ad hoc</u>. For there are many pieces of evidence which show that <u>that</u>-clauses are dominated by NP at some point in their derivation.

(4.12) a. That the defendant had been rude was stoutly denied by his lawyer.

b. What I said was that she was lying.

c. Bill told me something awful: that ice won't sink.

d. Muriel said nothing else than that she had been insulted.

<u>That</u>-clauses passivize (4.12a), they occur after the copula in pseudo-cleft sentences (4.12b), after the colon in equative sentences (4.12c), and after <u>than</u> in sentences like (4.12d): in all of these

contexts, phrases can occur which are unquestionably noun phrases
(e.g., Little Willy, potatoes, flying planes, etc.), and Lakoff and
I argue that the syntactic environments defined by (4.12) can only
be filled with noun phrases (cf. Lakoff and Ross (in preparation a)).
If our arguments are correct, then that-clauses must be dominated
by NP at some stage of their derivation. But it might be claimed
that the late rule of It Deletion[3], which deletes the abstract pronoun
it when it immediately precedes a sentence, could change phrase-
markers in such a way that the NP node which dominated it S would
undergo pruning before Question and Relative Clause Formation had
applied. Not enough is known about rule ordering at present for this
possibility to be excluded, but it should be noted that even if it
should prove to be possible to order It Deletion before all reordering
transformations, thereby accounting for the grammaticality of (4.7)
by providing for the deletion of the boxed NP of (4.8), it would
still be necessary to explain why there is no difference in grammaticality
between (4.13a) and (4.13b),

> (4.13) a. This is a hat which I'm going to see to it
>   that my wife buys.
>
> b. This is a hat which I'm going to see that
>   my wife buys.

After the verb see (to), the deletion cf it is optional
(in my dialect), and therefore, by the previous argument, while the

that-clause in (4.13b) might not be dominated by NP, the that-clause in (4.13a) still would be. So unless some additional convention for NP pruning could be devised for this case too, (4.5) would not allow the generation of (4.13a). Again, I must reiterate that there is no known evidence for pruning NP under any other circumstances, so the ad hoc character of the explanation which is necessitated if (4.5) is adopted is readily apparent.

But there is an even more compelling reason to reject (4.5) than the ones above: as I pointed out in § 2.4.1 above, it is in general the case that elements of reduced relative clauses and elements of full relative clauses behave exactly the same with respect to reordering transformations. This can be seen from the following examples: NP which are in the same position as Maxime in the sentences of (4.14) cannot be questioned (cf. the ungrammaticality of (4.15)),

(4.14) a. Phineas knows a girl who is jealous of Maxime.

b. Phineas knows a girl who is behind Maxime.

c. Phineas knows a girl who is working with Maxime.

(4.15) a. * Who does Phineas know a girl who is jealous of?

b. * Who does Phineas know a girl who is behind?

c. * Who does Phineas know a girl who is working with?

nor can they be questioned, even after the relative clauses of (4.14) have been reduced (this is evidenced by the ungrammaticality of (4.16)).

(4.16)   a. * Who does Phineas know a girl jealous of?

b. * Who does Phineas know a girl behind?

c. * Who does Phineas know a girl working with?

It was facts like these which motivated the condition stated in (2.26) above, which I repeat for convenience here.

(2.26)   No element of a constituent of an NP which modifies the head noun may be questioned or relativized.

In the light of the facts of (4.15), and (4.16), it would appear that it is the grammaticality of (4.4b) which is problematic, not the ungrammaticality of the sentences in (4.16). And there are parallel facts which have to do with Reflexivization, which I will present in § 4.1.6 below, which also support this interpretation. So condition (4.5), which takes the differences between the sentences in (4.4) to be typical, would seem to be a projection to an incorrect general conclusion from a case where special circumstances obtain. In the next section, I will give some evidence which allows the formulation of a broader-based generalization.

4.1.3.   The sentences of (4.17), which only differ in that the

NP object of <u>believe</u> has a lexical head noun in the first, but not

in the second, differ as to relativizability, as the corresponding
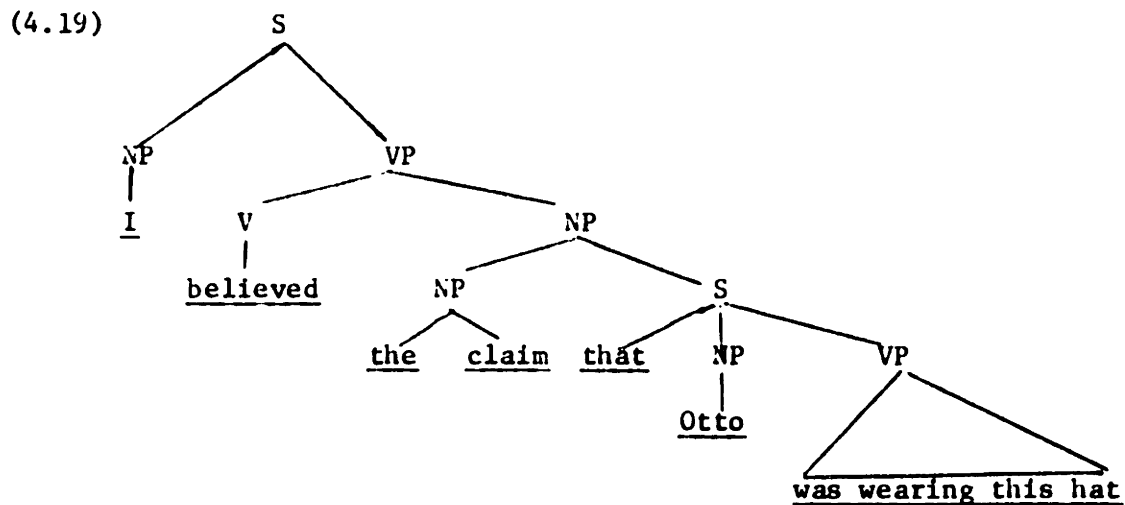
sentences of (4.18) show.

(4.17)   a.   I believed the claim that Otto was wearing

this hat.

b.   I believed that Otto was wearing this hat.

(4.18)   a. * The hat which I believed the claim that

Otto was wearing is red.

b.   The hat which I believed that Otto was

wearing is red.

If the analysis proposed by Lakoff and me (op. cit.) is

correct, the d.c.s. of (4.17a) will be roughly that shown in (4.19):

(4.19)
```
                        S
                      /   \
                    /       \
                  NP         VP
                  |        /    \
                  I       V       NP
                          |      /   \
                      believed  NP      S
                              /  \      |
                          the  claim  that  NP      VP
                                            |      /  \
                                          Otto    /    \
                                                 was wearing this hat
```

Whether or not we can show it to be correct that abstract

nouns followed by sentential clauses in apposition to them have

exactly the same $[NP\ S]_{NP}$ structure that we argue relative clauses

have, it is clear that these constructions are highly similar.

Condition (4.20), the Complex NP Constraint, is formulated in an effort

to exploit this similarity to explain the ungrammaticality of sentences

like (4.18a) and (4.15) on the same basis.

> (4.20)   The 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 noun phrase by a transformation.

To put it diagrammatically, (4.20) prevents any constituent

A from being reordered out of the S in constituents like the NP

shown in (4.21),

(4.21)
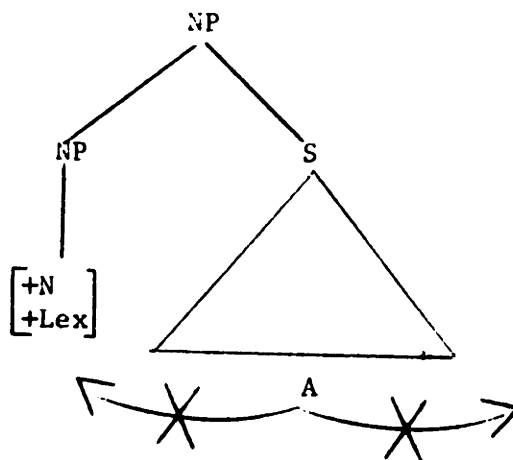
as the X's on the two arrows pointing left or right from A designate.

(Note that (4.20) does not prohibit elements from reordering within

the dominated sentence, and in fact, there are many rules which effect

such reorderings. Some will be discussed in § 5.1 below.)

I have assumed the existence of a feature, $[\pm \text{Lex}]$, to

distinguish between lexical items like claim in (4.17a) or girl in

(4.14) on the one hand, and the abstract pronoun it of (4.13a) on the

other. Since it is possible to move elements out of sentences in

construction with the third of these, as (4.13a) attests, but not

out of sentences in construction with the first two ((4.18a) and (4.15)

are ungrammatical), it will be necessary for the theory of grammar

to keep them distinct somehow. The feature $[\pm \text{Lexical}]$ may not turn

out to be the correct one; I have chosen it not only on the basis of

the facts just cited but also with regard to the following parallel

case in Japanese.

4.1.4.   In Japanese, and I believe in all other languages as

well, no elements of a relative clause may be relativized. Japanese

relative clauses invariably precede the noun they modify. Superficially,

they appear to be formed by simply deleting the occurrence of the

identical NP in the matrix sentence. Thus when the sentence (4.22)

is embedded as a modifier onto the NP sono sakana wa 'this fish',

which is the subject of (4.23), (4.24) results.
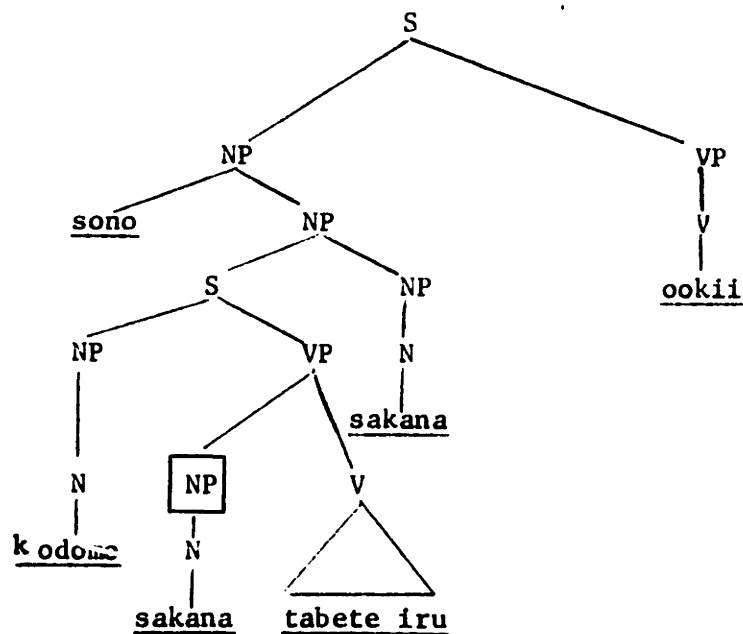
(4.22) kodomo ga[4] sakana o tabete iru.

child   fish   eating is

'The child is eating the fish.'

(4.23) Sono sakana wa ookii.

That fish   big

'That fish is big.'

(4.24) Sono kodomo ga tabete iru sakana wa ookii.

That child   eating is fish   big

'That fish which the child is eating is big.'

The deep structure of (4.24) is that shown in (4.25)[5].

(4.25)

In the derivation of (4.24) from (4.25), when the
Relative Clause Formation Rule applies, the only apparent change that
occurs in (4.25) is that the boxed node NP disappears. It would
thus appear that the English version of the Relative Clause Formation
Rule, which was stated in (4.2), is fundamentally different from the
Japanese version, for in the former, the embedded identical NP is
reordered and placed at the front of the matrix sentence, while in
Japanese, the embedded NP is merely deleted.

But there are two facts which lead me to believe that
this dissimilarity is only superficial. First of all, the Japanese
Relative Clause Formation Rule is subject to the Complex NP Constraint
and also to the Coordinate Structure Constraint, which will be discussed
in § 4.2, and I will show, in Chapter 6, that simple deletion
transformations are not subject to these two conditions. Secondly,
in Japanese, as in all other languages I know of, the crossover
condition, which Postal has proposed, obtains.

This condition, as Postal originally stated it[6], prevents
any transformation from interchanging two coreferential NP. Since the
Passive Rule effects such an interchange, reflexive sentences cannot
be passivized, as was noted by Lees and Klima (cf. Lees and Klima (1963)).

       (4.26)   a.   Rutherford understands himself.

                 b. * Rutherford is understood by himself.

                 c. * Himself is understood by Rutherford.

The condition can be generalized, however. Subjects of sentences which appear as the object of _say_ can normally be relativized: that this is true of the NP _pudding_ in (4.27a) can be seen from the grammaticality of (4.27b):

(4.27) a. The man who ordered ice cream said the

pudding$_i$ would be tasty.

b. The pudding which the man who ordered

ice cream said would be tasty was a

horror show.

But if (4.27a) is changed so that the coreferential NP _the pudding_$_i$ appears not only as the subject of _would be tasty_ but also as the deep object of _ordered_, and if backward pronominalization has applied, yielding (4.28),

(4.28) The man who ordered it$_i$ said the pudding$_i$

would be tasty.

then, for many speakers, the subject NP of the embedded sentence is no longer relativizable.

(4.29) * The pudding$_i$ which the man who ordered it$_i$

said would be tasty was a horror show.

While (4.29) is an acceptable sentence if the pronoun _it_ refers to some other NP, it is ungrammatical if it has the same referent as the head noun of the subject of (4.29).

These facts can be explained by generalizing the cross-over condition as shown in (4.30):

(4.30)   The Crossover   Condition

No NP mentioned in the structural index

of a transformation may be reordered by that rule

in such a way as to cross over a coreferential NP.

This condition is strong enough to exclude (4.29), for in

carrying out the Relative Clause Formation Rule to form (4.29), it

would have been necessary to move the subject of would be tasty

leftwards over the coreferential pronoun it. This also explains why

the pronoun he in (4.31a) can refer to the same man as the head NP

the man but cannot do so in (4.31b).

(4.31)   a.   The man$_i$ who said he$_i$ was tall

b. * The man$_i$ who he$_i$ said was tall

However, (4.30) is too strong -- it would incorrectly

prevent (4.32a) from being passivized, and (4.32b) could not be

generated.

(4.32)   a.   The sheriff$_i$ denied that gangsters had

bribed him$_i$.

b.   That gangsters had bribed him$_i$ was denied

by the sheriff.

At present, I know of no way to weaken (4.30) to avoid this wrong

result.

The crossover condition also obtains in Japanese: the

Japanese version of the Passive Rule, which converts (4.33a) to (4.33b),

> (4.33) a. sono hito wa sakana o aratta.
>
>   that man   fish   washed
>
>   'That man washed the fish.'
>
> b. ·sakana wa sono hito ni arawareta.
>
>   fish   that man   was washed
>
>   'The fish was washed by the man.'

cannot apply to reflexive sentences. (4.34a) cannot be passivized, as

the ungrammaticality of (4.34b) shows.

> (4.34) a. sono hito wa zibun o aratta.
>
>   that man   self   washed
>
>   'That man washed himself.'
>
> b. * zibun wa sono hito' ni arawareta.
>
>   '* That man was washed by himself.'

The crossover condition, by its very nature, applies only

to transformations which reorder constituents, so the fact that

grammatical and ungrammatical pairs of Japanese relative clauses

can be found which parallel those in (4.31) is a second indication

that the Japanese rule of <u>Relative Clause Formation</u> also involves

reordering, and not merely deletion.

> (4.35) a. $kare_i$ ga nagai to itta $hito_i$
>
>   he   tall that said man
>
>   'The man who said he was tall '

b. * hito$_i$ ga nagai to itta hito$_i$

man tall that said man

'* The man$_i$ who he$_i$ said was tall '

The fact that the first occurrence of <u>hito</u> 'man' in (4.35b) cannot have the same referent as the second one indicates that the term 'cross over', which was used in the statement of (4.30), cannot be taken simply to refer to the linear order of words in the sentence, for the underlying structure of (4.35a) is that shown in (4.36).

(4.36)
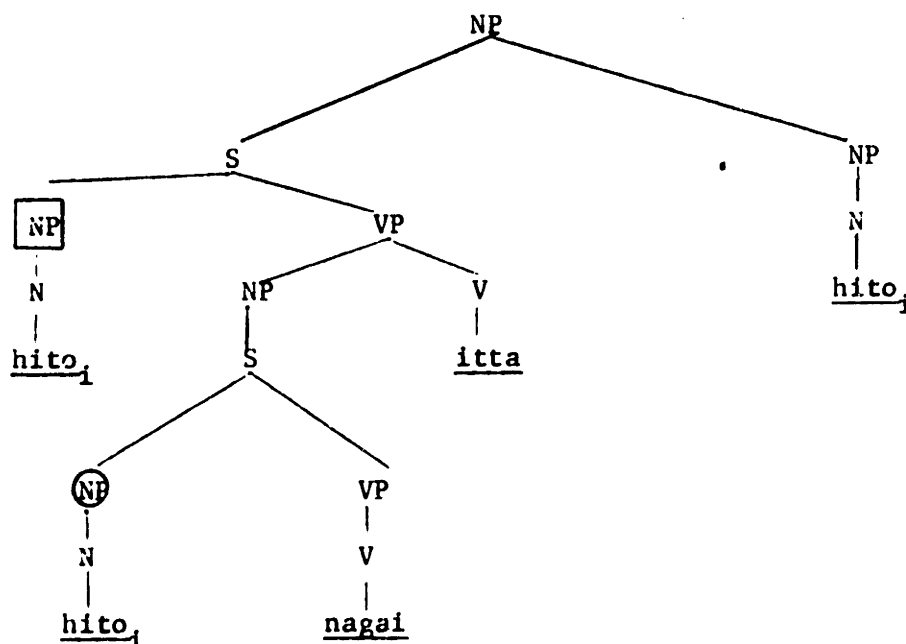
As (4.35) shows, the boxed NP can be relativized, although the circled NP cannot. If I am correct in attributing these facts to the cross over condition, which (4.34b) shows to be necessary in Japanese in any case, then, if the rule of <u>Relative Clause Formation</u>

in Japanese operates in such a way as to move the identical NP in
the matrix sentence to the right end of the embedded sentence, in
the opposite direction from that in which it moves in English[7], the
notion of "crossing over" must be defined in such a way as to take
into consideration not only the one-dimensional linear ordering of
constituents, but also their two-dimensional hierarchical arrangement.

At any rate, whether or not my contention that the Japanese
version of Relative Clause Formation involves reordering is correct,
it is a fact that elements of relative clauses cannot be relativized.
For example, sentence (4.24), in which the NP kodomo ga 'the child'
appears as the subject of a relative clause, cannot be embedded as
a modifier of the subject NP of (4.37), as is shown by the
ungrammaticality of (4.38).

(4.37)   kodomo ga byooki da.

         child   sick   is

         'The child is sick.'

(4.38) * sono   tabete   iru   sakana ga   ookii   kodomo ga   byooki   da.

         that   eating   is   fish   big   child   sick   is.

         '* The child who that fish (he) is eating is big is sick.'

Furthermore, there are Japanese sentences like (4.39) which
parallel those in (4.17); and, just as is the case in English, while
elements can be relativized from the object clause of (4.39b), which
corresponds to (4.17b), this is not possible in (4.39a), which corresponds
to (4.17a). This can be seen from the ungrammaticality of (4.40a) and
the grammaticality of (4.40b).

(4.39) a. Otto ga kono boosi o kabutte ita to   iu syutyoo o watakusi wa sinzita.

Otto   this hat   wearing was that say claim   I   believed

'I believed the claim that Otto was wearing this hat.'

b. Otto ga kono boosi o kabutte ita koto o watakusi wa sinzita.

Otto   this hat   wearing was thing   I   believed

'I believed that Otto was wearing this hat.'

(4.40) a. *Otto ga kabutte ita to   iu syutyoo o watakusi ga sinzita boosi wa akai.[8]

Otto   wearing was that say claim   I   believed hat   red

'*The hat which I believed the claim that Otto was wearing is red.'

b. Otto ga kabutte ita koto o watakusi ga sinzita boosi wa akai.

Otto   wearing was thing   I   . believed hat   red

'The hat which I believed that Otto was wearing is red.'

The underlying structure for (4.40b) is roughly that shown

in (4.41).

(4.41)
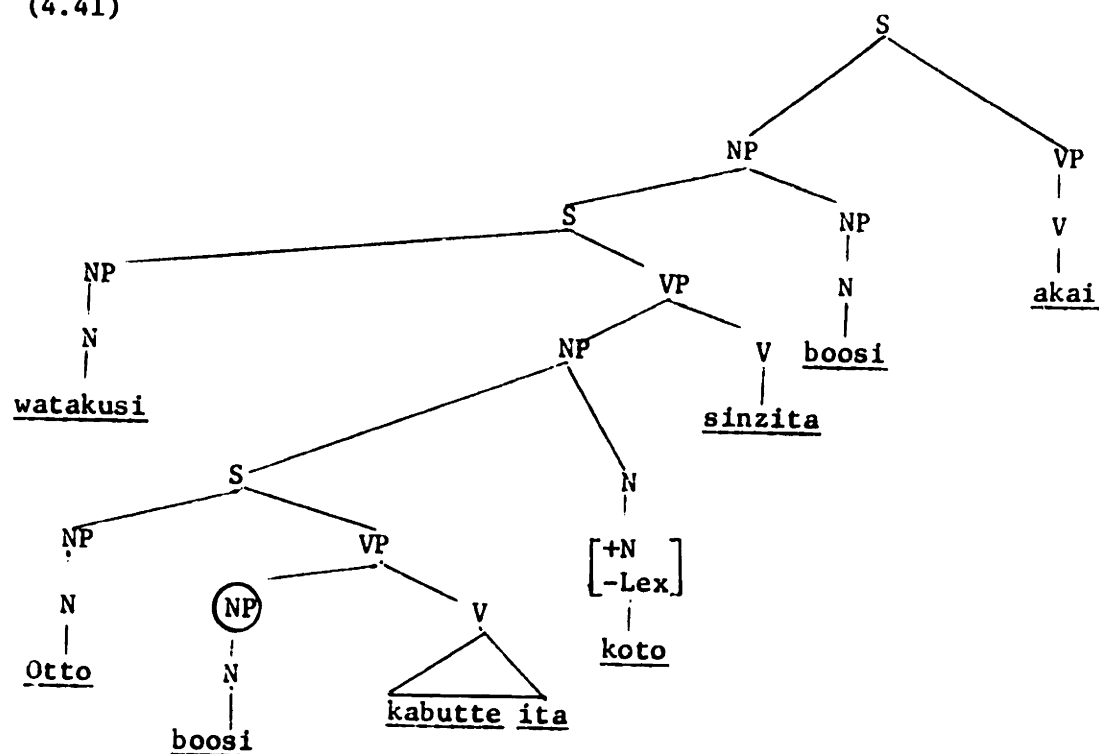
Although it is not clear to me what the deep structure
for sentences like (4.39a) should be, it seems reasonable to assume
that at the time the _Relative Clause Formation Rule_ applies, the
major difference between this structure and the structure which results
from the deep structure of (4.39b) (the deep structure which appears
in (4.41) as a relative clause on _boosi_ 'hat') would be that the
lexical noun _syutyoo_ 'claim', would appear in place of the non-
lexical noun _koto_ 'thing'. Thus the circled NP _boosi_ 'hat' in
(4.41) is relativizable, because the Complex NP Constraint only
prohibits elements which are contained in a sentence dominated by a

NP with a _lexical_ head noun from reordering, and the Japanese nouns _koto, mono,_ and _no_ (if this last should be analyzed as a noun at all), which all mean roughly 'thing', are presumably non-lexical. But nouns like _syutyoo_ 'claim' _are_ lexical, and therefore the Complex NP Constraint must prevent elements of sentences in apposition to them from reordering out of these sentences, as the ungrammaticality of (4.40a) shows.

To summarize briefly, what I am proposing is that the facts presented as evidence for the A-over-A principle, in Cases A and B of § 2.2 – namely that elements of relative clauses cannot be relativized or questioned, and that in general, elements of clauses in apposition to sentential nouns also cannot –- should both be accounted for by (4.20) –- the Complex NP Constraint. The fact that elements of clauses in construction with "empty" nouns like _it_ (cf. (4.13a)) and _koto_ 'thing' (cf. (4.40b)) can be relativized, whereas this is not possible in clauses in construction with nouns like _girl_ (cf. (4.15)), _claim_ (cf. (4.18a)), _kodomo_ 'child' (cf. (4.38)), and _syutyoo_ 'claim' (cf. (4.40a)), necessitates that the constraint be stated with reference to some such feature as [± Lexical]. I believe the Complex NP Constraint to be universal (but cf. fn. 8), although there are problems with it even in English. These will be taken up in the two sections immediately following.

4.1.5.   The first difficulty with (4.20) concerns sentences
like those in (4.42).

(4.42)   a.   I am making the claim that the company

squandered the money.

b.   I am discussing the claim that the company

squandered the money.

Most speakers find NP in the position of the money not
to be relativizable in (4.42b), but to be so, or at least more nearly
so, in the case of (4.42a).

(4.43)   a. ? The money which I am making the claim that

the company squandered amounts to $400,000.

b. * The money which I am discussing the claim

that the company squandered amounts to

$400,000.

Sentence (4.43b) can be made even more ungrammatical by prefixing the
noun claim with some possessive modifier,

(4.44)   ** The money which I am discussing Sarah's

claim that the company squandered amounts

to $400,000.

and many speakers feel that while (4.43a) may not be fully grammatical,
sentences like those in (4.45), whose only significant difference from
(4.43a) lies in the definiteness of the article on the sentential
noun, are completely grammatical.

(4.45) a. The money which I have $\left\{\begin{array}{l}\text{hopes} \\ \text{a feeling}\end{array}\right\}$ that the

company will squander amounts to \$400,000.

b. The money which I will have a chance to

squander amounts to \$400,000.

c. The money which I will make a proposal

$\left\{\begin{array}{l}\text{for us to squander} \\ \text{that we squander}\end{array}\right\}$ amounts to \$400,000.

If any of these sentences are grammatical, either

condition (4.20) must be modified or abandoned, or the two sentences

in (4.42) must derive from quite different sources. As it stands, (4.20)

will block the generation of all the sentences in (4.43) – (4.45): in

each case, the NP being relativized is contained in a sentence in

apposition to a lexical head noun.

There is some evidence that the second alternative may

be correct, i.e., that (4.20) can be preserved as is. I have not yet

been able to solve various problems of rule ordering that arise in

connection with this alternative, and it is only in the hope that the

following incomplete analysis may suggest a correct way of distinguishing

between (4.43a) and (4.43b) that I present it here.

Harris has proposed (cf. Harris (1957)) that sentences

like those in (4.46) be directly transformed into the corresponding

sentences in (4.47), by a rule which he calls the modal transformation.

(4.46)   a.   I snoozed.

b.   Sam progressed.

c.   Bill gave me $40.

d.   Max shoved the car.

e.   I feel that Arch will show up.

(4.47)   a.   I took a snooze

b.   Sam made progress.

c.   Bill made a gift to me of $40.

d.   Max gave the car a shove.

e.   I have a feeling that Arch will show up.

Since the surface structures of (4.46a) and (4.47a) seem to be those shown in (4.48a) and (4.48b), respectively (the situation is similar with respect to the other sentences of (4.46) and (4.47)),

(4.48) a.

```
            S
          /   \
        NP     VP
        |      |
        I      V
               |
            snoozed
```

b.

```
            S
          /   \
        NP     VP
        |     /   \
        I    V     NP
             |    /  \
           took  a    N
                      |
                   snooze
```

142
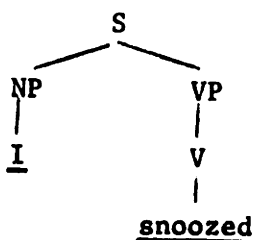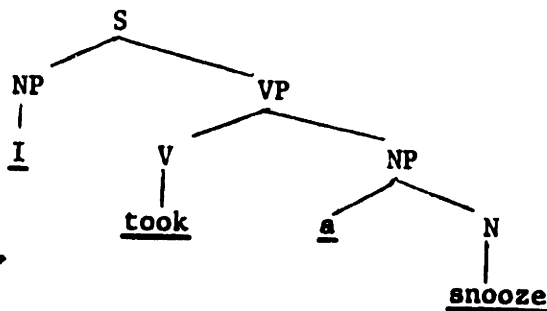
Harris' rule cannot be stated within the currently available theoretical framework, for at present, only transformations which decrease structure can be formulated. The P-marker in (4.48a) contains only one NP, but the one in (4.48b) contains two, so the present theory would not allow a direct transformational relation which converted the former into the latter (the opposite direction would be possible, of course). So, at present, in the theory of generative grammar, one could only claim (a) that the sentences are only semantically related, or (b) that (4.48b) is converted into (4.48a), or (c) that the deep structure of (4.48a) is contained in the deep structure of (4.48b), as shown in (4.49):

(4.49)

```
                    S
                  /   \
                NP      VP
                |      /  \
                I     V     NP
                |    took  /  \
                         N      S
                         |     /  \
                         it   NP    VP
                              |     |
                              I     V
                                    |
                                  snooze
```
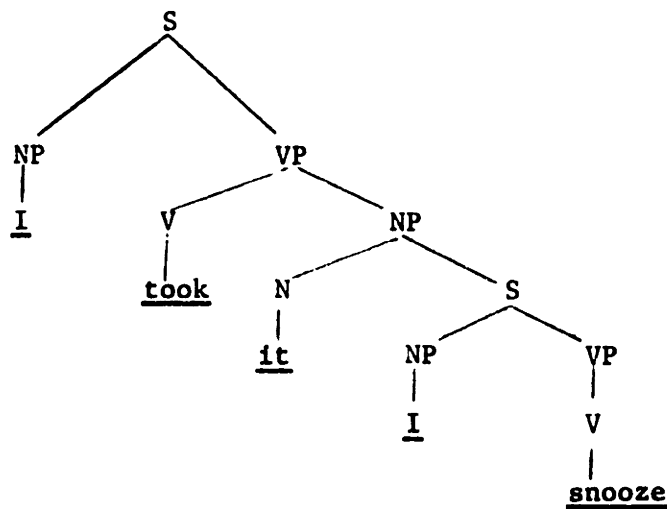
Proponents of this last approach would presumably argue that after the embedded subject in (4.49), I, had been deleted by Equi-NP Deletion, the verb snooze would be substituted for the

abstract pronoun, <u>it</u>, and the indefinite article would be segmentalized[9],

yielding the structure in (4.48b).

I do not know whether any of the above analyses is

correct, or whether structure-building transformations, which could

convert (4.48a) directly into (4.48b), should be countenanced within

the theory. But whatever analysis is adopted for the sentences in

(4.47), it should also be adopted for expressions like <u>make the claim</u>

<u>that S</u>, <u>have hopes that S</u>, <u>have a chance to VP</u>, etc., which were

used in (4.42) and (4.45) above. If analysis (a) is correct, then

both sentences in (4.42) would come from roughly the same deep

structure, (4.50).

(4.50)
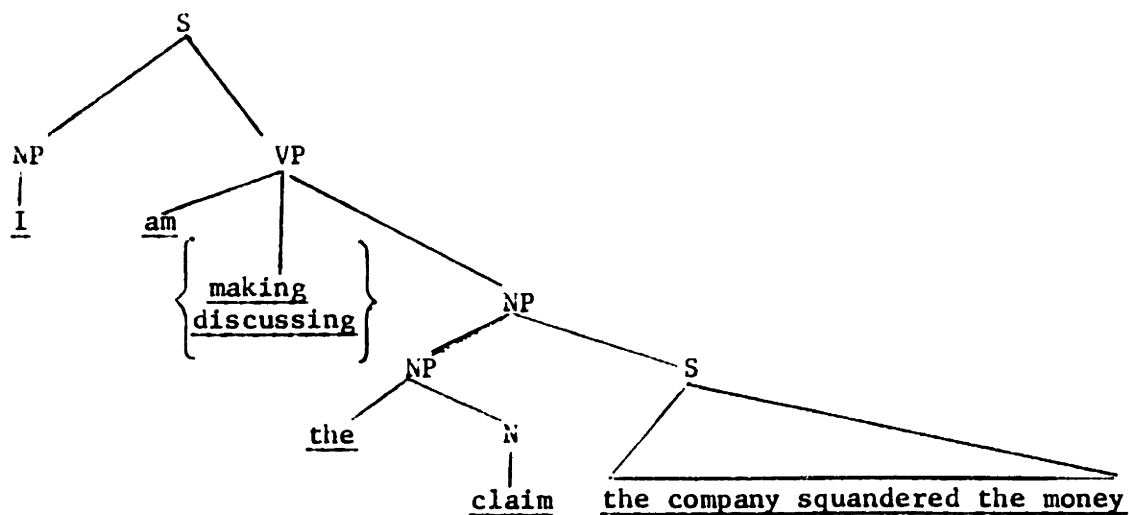
But the fact that the NP <u>the money</u> is relativizable in (4.42a) but not in (4.42b) seems to argue against this analysis, for how can this difference be accounted for, if both sentences have roughly the same deep structure? Furthermore, there is another fact about the sentences in (4.42a) and (4.45a) which sets them off from other sentences containing sentential nouns with clauses in apposition to them. George Lakoff has pointed out to me that the rule which optionally deletes the complementizer <u>that</u> in clauses which follow a verb cannot apply if the verb has been substantivized. So, while both (4.51a) and (4.51b) are grammatical, only the <u>a</u>-version of (4.52) is possible.

(4.51) a. Kleene proved that this set is recursive.

b. Kleene proved this set is recursive.

(4.52) a. The proof that this set is recursive is difficult.

b. * The proof this set is recursive is difficult.

It seems to be the case that it is only in modal constructions like <u>make the claim that   S</u>, <u>have hopes that   S</u>, etc. that the complementizer <u>that</u> can be deleted after a sentential noun.

(4.53) a. ? I am making the claim the company squandered the money.

b. 1 have hopes the company will squander the money.

c. I have a feeling the company will squander the money.

d. * I made a proposal we squander the money.

As (4.53d) shows, it does not seem to be the case that _that_ can be deleted in all modal constructions -- what the restrictions are I do not know at present -- but the fact that it generally can be deleted in these constructions is another piece of evidence that argues they should be analyzed differently than such sentences as (4.42b).

One final fact deserves mention here: to the best of my knowledge, it is only in modal constructions that sentential nouns which are related to transitive verbs cannot occur with a full range or possessive modifiers. In sentences like those in (4.54), where the main verb of the sentence containing _claim_ is not _make_, any possessive NP can modify _claim_.

(4.54) a. $\begin{Bmatrix} \text{Your} \\ \text{Dick's} \\ \text{etc.} \end{Bmatrix}$ claim that semantics is generative

is preposterous.

b. We are discussing $\begin{Bmatrix} \text{Myron's} \\ \text{their} \\ \text{etc.} \end{Bmatrix}$ claim that

flying saucers are real.

But after the verb <u>make</u>, and only after it, the possessive modifier must refer back to the subject of <u>make</u>, if it is possible to have such a modifier at all:

(4.55) Myron is making $\left\{ \begin{array}{l} \text{the} \\ ?\ \text{his} \\ *\ \text{Suzie's} \\ *\ \text{Dr. No's} \\ \text{etc.} \end{array} \right\}$ claim that dead

is better than red.

The same is true of all modals, as the sentences in (4.56) demonstrate.

(4.56)   a. * I have Tom's feeling that the company will

squander the money.

b. * Myra took Betty's snooze.

c. * Bill made Sarah's gift to me of $40.

d. * Max gave the car Levi's shove.

These three facts -- that the Complex NP Constraint is not operative in modal constructions, that the complementizer <u>that</u> is generally deletable there, and the fact that possessive modifiers must refer back to the subject of the modal verb -- indicate clearly that sentential nouns like <u>claim</u>, <u>hope</u>, etc. which occur in these constructions must be derived differently in modal constructions than they are elsewhere.

It is tempting to propose changing the theory so that (4.48a) could be directly converted into (4.48b) by a structure-building

rule of <u>Modalization</u>. Then the fact that elements are relativizable
in complement sentences after <u>make the claim</u>, <u>have hopes</u>, etc. and
the fact that <u>that</u> can be deleted there could be handled by ordering
the rules as follows: <u>Relative Clause Formation</u>, <u>That Deletion</u>,
<u>Modalization</u>.
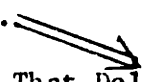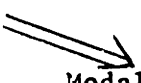
Unfortunately, this solution will not work, for if there
is a rule of <u>Modalization</u>, <u>Passive</u> must follow it:

(4.57)   The claim that plutonium would not float was
         made by the freshman.

But if <u>Passive</u> follows <u>Relative Clause Formation</u>, such
sentences as (4.58) will not be derivable.

(4.58)   The man who was arrested bý Officer McNulty
         went mad.

Furthermore, if <u>Passive</u> follows <u>That Deletion</u>, what is
to prevent derivations like that shown in (4.59)?

(4.59)   a.   Jack is claiming that you won't need it.
                                                      <u>That Deletion</u>

         b.   Jack is claiming you won't need it.
                                                      <u>Modalization</u>

         c.   Jack is making the claim you won't need
              it. ⟹<u>Passive</u>

         d. * The claim you won't need it is being made
              by Jack.

These difficulties, which I have not been able to overcome, have kept me from reaching a solution to the problem posed by the modal construction for the Complex NP Constraint. But since it seems clear that the complex sentential NP which occur in modal constructions must be derived from some other source than the sentential NP in other constructions, I have hopes that it will be possible to preserve the Complex NP Constraint in the way it was stated in (4.20). At any rate, I will not settle for merely an ad hoc rider on (4.20) until the grammar of modal constructions is considerably better understood than it is at present.

4.1.6.   The second difficulty concerning (4.20) arises in connection with the sentences in (4.3) and (4.4), which I will repeat below for convenience.

(4.3)   a.   I read a statement which was about that man.

          b.   I read a statement about that man.

(4.4)   a. * The man who I read a statement which was about is sick.

          b.   The man who I read a statement about is sick.

As I pointed out in § 4.1.2, it is not in general the case that elements in reduced relative clauses can be relativized or questioned: the fact that the sentences of (4.15) and (4.16) are equally ungrammatical supports this contention. How then can it be that the object of about in (4.3b) can be relativized, if (4.3b) derives

from (4.3a) by way of the rule of <u>Relative Clause Reduction</u>?

The tentative answer to this question which I would

propose is that the relation between the sentences of (4.3) must be

much more complex than has hitherto been suspected. I suspect that

(4.3b) is nearer to being basic than (4.3a) is, and that in any case,

(4.3b) is not derived from (4.3a) by means of the rule of <u>Relative</u>

<u>Clause Reduction</u>. There are a number of peculiar facts about sentences

containing nouns like <u>statement</u>, some of which I will take up below,

which suggest the correctness of this idea.

First of all, such sentences behave uniquely under

reflexivization. As was shown in Lees and Klima (1963), the second

of two identical noun phrases is replaced by a reflexive pronoun,

subject to the condition that both NP's be in the same "simplex

sentence", to use their term. They do not state how this restriction

is to be expressed formally, but their meaning will be clear from

the following examples:

(4.60) a. You're going to hurt yourself one of these

days.

b. I spoke to Bill about himself.

(4.61) a. * That Tom saw me surprised myself.

b. * He said that himself was hungry.

<u>Reflexivization</u> must be blocked in (4.61), for in both

cases, there is a node S which dominates one occurrence of the two

NP's which does not dominate the other. Since this is not true of

(4.60), <u>Reflexivization</u> must apply.

Consider now such sentences as those shown in (4.62)

(4.62) a. I read him$_i$ a statement which was about

$$\left\{ \begin{array}{l} \text{him}_i \\ \text{?himself} \end{array} \right\} .$$

b. I read him$_i$ a statement about $\left\{ \begin{array}{l} \text{*him}_i \\ \text{himself} \end{array} \right\} .$

I am not sure, but I believe (4.62a) is better, in my

own speech, with a non-reflexive pronoun than with a reflexive

pronoun. If there are dialects in which both of the sentences in

(4.62a) are fully grammatical, I can provide no explanation of such

facts, for in the overwhelming majority of cases, <u>Reflexivization</u>

cannot go down into relative clauses, and I would not know how to

characterize formally the relative clauses in sentences like

(4.62a) in such a way that <u>Reflexivization</u> could go down into

them, but not into clauses like the one shown in (4.63).

(4.63)   I know a man who hates $\left\{ \begin{array}{l} \text{me} \\ \text{*myself} \end{array} \right\} .$

Therefore, for the purposes of this study, let us assume,

perhaps falsely, the existence of a dialect in which reflexive pronouns

are absolutely excluded in (4.62a) and are absolutely necessary in

(4.62b). How could we explain such facts?

Given that a meta-rule of S-pruning like (3.6) must

be included in linguistic theory, on the basis of the independent

evidence presented in § 3.1, it might be argued that the explanation

must depend in some way on this meta-rule. That is, one could assume that (4.62b) is derived from (4.62a) by the rule of <u>Relative Clause Reduction</u>. <u>Reflexivization</u> would be blocked in (4.62a), because in (4.64), which shows the approximate structure of (4.62a), the circled node S dominates the second occurrence of the NP <u>he</u> (<u>him</u>), but not the first, so the two NP's are not in the same simplex sentence.

(4.64)
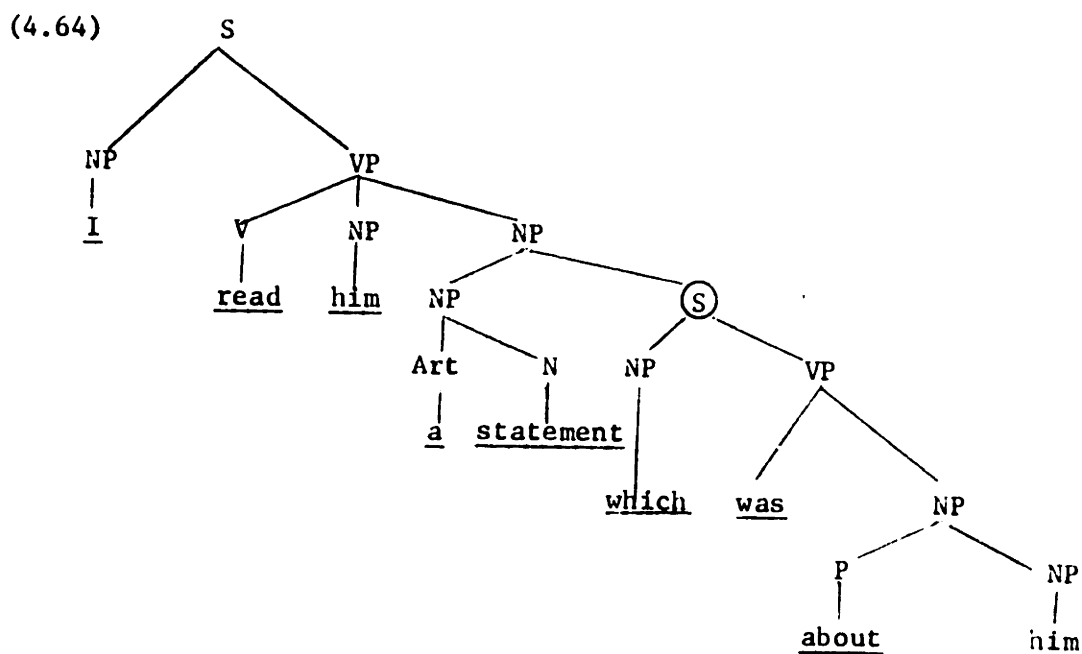
Then, of course, as in the cases discussed in §§ 3.1.1 - 3.1.3, when the <u>Relative Clause Reduction Rule</u> deletes <u>which was</u> in (4.64), the circled S will no longer branch and will be pruned by (3.6), thus bringing it about that the two occurrences of <u>he</u> (<u>him</u>) are in the same simplex sentence, so that <u>Reflexivization</u> can convert the second one into <u>himself</u>.

This proposal may seem appealing at first glance, but closer scrutiny reveals that it is inadequate in a number of serious ways, and cannot, as far as I can see at present, be patched up to overcome these inadequacies. The first difficulty arises in connection with several facts which were first pointed out in two careful studies of reflexives made by Florence Warshawsky (cf. Warshawsky (1965a,b)). She pointed out that whether or not reflexivization occurs in sentences like (4.62b) is correlated in some inexplicable way with the type of determiner which precedes statement. In (4.65a), where the determiners are indefinite, reflexivization seems to be obligatory, in most dialects, whereas in (4.65b), where the determiners are possessives, they do not occur (in most dialects). With the definite articles the, this, that (4.65c), there seems to be great dialectal variation. To my ear, the sentences sound odd with or without reflexives.

(4.65)   a.   I read him two (several, some, no)
             statements about himself.

         b. * I read him Judy's statement about himself.

         c.?* I read him the (this, that) statement
             about himself.

Clearly, no principle like (3.6) can account for the facts in (4.65) by itself -- additional conditions of some sort must be imposed on the rule of Reflexivization (these sentences will be discussed again in § 6.4) below). But, it might be argued, at least the principle of

S-pruning makes it possible to state the _Reflexivization Rule_ in such
a way that reflexives are excluded from (4.62a), while at least
some of them are allowed in sentences like (4.65a) and possibly (4.65c).
This argument seems appealing until it is realized that normally
Reflexivization does not go down into reduced relative clauses. For
example, if the relative clause in (4.66a) is reduced to the phrase
behind me, the NP _me_ cannot be converted into a reflexive. The
same is true of the reduced clauses _jealous of you_ and _watching me_
in (4.77b) and (4.78b).

(4.66)   a.   I know two men who are behind me.

         b.   I know two men behind me (*myself).

(4.67)   a.   You are too flip with people who are jealous
               of you.

         b.   You are too flip with people jealous of
               you (*yourself).

(4.68)   a.   I screamed at some children who were
               watching me.

         b.   I screamed at some children watching me
               (*myself).

In fact, excluding the problem as to whether reflexive
pronouns can appear in relative clauses of the type contained in
(4.62a), I would hazard a guess that not only do rules of reflexivization
universally not go down into relative clauses, they also do not go down
into reduced relative clauses. For instance, in German, if the

relative clause <u>die ihm lieb sind</u> 'who are kind to him' in (4.69a)

is reduced to form (4.69b), the personal pronoun <u>ihm</u> 'him' (dat.)

is not converted to the reflexive pronoun <u>sich</u> 'himself'.

> (4.69)   a.   Hans verknallt sich nur in Mädchen, die
>
>   Hans falls   only for girls,   who
>
>   ihm lieb sind.
>
>   him kind are.
>
>   'Hans only falls for girls who are kind to him.'
>
>   b.   Hans verknallt sich nur in ihm liebe Mädchen.
>
>   Hans falls   only for him kind girls.
>
>   'Hans only falls for girls kind to him.'

If <u>sich</u> is substituted for <u>ihm</u> in (4.69b), as in

(4.70), the sentence produced has a different meaning and is unrelated

to the sentences in (4.69).

> (4.70)   Hans verknallt sich nur in sich liebe Mädchen.
>
>   Hans falls   only for themselves kind girls.
>
>   'Hans only falls for girls who are kind to themselves.

Thus, the most obvious explanation of the facts of

(4.62), an explanation making use of the rule ordering shown in (4.71)

> (4.71)   <u>Relative Clause Reduction</u>
>
>   <u>Reflexivization</u>

and of some convention of S-pruning, would seem to be inadequate

for the same reason that (4.5) cannot adequately account for the

difference in grammaticality of the sentences in (4.4). Normally,

Reflexivization does not go down into reduced relative clauses, so the fact that reflexives can occur after about in (4.62b) suggests that the about-phrase is not clausal in origin.

Warshawsky (op. cit.) points out that many of the nouns which can appear in the blank in (4.72) are related to verbs.

(4.72) Max showed me a _____ $\left\{\begin{matrix} of \\ about \end{matrix}\right\}$ himself.

A few of the verb-related nouns that occur in this environment are listed in (4.73a); several for which no corresponding verb exists are given in (4.73b). (Warshawsky gives much more extensive lists of these nouns, which she calls "picture nouns".)

(4.73) a. description, statement, report, claim, tale, drawing, painting, photograph, etching, sketch

b. story, column, satire, book, letter, text, article, sentence, paragraph, chapter, picture

Warshawsky points out that the verbs associated with the nouns of (4.73a) are all verbs of creation, and the nouns systematically ambiguous with respect to whether they denote an abstract creation or some physical object upon which this creation is represented. Further, she notes that certain of these verbs can occur only with human subjects (cf. (4.74)),

$$(4.74) \quad \left\{ \begin{matrix} \text{Michael} \\ \text{*Michael's photograph} \end{matrix} \right\} \left\{ \begin{matrix} \text{painted} \\ \text{sketched} \\ \text{drew} \end{matrix} \right\} \text{ the duck}$$

pond.

but that others could have either human subjects <u>or picture noun</u>

<u>subjects</u>.

$$(4.75) \quad \left\{ \begin{matrix} \text{Michael} \\ \text{Michael's} \left\{ \begin{matrix} \text{report} \\ \text{statement} \\ \text{description} \\ \text{story} \\ \text{article} \\ \text{book} \\ \text{?picture} \end{matrix} \right\} \end{matrix} \right\} \left\{ \begin{matrix} \text{told of the conflict} \\ \text{described the country} \\ \text{stated that we were at fault} \end{matrix} \right\}.$$

This last property is unlike any other grammatical fact I have

encountered. It is worth pointing out that it is not the case

that any abstract noun can serve as subject of these verbs -- only

picture nouns can, as is shown by the ungrammaticality of (4.76).

$$(4.76) \quad * \left\{ \begin{matrix} \text{the space between my eyes} \\ \text{sentencehood} \\ \text{Harry's civil rights} \\ \text{Marilyn's arrival} \\ \text{etc.} \end{matrix} \right\} \left\{ \begin{matrix} \text{told of the conflict} \\ \text{described the country} \\ \text{stated that we were at fault} \end{matrix} \right\}.$$

The fact that the deverbal nouns in (4.73a) behave the

same way as the apparently basic nouns in (4.73b) with respect to

relativization and questioning (cf. (4.4)), reflexivization (cf. (4.62))

and with respect to the curious selectional facts pointed out in (4.75)

provides strong evidence for treating all picture nouns alike.

Warshawsky suggests that verbs may be basic for picture nouns, and

that hypothetical verbs (cf. Lakoff (1965)) such as to story,

to column, etc. be postulated as underlying the nouns of (4.73b).

This proposal seems quite reasonable, but in the absence of a

detailed analysis along these lines, little more can be said

about it at present.

In passing, it should be remarked that there are a

number of prepositional phrase adjuncts to noun phrases which exhibit

similar behavior to picture nouns. As (4.16b) shows, it is not

in general the case that elements of postnominal prepositional

phrases can be questioned. But this is the case in the sentences

of (4.77), as (4.78) shows.

(4.77) a.   I gave Tom a key $\left\{\begin{array}{l}\text{to}\\ \text{for}\end{array}\right\}$ that door.

b.   Harold has books by some young novelists.

c.   Billy is looking for a road into the cavern.

(4.78) a.   Which door did I give Tom a key $\left\{\begin{array}{l}\text{to}\\ \text{for}\end{array}\right\}$?

b.   Which novelists does Harold have books by?

c. ? Which cavern is Billy looking for a road into?

Considerations of the same sort as were discussed above

would suggest that NP like a key to this door and a road into the

cavern should not be derived from ?a key which is to this door and

?a road which is into the cavern, which are at best of dubious

grammaticality in any event. But what their deep structures might be

is at present an unsolved problem.

4.1.7.   To conclude this discussion, the constraint which I

stated in (4.20) correctly prevents elements of relative clauses

from being questioned or relativized. The remarks of footnote 8

and § 4.1.5 above indicate that this constraint is stated too

strongly at present, and the remarks in § 4.1.6 show that the

differences between the sentences of (4.4), although they appear to

fall within the scope of (4.20), are in fact much more complex than

has been realized. I know of no other counterexamples to the

Complex NP Constraint, and I therefore submit it for inclusion

in the list of putative linguistic universals, subject to whatever

modifications are necessary to avoid the extra strength pointed out

in footnote 8 and §4.1.5.

4.2.   <u>The Coordinate Structure Constraint</u>

4.2.1.   In § 2.2, in Case F, it was pointed out that conjoined

NP cannot be questioned: this was attested to by the ungrammaticality

of (2.18) and (2.19), which I repeat here for convenience.

        (2.18)   * What sofa will he put the chair between some

                table and?

        (2.19)   * What table will he put the chair between and

                some sofa?

The impossibility of questioning the circled NP nodes in diagram
(4.79) can be successfully accounted for by invoking the A-over-A
principle,

(4.79)
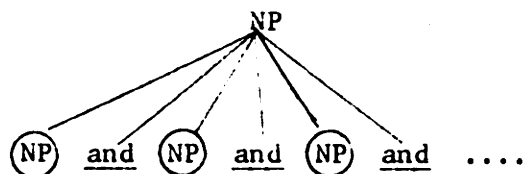
but this principle does not prevent the circled NP nodes in diagrams
(4.80) or (4.81) from being questioned or relativized.

(4.80)
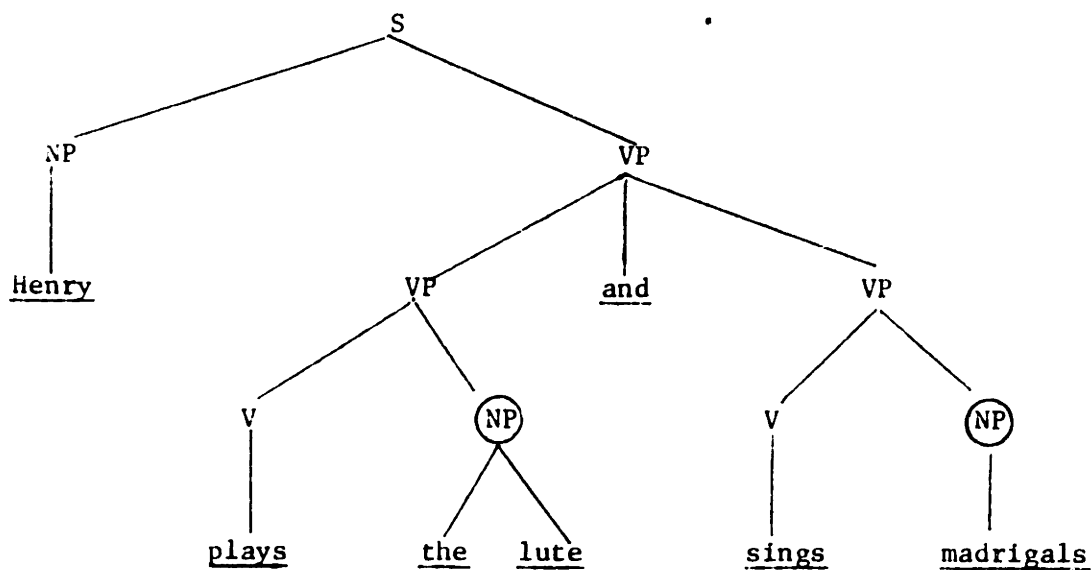
(4.81)
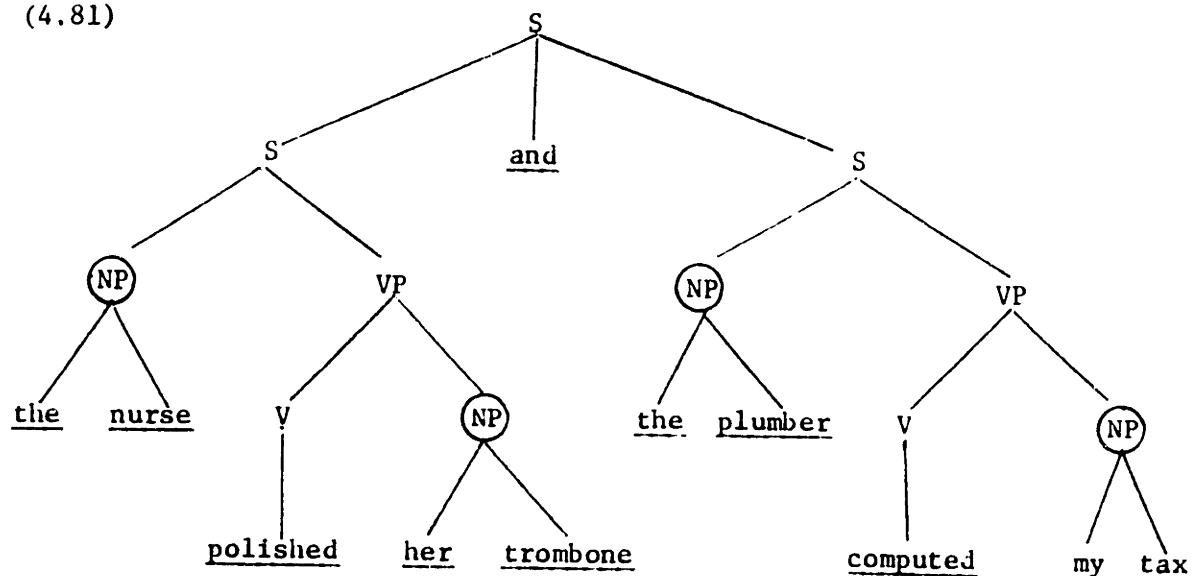
But all of the circled nodes must somehow be restricted from being moved, as the ungrammatical sentences of (4.82) show.

(4.82) a. * The lute which Henry plays and sings
          madrigals is warped.

        b. * The madrigals which Henry plays the lute
          and sings sound lousy.

        c. * The nurse who polished her trombone and
          the plumber computed my tax was a blonde.

        d. * Which trombone did the nurse polish and
          the plumber computed my tax?

        e. * The plumber who the nurse polished her
          trombone and computed my tax was a hefty
          fellow.

        f. * Whose tax did the nurse polish her trombone
          • and the plumber compute?

I know of no principled way of excluding such structures as those shown in (4.80) and (4.81) from being introduced as relative clauses, i.e., at the node S in (4.83),

(4.83)

```
        NP
       /  \
      /    \
    NP      S
```
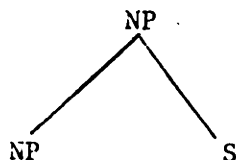
so it appears to be necessary to add the following constraint to the meta-theory:

(4.84)   The 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.

4.2.2.   I propose to define the notion coordinate structure as any structure conforming to the schematic diagram in (4.85).

(4.85)

```
                    A
         _____ / /|\
        {  and  }  / | \
        {  ――   } A  A  ....
        {  or   }
```
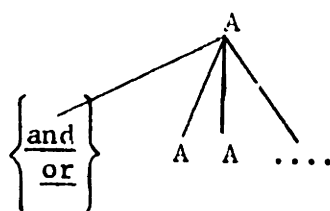
Of course, since (4.85) is intended to be a universal definition, it must be understood as containing not the English morphemes and and or, but rather a more abstract, language-independent representation of these terms[10]. Furthermore, the conjunction should be understood as either preceding all its conjuncts, as in English, French, etc., or as following them, as in Japanese. Coordinate structures contain at least two conjuncts, but may contain any higher number of them.

As for the deep structure position of the conjunction with respect to the conjuncts, there are many reasons for believing that the structure of (4.86) is not that shown in (4.87), but rather that shown in (4.88), when each occurrence of the conjunction and forms a constituent with the following sentence instead of being coordinate with it, as in (4.87).

(4.86)   Irma washed the dishes, and Sally dried, and Floyd loafed.

(4.87)

(4.88)

```
                              S
              ┌──────────────┼──────────────────────┐
              S              S              S
          ┌───┴───┐      ┌───┴───┐      ┌───┴───┐
      Irma washed    and   Sally dried  and   Floyd loafed
      the dishes
```
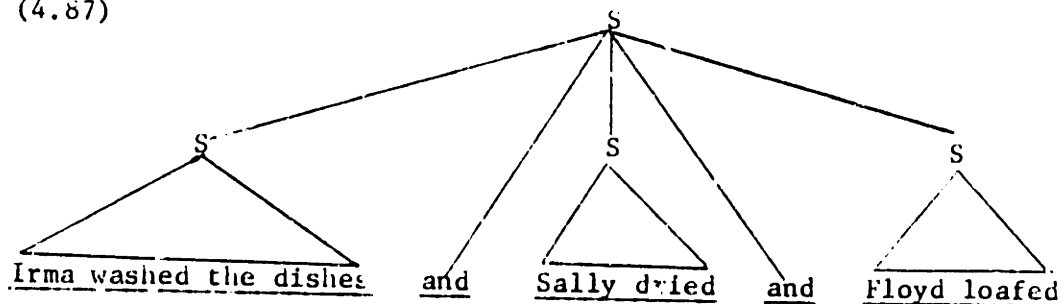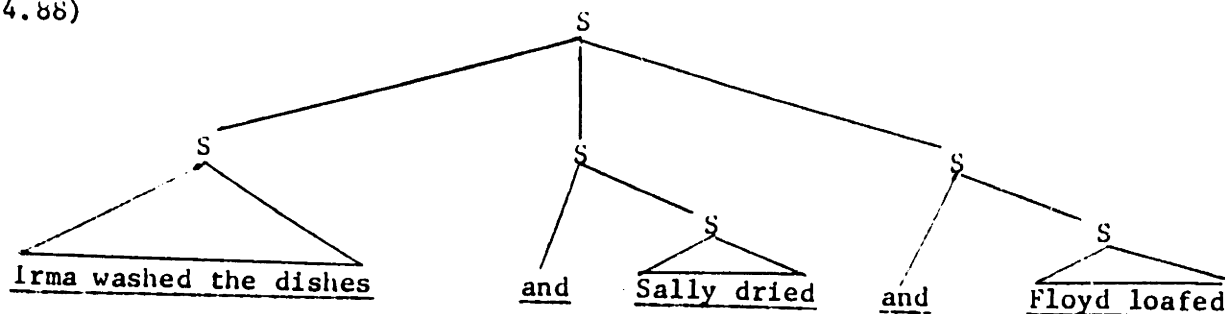
One syntactic reason is that if a conjoined sentence like (4.89) is broken up into two sentences, as in (4.90), the conjunction always goes with the second sentence, as in (4.90a), never with the first, as in (4.90b).

(4.89)   John left, and he didn't even say goodbye.

(4.90) a.   John left. And he didn't even say goodbye.

        b. * John left and. He didn't even say goodbye.

A second syntactic reason is in that languages in which coordinating conjunctions can become enclitics, which are then inserted into one conjunct (this is the case with - que 'and' in Latin, and with the word aber 'but' in German), these enclitics are always associated with the following conjunct, never with the preceding one. Thus (4.91) may be converted into (4.92a), but not into (4.92b).

(4.91)   Sie will tanzen, aber ich will nach Hause gehen.

           'She wants to dance, but I want to go home.'

(4.92) a.   Sie will tanzen; ich will aber nach Hause

gehen.

b. * Sie will aber tanzen; ich will nach Hause

gehen.[11]

A third syntactic reason for regarding (4.88) as the

correct structure is the following: since the <u>Appositive Clause</u>

<u>Formation Rule</u> must convert sentences like (4.93a) into (4.93b),(but cf. §6.2.4.1

(4.93) a.   Even Harold failed, and he is the smartest

boy in our class.

b.   Even Harold, $\begin{Bmatrix} \text{and he} \\ \text{who} \end{Bmatrix}$ is the smartest boy

in our class, failed.

there are very general theoretical grounds for arguing that the string

<u>and he is the smartest boy in our class</u> in (4.93a) is a constituent,

for except for this case, transformations can be constrained so that

only constituents may be adjoined.

Phonolrgical evidence indicates strongly that the bracketing

of the subject NP of (4.94) must be that shown in (4.95a), and not

that shown in (4.95b) or (4.95c),

(4.94)   Tom, and Dick, and Harry all love watermelon.

(4.95) a.   ((Tom) (and Dick) (and Harry)) all love

watermelon.

b.   ((Tom) (and) (Dick) (and) (Harry)) all

love watermelon.

c. ((Tom and) (Dick and) (Harry)) all love

watermelon.

for intonational pauses come before coordinating conjunctions, not

after them or equally on both sides of them.

So there is good evidence to indicate that the correct

structure of (4.86) must be that given in (4.88). But how does this

structure arise? Lakoff and I (op. cit.) propose that there be a

phrase structure rule schema like (4.96) in the base,

$$(4.96) \qquad S \rightarrow \left\{ \frac{and}{or} \right\} \; \colon^n \; , \text{ where } n \geq 2$$

and that later the _and_ or _or_ which is introduced by (4.96) be

copied and Chomsky-adjoined[12] to each of the indefinitely many

S's that are introduced by (4.96) by a rule of Conjunction Copying.

So the deep structure of (4.86) would be approximately that shown in

(4.97), which the rule of Conjunction Copying will convert to (4.98).

(4.97)
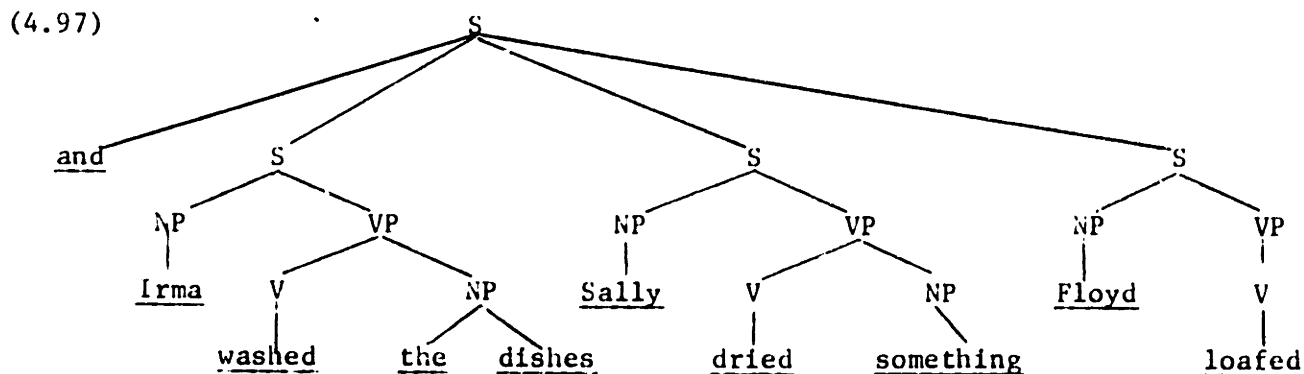
(4.98)
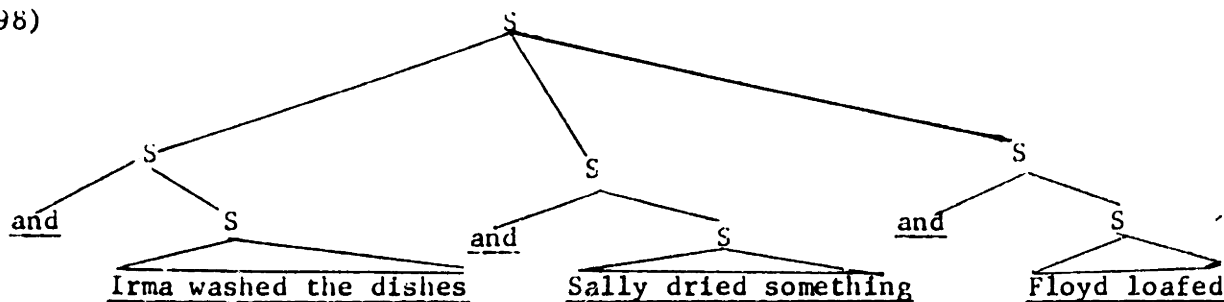
To derive (4.88) from (4.98), the first instance of and
is deleted by a general rule which I will not state here. It is
deleted obligatorily if the conjuncts are sentences, as is the case
in (4.98), but it may optionally be converted into both if the conjuncts
are NP, VP, or V. The rules for conjunction with or are similar
in all respects, except that the initial or may be converted into
either in front of all conjuncts. Languages like French, where the
first conjunction does not have a suppletive alternant, provide
further motivation for this analysis:

(4.99) a. Et Jean et Pierre sont fatigués.

andJohn and Peter   are   tired.

'Both John and Peter are tired.'

b. Ou Jean ou Pierre doit le faire.

Or John or Peter   must it do.

'Either John or Peter must do it.'

One final point in favor of this analysis should be
mentioned: the semantic interpretation of conjunctions, under this
analysis, is much more in line with the traditional logical analysis of

1

conjunctions, which treats them as n-place predicates, than would be

the case if the previously accepted analyses were adopted. That is,

if (4.97) is adopted as the deep structure of (4.86), the conjunctions

and and or are only different semantically from such two-place

relations as see, etc. in that the former can have an indefinitely

large number of arguments, while the latter is binary. But if some

such structure as (4.87) is postulated as the deep structure of (4.86),

quite dissimilar projection rules will have to be constructed to

interpret (4.87) semantically, and the fact that and, or, and see

are semantically similar, in that all are relations, will not be

expressed formally.

4.2.3.   Given the above definition of coordinate structure, the

first clause of the Coordinate Structure Constraint will exclude

(2.18) and (2.19), while the second will exclude all the sentences

of (4.82). The latter sentences could neither be excluded by the

A-over-A principle nor by the Complex NP Constraint of § 4.1,

so it appears that condition (4.84) is necessary for reasons which

are independent of the problems raised by (2.18) and (2.19). Thus

(4.84) can be used to explain their ungrammaticality, just as the

A-over-A principle was.

It should be pointed out that there are instances of

the morpheme and which must be derived from different sources than

the two major sources discussed in Lakoff and Peters (1966). For

instance, as (4.101) shows, there is a difference in relativizability
between (4.100a) and (4.100b), even though both sentences in (4.100)
appear to contain structures that are coordinate, by definition (4.85).

(4.100)   a.   I went to the store and bought some whisky.

            b.   I went to the store and Mike bought some
whisky.

(4.101)   a.   Here's the whisky which I went to the store
and bought.

            b. * Here's the whisky which I went to the store
and Mike bought.

However, as George Lakoff has pointed out to me, there
are clear syntactic indications that the relative clause in (4.101a)
is not an instance of ordinary sentence conjunction. First of all,
it is only with non-stative verbs as the main verb of the second
conjunct that sentences like (4.101a) can be constructed.

(4.102)   a.   Tony has a Fiat and yearns for a tall nurse.

            b. * The tall nurse who Tony has a Fiat and
yearns for is cruel to him.

Secondly, the second conjunct cannot be negative:

(4.103)   a.   I went to the movies and didn't pick up
the shirts.

            b. * The shirts which I went to the movies and
didn't pick up will cost us a lot of money.

Thirdly, there are restrictions on the tenses that may appear in such sentences as (4.101a). Thus (4.104a) parallels (4.100a) in everything but tense, but the NP the whisky is not relativizable as (4.104b) indicates.

(4.104) a. I went to the store and have bought some excellent whisky.

b. * The excellent whisky which I went to the store and have bought was very costly.

The fact that (4.100a), on one reading, is synonymous with (4.105a), which contains a purpose clause, and the fact that the ungrammaticality of (4.102b), (4.103b), and (4.104b) is matched by correspondingly ungrammatical purpose clauses (cf. (4.105b), (4.105c), and (4.105d) respectively) suggests that the reading of (4.100a) which allows the formation of the relative clause of (4.101a) be derived from whatever the underlying structure is that underlies (4.105a). Note, by the way, that relativization is also possible in (4.105a), as (4.106) shows.

(4.105) a. I went to the store to buy some whisky.

b. * Tony has a Fiat to yearn for a tall nurse.

c. * I went to the movies $\begin{Bmatrix} \text{not to} \\ \text{to not} \end{Bmatrix}$ pick the shirts up.

d. * I went to the store to have bought some whisky.

(4.106)   Here's the whisky which I went to the

            store to buy.

There are other instances of the morpheme and which a

similar line of argument suggests should not be derived from coordinate

nodes in deep structure. For example, consider the sentences in (4.107):

(4.107) a.   She's gone and ruined her dress now.

         b.   I've got to try and find that screw.

         c.   Aunt Hattie wants you to be nice and kiss

              your granny.

As I have no plausible analysis for these sentences, I will merely

point out that they are not subject to (4.84):

(4.108) a.   Which dress has she gone, and ruined now?

         b.   The screw which I've got to try and find

              holds the frammis to the myolator.

         c.   Which granny does Aunt Hattie want me to

              be nice and kiss?

The fact that the sentences of (4.108) and sentence (4.101a) are

grammatical might mean that (4.84) is simply wrong, but the facts

I presented in (4.102) - (4.106) suggest that this may not be so,

at least with regard to (4.101a). Rather it may be the case that none

of these sentences contain coordinate structures at the time when

questions, relative clauses, etc. are formed, but only are converted

into coordinate structures later, or that they never contain coordinate

structures at all. In fact, I know of no other test for coordinate

structure than the one (4.84) provides, and it therefore seems quite
reasonable to me to assume that one of the last two possibilities
mentioned above is correct.

It is perhaps worthwhile to show how (4.84) can provide
a test for coordinate structure.   (4.109a) can be converted into
(4.109b) by the rule of _Gapping_ (Ross 1967d)):

(4.109)   a.   The boy works in a skyscraper and the girl

works in a quonset hut.

b.   The boy works in a skyscraper and the girl

in a quonset hut.

The structure underlying these sentences is that shown in (4.110).

(4.110)
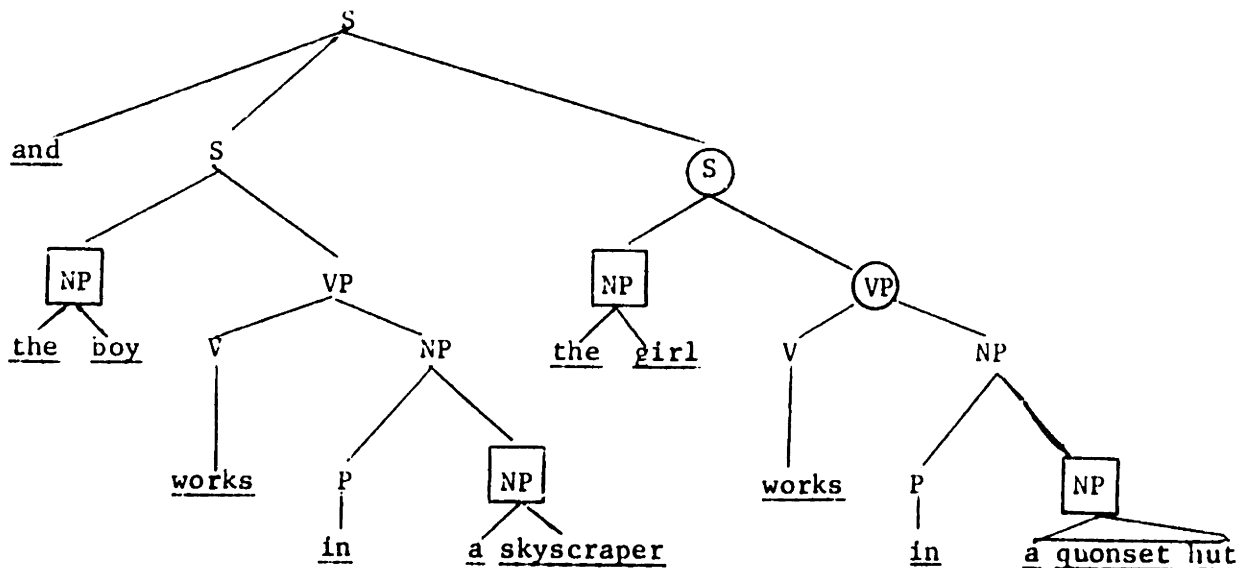
When Gapping applies to (4.110), deleting the second occurrence of the verb works, it might be proposed that either the node VP which immediately dominates it or the circled node S should be pruned, or both. There is no evidence which argues for or against retention of the circled node VP, but if the circled S were pruned, (4.110) would cease to be a coordinate structure, under the definition given in (4.85), and the boxed NP's in (4.110) should become movable. The fact that they do not (cf. (4.111))

(4.111)   a. * Which boy works in a skyscraper and the

                girl in a quonset hut?

          b. * The skyscraper which the boy works in and

                the girl in a quonset hut belongs to

                Uncle Sam.

          c. * The girl who the boy works in a skyscraper

                and in a quonset hut has a dimple on her

                nose.

          d. * Which quonset hut does the boy work in a

                skyscraper and the girl in?

is most simply accounted for by assuming that (4.110) retains its coordinate structure even after Gapping has applied, i.e., that the putative convention which pruned the circled S was incorrect.

It can also be shown that coordinate structure can disappear in the course of a derivation. So, for instance, Lakoff and Peters (op. cit.) argue that (4.112) should be derived from (4.113) by

a sequence of optional rules which convert an occurrence of <u>and</u> to

<u>with</u> and then adjoin the <u>with</u>-phrase to the main   VP   of the

sentence.[13]

    (4.112)   Billy went to the movies with a luscious

          click.

(4.113)
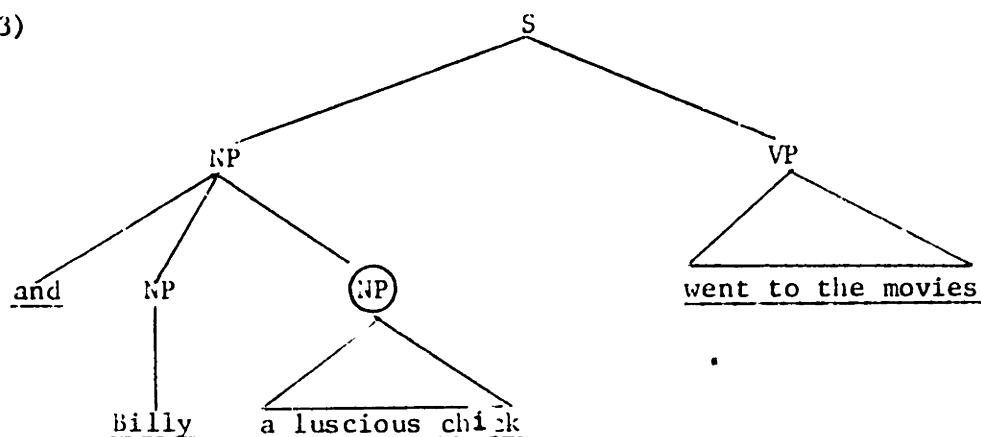
   The circled   NP   is not relativizable unless <u>Conjunct</u>

<u>Movement</u> has applied (cf. (4.114)):

    (4.114) a. The luscious chick who Billy went to the

         movies with will wed me ere the morn.

      b. * The luscious chick who Billy and went to

         the movies will wed me ere the morn.

  Similarly, in the conjoined structure (4.115),

(4.115)

```
                                    S
                   ┌────────────────┼──────────────────────┐
                 and   S                                    S
            ┌───────────┴──────┐              ┌─────────────┴──────────┐
           NP                  VP            NP                        VP
            │          ┌────────┼──────┐      │              ┌──────────┴────┐
         Pietro        V      (NP)     NP    Sofia           V               NP
                       │       /\       /\     │             │                │
                    bought  a Ferrari from me              adores          Pietro
```
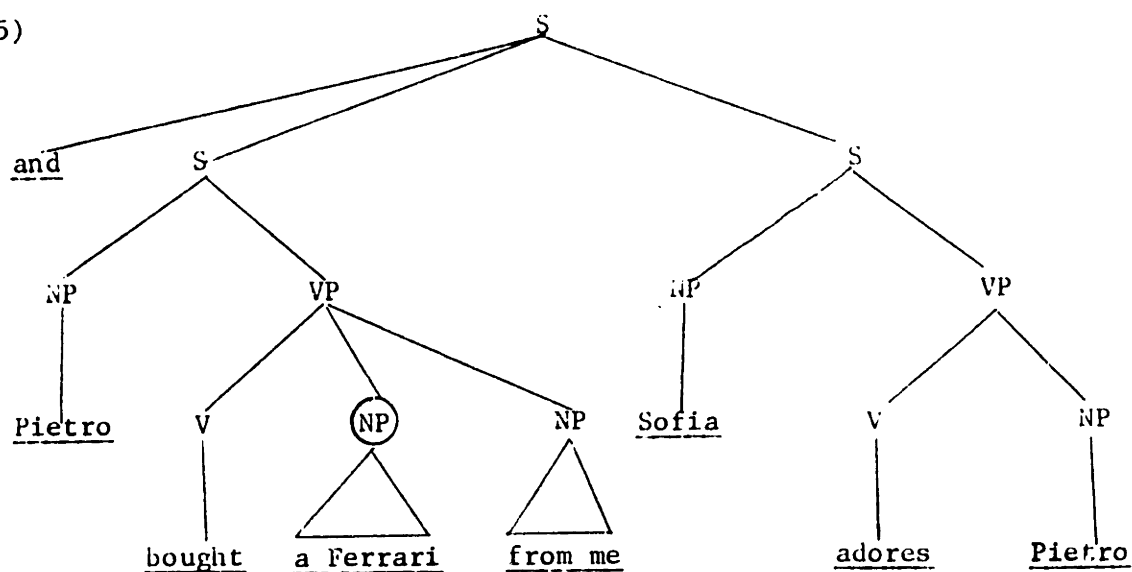
The circled NP can only be relativized if the second conjoined

sentence has been inserted into the first as an appositive clause.

(4.116) a. * The Ferrari which Pietro bought from me

and Sofia adores him cost him a bundle.[14]

b. The Ferrari which Pietro, who Sofia adores,

bought from me cost him a bundle.

These two facts illustrate a perhaps obvious point: whether or not

a constituent can be moved depends not on deep structure, but on

derived structure.

4.2.4.

4.2.4.1.   There is an important class of rules to which (4.84) does

not apply. These are rule schemata which move a constituent out of all

the conjuncts of a coordinate structure. In Lakof˜ and Ross

(in preparation b), an analysis of conjoined sentences is explored

which takes the process which converts such sentences as (4.117a)

into (4.117b) as being the fundamental process in conjunction.

> (4.117) a.   Sally might be pregnant, and everyone
>
> believes Sheila definitely is pregnant.
>
> b.   Sally might be, and everyone believes
>
> Sheila definitely is, pregnant.

We propose a rule of Conjunction Reduction which Chomsky-adjoins

to the right or left of the coordinate node a copy of some constituent

which occurs in all conjuncts, on a right or left branch, respectively,

and then deletes the original nodes. Thus this rule converts (4.118),

which underlies (4.117), into (4.119).

(4.118)
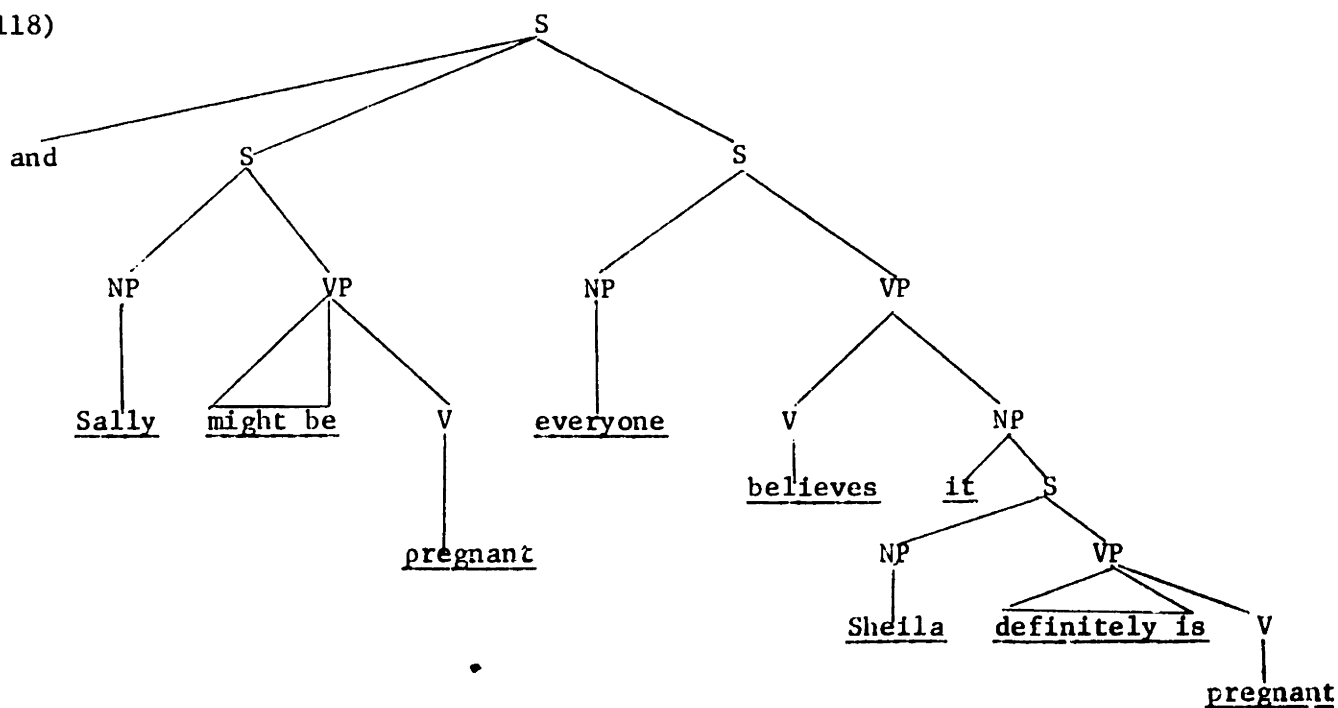
(4.119)
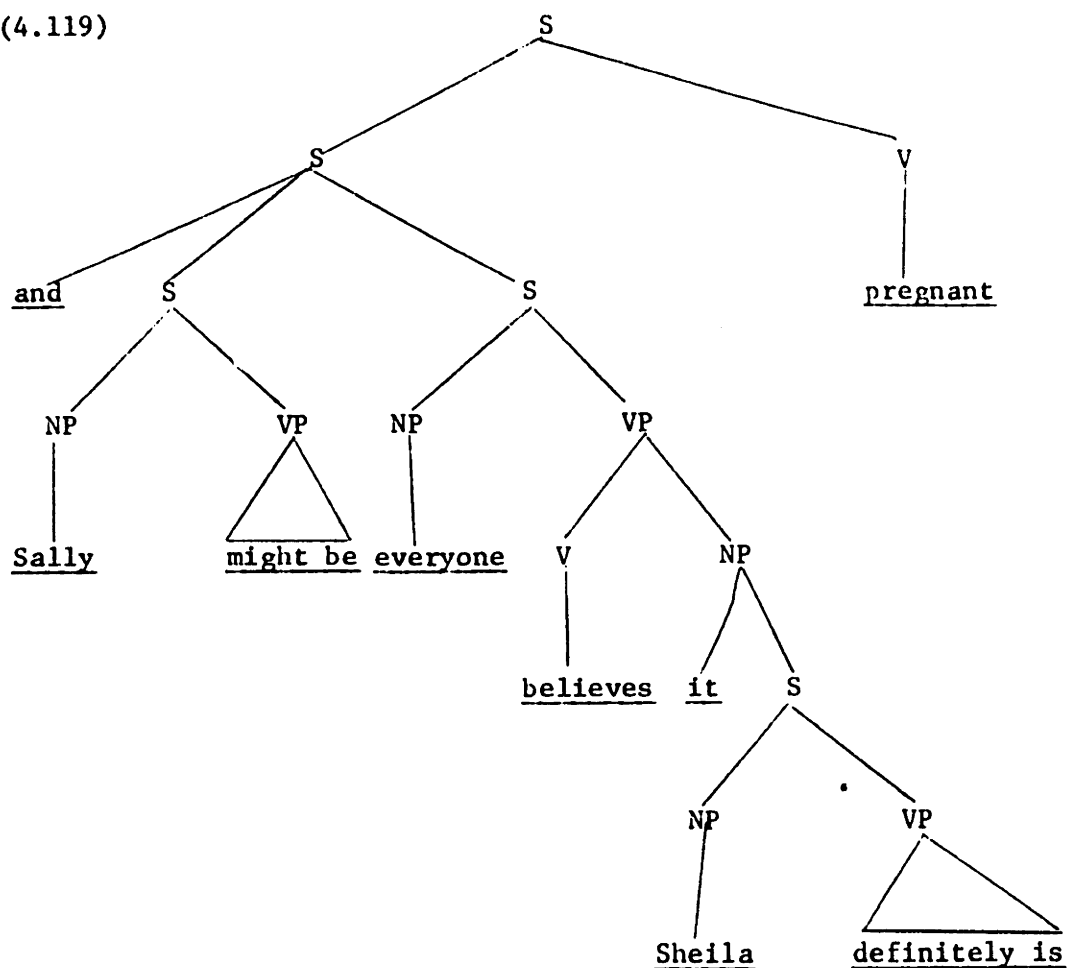
It is important to note that <u>Conjunction Reduction</u> must
work "across the board" -- the element adjoined to the coordinate
node must occur in each conjunct. Thus (4.120a) can be converted to
(4.120b), but not (4.121a) to (4.121b).

> (4.120) a. Tom picked these grapes, and I washed
> these grapes, and Suzie will prepare
> these grapes.

b.   Tom picked, and I washed, and Suzie will prepare, these grapes.

(4.121) a.   Tom picked these grapes, and I washed some turnips, and Suzie will prepare these grapes.

b. * Tom picked, and I washed some turnips, and Suzie will prepare, these grapes.

It appears that the rule of Relative Clause Formation must also apply "across the board"; the relative clause in (4.122) would seem to have to derive from a structure with an embedded disjunction, as in (4.123),

(4.122)   Students who fail the final exam or who do not do the reading will be executed.

(4.123)
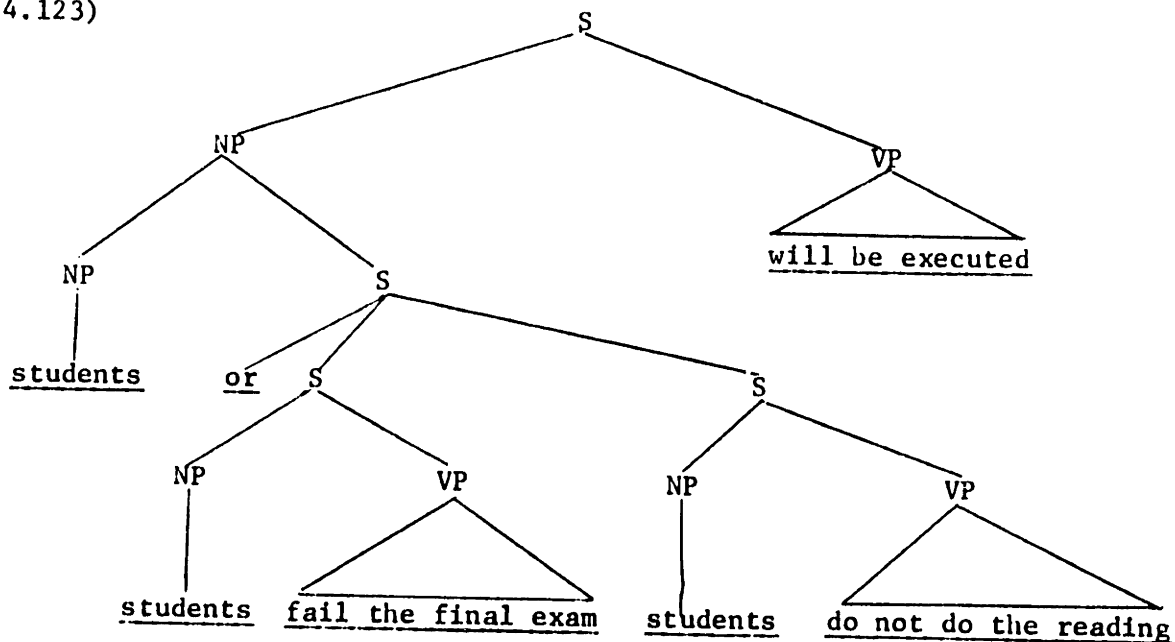
rather than sentence (4.124), whose main clause is a disjunction,

because (4.124) is not synonymous with (4.122).

> (4.124)   Students who fail the final exam will be
>
>   executed or students who do not do the
>
>   reading will be executed.

It is obvious that there are many rules which do not

necessarily apply across the board -- passives can be conjoined

with actives (cf. (4.125a)), and _Particle Movement_ and _Extraposition_

may apply in some conjuncts but not in others (cf. (4.125b) and (4.125c)).

> (4.125) a. John has been captured by the cops and I'm
>
>   afraid he'll talk.
>
>   b. I heated up the coffee and Sally wiped the
>
>   table off.
>
>   c. That Peter showed up is a miracle and it
>
>   is doubtful that he'll ever come again.

4.2.4.2.   At present, since 1 only know of two rules which can

convincingly be argued to apply across the board, it is perhaps too

early to look for formal properties of rules which correlate with the

way the rules apply. Nonetheless, I find it significant that both

of the across-the-board rules operate in such a way as to remove

elements from conjuncts, while rules like _Passive_, _Particle Movement_,

Extraposition, and many others like them which could be cited, merely

rearrange items within a conjunct.

It is evident, even from the informal description of Conjunction Reduction which was given above, that this rule moves elements out of conjuncts, but it is not evident from the statement of Relative Clause Formation which was given in (4.2) that this rule must also move elements out of conjuncts. Under the normal interpretation of the elementary operation of sister-adjunction, which is symbolized by '+' in the structural change of (4.2), when one term is sister-adjoined to a variable and that variable is null for some particular structure, nothing happens to that structure. That this convention is necessary can be seen from the following considerations:

The rule of Extraposition sister-adjoins the sentence to a variable, as can be seen from the formal statement of this rule in (4.126).

(4.126)   Extraposition

$$X - [\underline{it} - S] - Y$$
$$NP$$

$$\begin{array}{cccc}
1 & 2 & 3 & 4 \xRightarrow{\text{OPT}} \\
1 & 2 & 0 & 4+3
\end{array}$$

With the above condition on sister-adjunction, if (4.126) were to apply to (4.127), no change would be effected: the sentence in apposition to it would stay within its NP.

(4.127)

```
                    S
                  /   \
                /       \
             NP          VP
             |          /   \
             |        /       \
             I       V         NP
                     |        /   \
                     |      /       \
                  claimed  it        S
                                    / \
                                   /   \
                                  /     \
                              that Bob is a nut
```
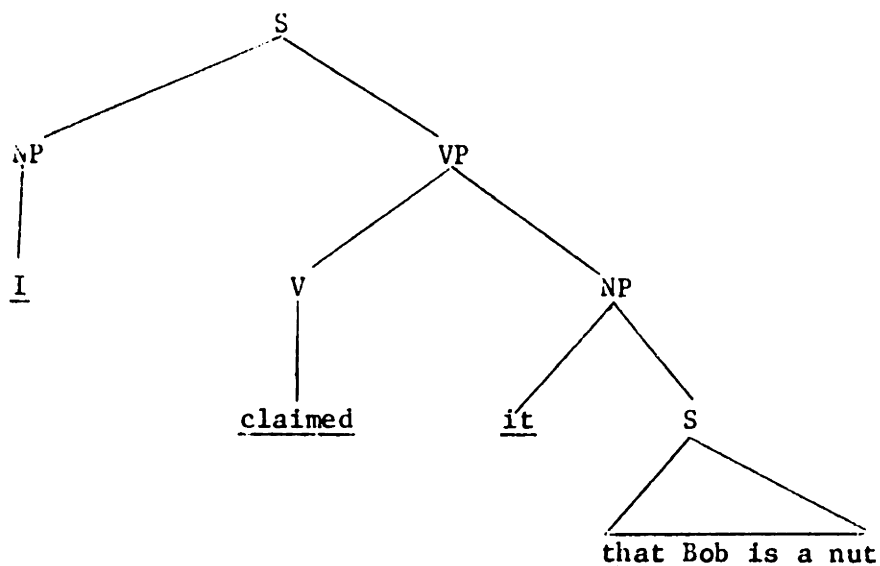
Thus the next rule in the ordering, __It Deletion__, could be formulated as shown in (4.128).

(4.128) __It Deletion__

$$X \quad - \quad [\underline{it} - S] \quad - \quad Y$$
$$ NP$$

$$1 \qquad 2 \quad 3 \qquad 4 \quad \overset{OBLIG}{\Longrightarrow}$$

$$1 \qquad 0 \quad 3 \qquad 4$$

However, if the convention I have suggested were not in effect, "vacuous extraposition"[15] would be possible, and the embedded sentence could be moved out of its NP and attached somewhere higher up the tree, as in (4.129) (just where it would attach is not relevant for my argument, and I have drawn two dotted lines from the extraposed S in (4.129) to indicate two possibilities).

(4.129)

```
                              S ----
                          ╱   ╲      ----
                      ╱       ╲          ----
                  ╱           ╲              ----
              NP              VP --- ------      ----
              │             ╱    ╲          ------   S
              │          ╱        ╲                ╱  ╲
              │        ╱            ╲            ╱      ╲
              I       V              NP        ╱          ╲
                      │              │       ╱              ╲
                      │              │     ╱                  ╲
                   claimed          it  ╱_____╲
                                        that Bob was a nut
```
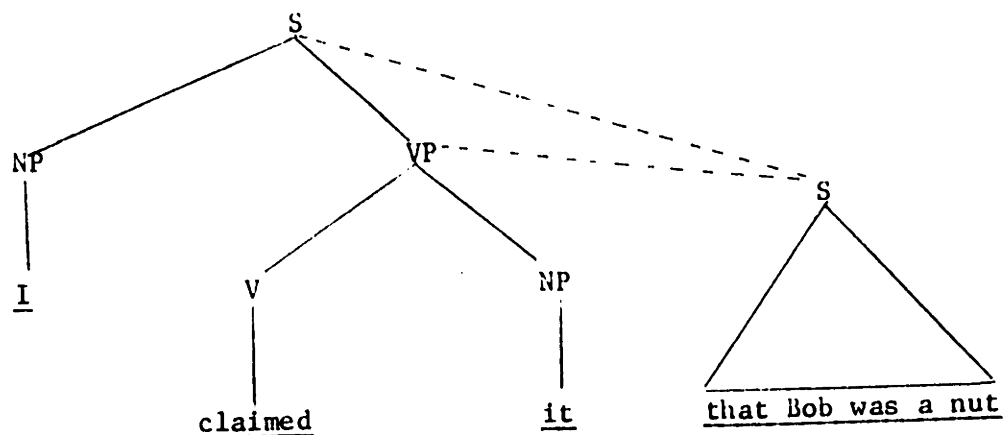
But if (4.127) can be converted into (4.129), then
(4.128) will have to be modified as shown in (4.130), for otherwise
this rule would not delete the it in (4.129), and the ungrammatical
(4.131) would result.

(4.130)   X - it - S - Y

$$\begin{array}{cccc} 1 & 2 & 3 & 4 \end{array} \xRightarrow{OBLIG}$$

$$\begin{array}{cccc} 1 & 0 & 3 & 4 \end{array}$$

(4.131)   * I claimed it that Bob was a nut.

But there are many sentences which show that (4.130) is
far too strong: it requires the deletion of it[16] before any sentence
whatsoever, and it is easy to construct sentences where this extra
power leads to wrong results. In (4.132a), for instance, the it
which is the object of claim will be deleted, because it precedes
the clause [and I think so too]$_S$, and the ungrammatical (4.132b)

will result.

   (4.132) a. Although Bob may not be a nut, many people

         have claimed it [and I think so too]$_S$.

      b. * Although Bob may not be a nut, many people

         have claimed and I think so too.

To avoid converting (4.132a) into (4.132b), while still requiring the it in (4.131) to delete, some method would have to be found of indicating that the sentence that Bob was a nut is somehow "appropriate" as an environment for the deletion of the it of (4.131), but that this is not the case with respect to the sentence and I think so too in (4.132a). In the absence of independent evidence for such a convention of appropriateness, it seems more desirable to me to reject the definition of sister-adjunction which gives rise to these difficulties by allowing "vacuous" extraposition, and to impose the suggested condition on this operation -- that if a term is sister-adjoined to a null variable, no change in the d.c.s. will result.

  Now let us return to the problem of the proper formulation of the rule of Relative Clause Formation. Robin Lakoff has pointed out to me that NP's in the position of the boy in (4.133) cannot be relativized (cf. (4.134)).

   (4.133) The boy and the girl embraced.

   (4.134) * The boy who and the girl embraced is my

       neighbor.

The fact that (4.134) is ungrammatical should be accounted for by the Coordinate Structure Constraint, but since this constraint only prevents constituents from being moved, it must be the case that the formulation of the rule of Relative Clause Formation which was given in (4.2) is wrong. (4.2) specifies that the identical NP shall be sister-adjoined to a variable, and since this variable is null in the case of (4.133), by the argument given above, this NP would not be moved by (4.2), and thus the constraint would not be in effect.[17] But if (4.2) is reformulated as in (4.135), the identical NP will be moved, whether it is the first constituent of the relative clause or not.

(4.135) Relative Clause Formation

$$W - [_{NP} NP - [_S X - NP - Y]_S]_{NP} - Z$$

1	2	3	4	5	6
1	2 4# [3	0	5]	6	

OBLIG $\Longrightarrow$

Condition: 2 = 4

The symbol '#' denotes the operation of Chomsky-adjunction, and the brackets in the structural change indicate that the adjoined term is not to be adjoined to term 3, but rather to the node which dominates the sequence of terms enclosed in the brackets, in this case, the node S. Thus (4.135) converts (4.136a) into (4.136b).[18]

(4.136) a.

```
              NP
           /      \
         NP         S
        /  \       /  \
     the   boy   NP    VP
                  |   /   \
                  I  V     NP
                     |    /   \
                    saw the   boy
```

b.

```
                NP
             /      \
           NP         S
          /  \       /  \
       the   boy   NP     S
                  /  \   /  \
               the boy NP   VP
                        |    |
                        I    V
                             |
                            saw
```
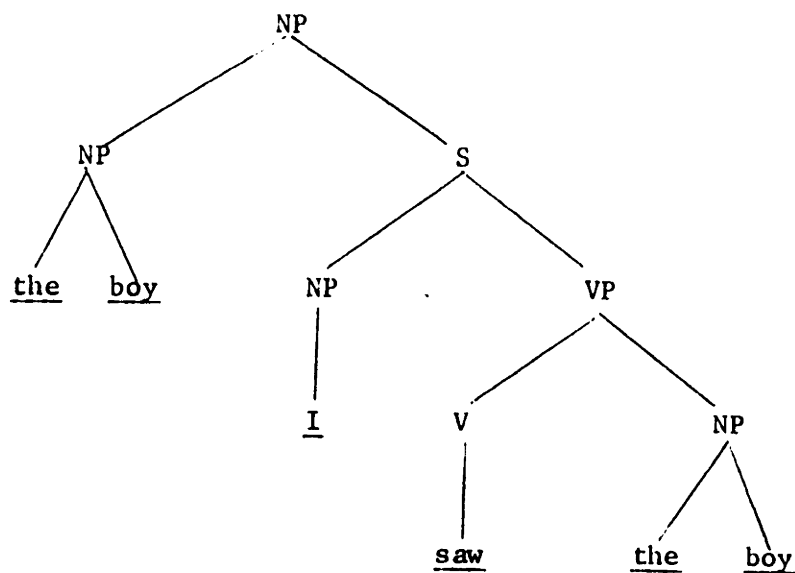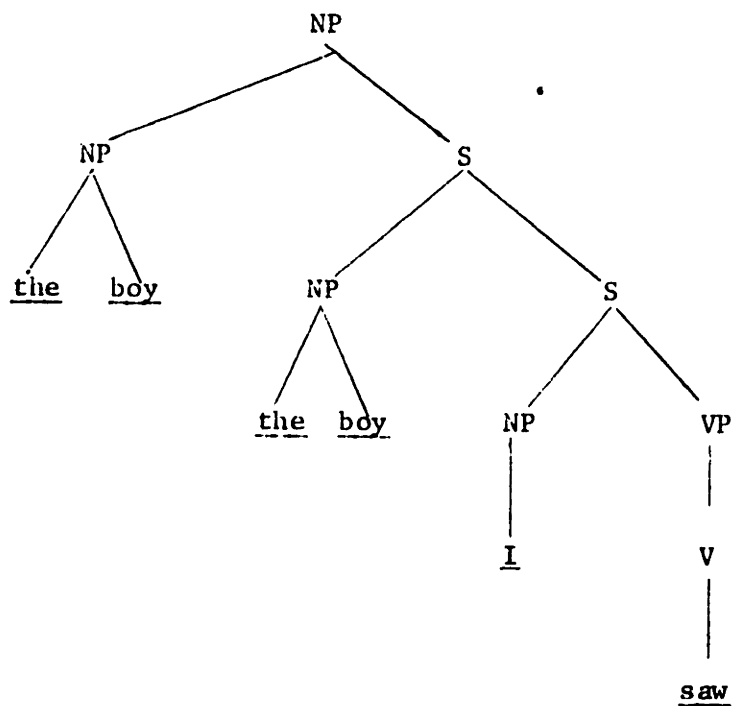
And since (4.84) would prevent the circled NP node in (4.137) from
being raised and Chomsky-adjoined to the circled S by rule (4.135),

sentences like (4.134) would be blocked.

(4.137)

```
                        NP
                      /    \
                   NP        (S)
                  /  \       /  \
               the   boy   NP      VP
                          /  \      |
                       (NP)   NP     V
                       /  \   /  \    |
                 the boy  and  NP  embraced
                              /  \
                           the   girl
```
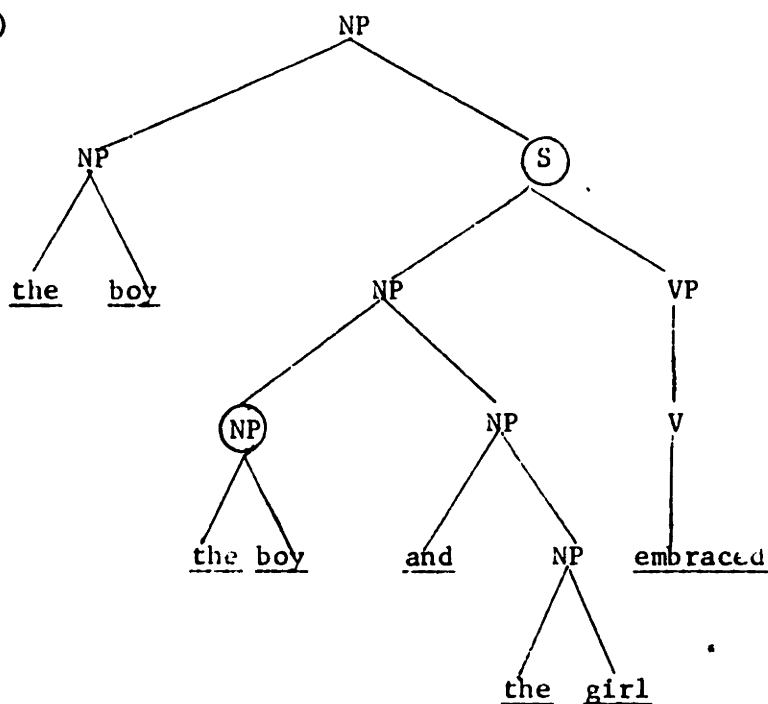
Therefore, except for the possibility that the ungrammaticality of (4.134) can be explained by rule ordering, along the lines suggested in footnote 17, it seems that it is necessary to formulate the rule of Relative Clause Formation in such a way that it becomes formally similar to the rule of Conjunction Reduction which Lakoff and I have proposed. Both rules would have the effect of moving elements contained in conjuncts out of those conjuncts, and possibly it is this formal property that the fact that they are both across-the-board rules must be attributed to.

4.2.4.3.   There are other problems in grammar which are reminiscent

of the across-the-board application of the two rules just discussed.

These have to do with the necessity of excluding such sentences as

those in (4.139), while allowing those in (4.138).

> (4.138) a.   When did you get back and what did you
>
>   bring me?
>
>   b.   (You) make yourself comfortable and I'll
>
>   wash the dishes.
>
>   c.   Did Merv show up $\left\{\begin{array}{c}\text{and}\\\text{or}\end{array}\right\}$ did you play chess?
>
> (4.139) a. * Sally's sick and what did you bring me?
>
>   b. * (You) make yourself comfortable and I
>
>   got sick.
>
>   c. * What are you eating or did you play chess?[19]

At first glance, it might seem possible to distinguish

between (4.138a) and (4.139a) by claiming that the Question Rule

must also be formulated in such a way as to Chomsky-adjoin the

questioned element to the sentence which it is moved to the front

of.   Support for such a proposal comes from the fact that it is not

any more possible to question the NP <u>the boy</u> in (4.133) than it

was possible to relativize it.

> (4.140)   * Which boy and the girl embraced?

The facts of (4.134) and (4.140) are similar, and I

think that it is correct to maintain that the Question Rule must be

reformulated in the same way as the rule of <u>Relative Clause Formation</u>

was reformulated in (4.135), so that the questioned element, too,

will be Chomsky-adjoined to the sentence. Also, since it seems

likely that yes-no questions should be derived from <u>whether</u>-clauses

whose initial element, after having been Chomsky-adjoined, is later

deleted, sentence (4.141) could be excluded, while (4.138c) was

allowed.

(4.141)   * I'm hungry $\left\{ \begin{array}{c} \text{and} \\ \text{or} \end{array} \right\}$ did you play chess?

Promising though this approach seems, it is not capable

of being strengthened to account for a wide range of additional facts.

For instance, in Japanese questions, the questioned element is not

moved from its original position in the structure. Thus to question

the object of the verb <u>mita</u> 'saw' in (4.142),

(4.142)   zyoozyi   wa   sakana   o   mita.

George   fish   saw

'George saw a fish.'

it is sufficient to replace the word <u>sakana</u> 'fish' with the question

word <u>nani</u> 'what' and add the question morpheme <u>ka</u> to the end of the

sentence, as in (4.143)

(4.143)   zyoozyi   wa   nani   o   mita   ka.

'What did George see?'

But the fact that (4.143) cannot be conjoined with a

declarative like (4.144), as the ungrammaticality of (4.145) shows,

(4.144)   neko   ga   nete   iru.

cat   sleeping   is

'The cat is sleeping.'

(4.145)   * zyoozyi   wa nani o $\begin{Bmatrix} \text{mita ka (to)} \\ \text{mite} \\ \text{mi} \end{Bmatrix}$, neko

ga nete iru.

*'What did George see and the cat is sleeping.'

while two questions can be conjoined (cf. (4.146)),

(4.146)   zyoozyi   wa nani o mi   neko wa nani o tabetaka?

George   what   see cat   what   ate

'What did George see and what did the cat eat?'

indicates that the attempt to exclude sentences, some of whose conjuncts are declaratives and others questions, by making the English rule of Question an across-the-board rule cannot be a successful solution to the problem in universal grammar of ensuring that only the "right kinds" of sentences get conjoined. It would seem that the non-sentences of (4.139) must therefore be excluded not by transformational constraints, but rather by deep structural ones.

In fact, there is evidence within English which supports this claim. Thus it seems that even questions like those in (4.147), which contain more than one WH-word but presumably have no history of reordering at all in their derivations, cannot be conjoined with declaratives (cf. (4.148)), although they can be conjoined with normal questions (cf. (4.149)):

(4.147) a.   Who ate what?

b.   What exploded when?

c.   Who gave what to whom?

(4.148) a. Where did you go and who ate what?

b. What exploded when and who was hurt?

c. How long did this fit of generosity last
and who gave what to whom?

(4.149) a. * I saw you there and who ate what?

b. * What exploded when and I warned you it
would?

c. * Who gave what to whom and I'm sickened at
this sentiment.

As far as I can see, only some kind of deep structure
constraint can be used to exclude (4.149). Moreover, the same is
true with respect to (4.138b). In one sense of this sentence, it is
synonymous with (4.150).

(4.150)   If you make yourself comfortable, I'll
wash the dishes.

But there is another sense of (4.138b) which is a command, or a
suggestion; and if the word <u>please</u> is inserted into (4.138b), the
result has only this sense.

(4.151)   (You) please make yourself comfortable
and I'll wash the dishes.

The fact that sentences like (4.139b) and (4.152) are ungrammatical

(4.152)   *(You) please make yourself comfortable and

$$\left\{ \begin{array}{l} \text{the cat is dead} \\ \text{I've studied Greek} \\ \text{Jack left} \end{array} \right\} \quad .$$

cannot be accounted for by an appeal to some across-the-board rule which has not applied to all conjuncts, because the only rule in question, __Imperative,__ only applies to the first conjunct to delete the subject __you.__ It therefore seems that only some deep structure constraint on what tenses can be used in sentences which are conjoined to commands can exclude (4.139b) and (4.152). Notice, incidentally, that it is not in general the case that if the first sentence of a conjoined sentence is in the future tense all subsequent conjuncts must also be:

> (4.153)   Harry will be in the Marines next year
>
>   and Herman was drafted last night.

Exactly what the nature of deep structure constraints on conjoined sentences is is an interesting topic which has been studied far too little and which I can contribute nothing to at present. Why, for instance should there be a difference between (4.138c) and (4.139c)? Whatever the answer to this and similar questions turns out to be, my basic point remains valid: there are both transformational and deep structural constraints which must be formulated to apply to all conjuncts in a coordinate structure.

4.2.4.4.   Sentences such as those in (4.154) raise problems which may be related to across-the-board constraints.

(4.154) a. Sasha is gobbling down blintzes faster

than I can reheat them.

b. I want to peruse that contract before filing

it away.

c. Fred tore the curtain in rolling it up.

Although the sentences are so complex that positive

judgments are difficult to come by, I believe it to be the case that

when relative clauses are formed from the sentences in (4.154), both

the NP's blintzes, that contract and the curtain themselves and

their anaphoric pronouns may seem to be relativized at once, as is

the case in the sentences in (4.155).

(4.155) a.?? The blintzes which Sasha is gobbling down

faster than I can reheat are extremely

tasty, if I do say so.

b. ? I suspect that the contract which I wanted

to peruse before filing away may have

some loopholes.

c. The curtain which Fred tore in rolling up

was the kind gift of my maternal Aunt

Priscilla.

I believe it is theoretically possible to relativize

any number of NP's at once, although the resulting sentences are

somewhat less than felicitous: the a-sentences below have been

converted into relative clauses in the corresponding b-sentences.

(4.156) a.   I want to peruse that contract before

damaging it while filing it away.

b. ? The contract which I want to peruse

before damaging while filing away is

written on Peruvian papyrus.

(4.157) a. ? I want to peruse that contract after

copying it by treating it in milk

while pressing it between two pieces

of marble in flattening it out.

b. ?*The contract which I want to peruse

after copying by treating in milk while

pressing between two pieces of marble

in flattening out is a beautiful piece

of art.

Whether or not such tortured constructions as this last are to be accorded some degree of Englishness is not of great importance for this study, since I cannot even propose a rule which will generate less questionable examples, such as (4.155) and (4.156b). What makes these sentences similar to the ones discussed in § 4.2.4.2 above is the fact that not only does it seem possible to relativize some NP simultaneously from a number of clauses, but it does not seem possible to relativize an NP from only the second of these clauses. Thus if the anaphoric pronouns of (4.154) are replaced by

different NP, as in (4.158), these NP cannot be relativized, as (4.159) shows.

(4.158) a. Sasha is gobbling down blintzes faster than I can reheat the fishballs.

b. I want to peruse that contract before filing away the deed.

c. Fred tore the curtain in rolling up the wallpaper.

(4.159) a. * I think Anita may have poisoned the fishballs which Sasha is gobbling down blintzes faster than I can reheat.

b. * The deed which I want to peruse that contract before filing away is probably a forgery.

c. ?*The wallpaper which Fred tore the curtain in rolling up had a pleasing geometrical pattern.

The similarity stops here, however; for, bafflingly, it is possible to relativize NP in just the first of these clauses (cf. (4.160)):

(4.160) a. The blintzes which Sasha is gobbling down faster than I can reheat the fishballs are extremely tasty, if I do say so.

    b.   I suspect that the contract which I want

to peruse before filing away the deed may

have some loopholes.

    c.   The curtain which Fred tore in rolling

the wallpaper up was the kind gift of

my maternal Aunt Priscilla.

Notice that it is similarly possible to relativize just

the NP's blintzes, that contract and the curtain in (4.154):

    (4.161)   a.   The blintzes which Sasha is gobbling down

faster than I can reheat them are extremely

tasty, if I do say so.

    b. ? I suspect that the contract which I

wanted to peruse before filing it away

may have some loopholes.

    c. ? The curtain which Fred tore in rolling it

up was the kind gift of my maternal Aunt

Priscilla.

These facts suggest that it may be incorrect to attempt to derive

the sentences in (4.155) directly from (4.154) by some kind of

modified across-the-board rule. The sentences in (4.161) may be a

necessary first step in this derivation, with a rule of pronoun

deletion applying optionally to (4.161) to produce (4.155). This idea

is given additional support by the fact that there are differences

in acceptability among the sentences of (4.155) which are exactly

reversed in the sentences of (4.161). That is, while (4.155a) is

far more awkward for me than (4.155b), which in turn is slightly

more awkward than the fully grammatical (4.155c), in (4.161), it

is the a-version which is fully grammatical, the b-version which

is slightly doubtful, and the c-version which is the most dubious

of all. These differences can be accounted for if it is assumed

that the rule of pronoun deletion which transforms (4.161) into (4.155)

is obligatory in the case of (4.161c), optional in the case of

(4.161b), and not applicable in the case of (4.161a). This attempt at

explanation does not yet have much force, for I have no idea what

features of the environment the optionality of this rule depends

upon, nor how to state the rule, but perhaps it is at least a correct

line of attack on this problem.

4.2.5.   In summary, I have tried to show in the above sections

that Case F of §2.2 can be excluded by a constraint of great

generality, the Coordinate Structure Constraint, which is needed

independently of the other constraints of this chapter. It is

more powerful than the A-over-A principle, which cannot exclude

sentences like (4.82). It can be used as a criterion for coordinate

structure, and on this basis, it was argued in § 4.2.3 that nodes

which are coordinate in deep structure may cease to be so in the course

of a derivation and that nodes which appear to be coordinate in surface structure may not be. The statement of the constraint in (4.84) was shown to require modification to account for the facts of the class of across-the-board rules, which must operate in all conjuncts simultaneously. A tentative hypothesis about the formal properties of such across-the-board rules was advanced. At present, I know of no rules which are not subject to the Coordinate Structure Constraint, except for the rule of <u>Appositive Clause Formation</u>, which I will discuss in § 6.2.4 below, so I propose that this constraint be added to the theory of grammar.

4.3.   The Pied Piping Convention

4.3.1.   In this section, I will suggest a constraint which can successfully account for the evidence for the A-over-A principle which was presented in case D and case E of § 2.2, and a convention which will provide for the generation of all the relative clauses in the sentences of (4.163). These must all be derived from (4.162), the approximate structure of sentence (2.3), which I have repeated here, for convenience.

(2.3)   The government prescribes the height of the lettering on the covers of the reports.

(4.162)

S
├── NP
│   └── the government
└── VP
    ├── V
    │   └── prescribes
    └── NP₁
        ├── NP
        │   └── the height
        └── NP₂
            ├── P
            │   └── of
            └── NP₃
                ├── NP
                │   └── the lettering
                └── NP₄
                    ├── P
                    │   └── on
                    └── NP₅
                        ├── NP
                        │   └── the covers
                        └── NP₆
                            ├── P
                            │   └── of
                            └── NP₇
                                └── the reports
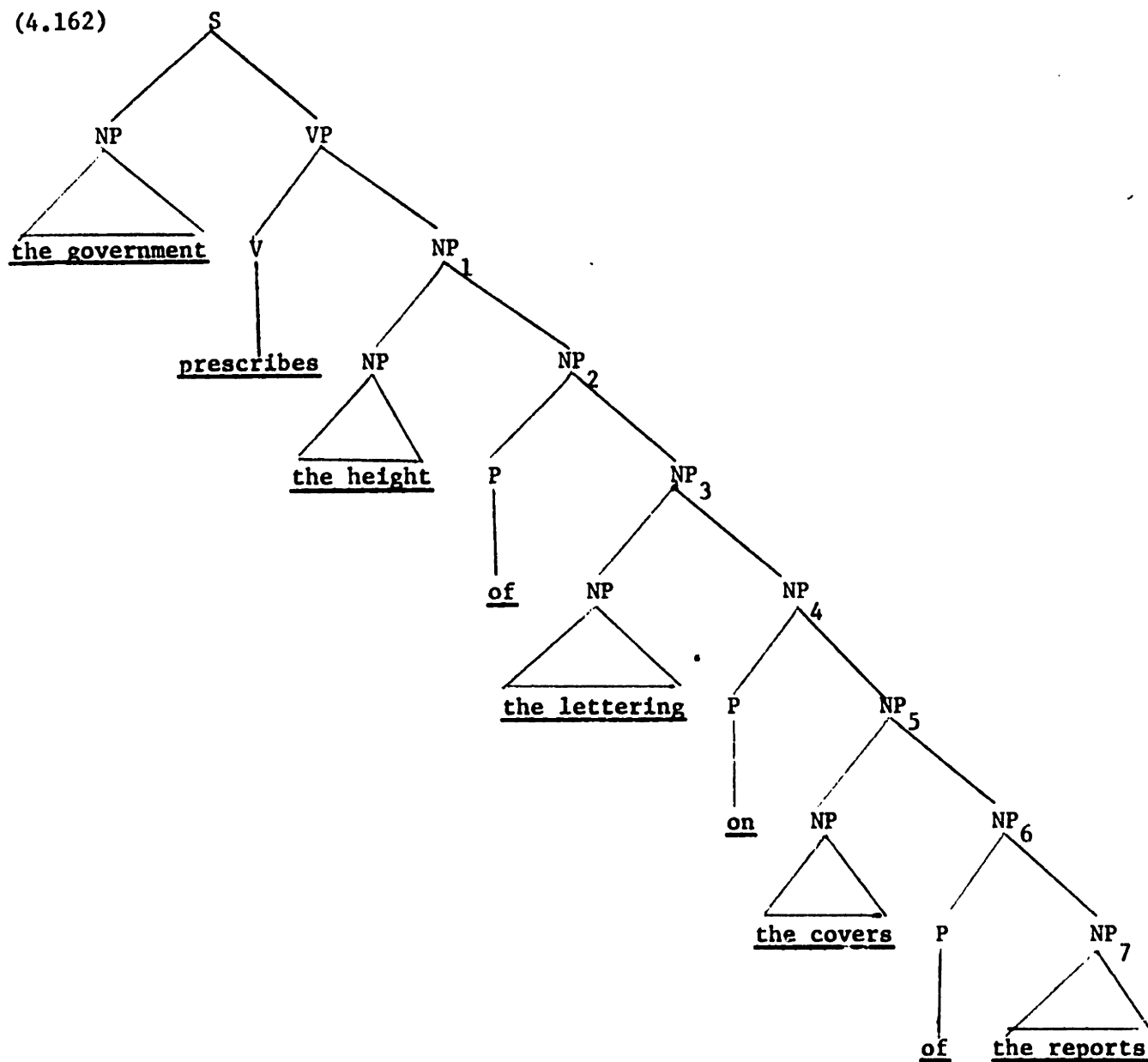
(4.163) a.   Reports which the government prescribes

the height of the lettering on the covers

of are invariably boring.

b. Reports the covers of which the government
prescribes the height of the lettering on
almost always put me to sleep.

c. Reports the lettering on the covers of
which the government prescribes the height
of are a shocking waste of public funds.

d. Reports the height of the lettering on the
covers of which the government prescribes
should be abolished.

It can be seen that if the structure in (4.162) were
embedded as a relative clause modifier in a noun phrase whose head
noun is _report_, the rule of _Relative Clause Formation_, as it is
stated in (4.135), would only produce the relative clause in (4.163a).
If an attempt were made to modify the structural index of (4.135) in
such a way that the new rule would derive either (4.163a) or (4.163b)
from (4.162), the revised rule would be that shown in (4.164):

$$(4.164) \quad W - \left[_{NP} \; NP - [_S X - \left\{ \begin{array}{cc} \emptyset & - NP \\ [_{NP} NP \; P - NP]_{NP} & \end{array} \right\} - Y]_S \right]_{NP} - Z$$

$$\begin{array}{ccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 1 & 2[45]\#[3 & & 0 & 0 & 6] & 7 \end{array} \overset{OBLIG}{\Longrightarrow}$$

Condition: 2 = 5

To derive the relative clause in (4.163c), the further complication of the rule shown in (4.165) would be necessary,

$$(4.165) \quad W - \begin{bmatrix} NP - [_S X - \begin{cases} \emptyset - NP \\ [_{NP} NP \ P - NP] \\ \cdot [_{NP} NP \ P [_{NP} NP \ P - NP]] \end{cases} - Y]_S \end{bmatrix}_{NP} - Z$$

OBLIG

1	2	3	4	5	6	7
1	2[4 5]#[3		0	0	6]	7

Condition: 2 = 5

and deriving the clause in (4.163d) would entail adding a fourth line to the disjunction inside the braces in (4.165). But since there is no upper bound on the length of a branch consisting entirely of NP's, like $NP_1 - NP_7$ in (4.162), in order to give a finite formulation of this rule, which must be able to generate clauses like those of (4.163) to any desired degree of complexity, either some abbreviatory notation, under which the sequences of terms within the parentheses of (4.164), (4.165), etc. can be collapsed, must be added to the theory of grammar, or some special convention must be. Of these two, the latter is weaker, for to add a new abbreviatory notation to the theory is to make the claim that there are other cases, unrelated to the case at hand, where rules must be collapsed according to the new notation. No such cases exist, to my knowledge, so I propose the

convention given in (4.166) as a first approximation to an appropriate universal convention.

(4.166)   Any transformation which is stated in such a way as to effect the reordering of some specified node NP, where this node is preceded and followed by variables, can reorder this NP or any NP which dominates it.[20]

By the term "specified" in (4.166), I mean that node NP, in a branch containing many NP nodes, which is singled out from all other nodes on this branch by virtue of some added condition on the rule in question, such as the condition on the rule of Relative Clause Formation that the NP to be relativized be identical to the NP which the clause modifies, or the condition on the rule of Question that the questioned NP dominate WH+some. This convention, then, provides that any reordering transformation which is stated as operating on some NP singled out in some such way may instead operate on any higher NP. Thus the formulation of Relative Clause Formation which was given in (4.135), when supplemented by (4.166), will allow for the adjoining to the front of the sentence of the specified NP_7, the reports, or NP_6, of the reports, or NP_5, the covers of the reports, etc., so that all of the clauses in (4.163) will be generated. That (4.166) is too strong, in that it does not exclude the ungrammatical sentences of (4.167) need not concern us here;

(4.167) a. * Reports of which the government prescribes

the height of the lettering on the covers

are invariably boring.

b. * Reports on the covers of which the

government prescribes the height of the

lettering almost alway put me to sleep.

c. * Reports of the lettering on the covers

of which the government prescribes the

height are shocking waste of public funds.

there seems to be a constraint, in my dialect at least, which prohibits

noun phrases which start with prepositions from being relativized and

questioned when these directly follow the NP they modify. Thus (4.168)

can be questioned to form (4.169a), but not (4.169b).

(4.168)   He has books by several Greek authors.

(4.169) a.   Which Greek authors does he have books by?

b. ?*By which Greek authors does he have books?

I will not attempt a more precise formulation of this restriction here:

instead, I will point out two further inadequacies in the formulation

of (4.166).

Firstly, if the structure shown in (4.170) were to be

embedded as a relative clause on an NP whose head noun were the boy,

(4.170)
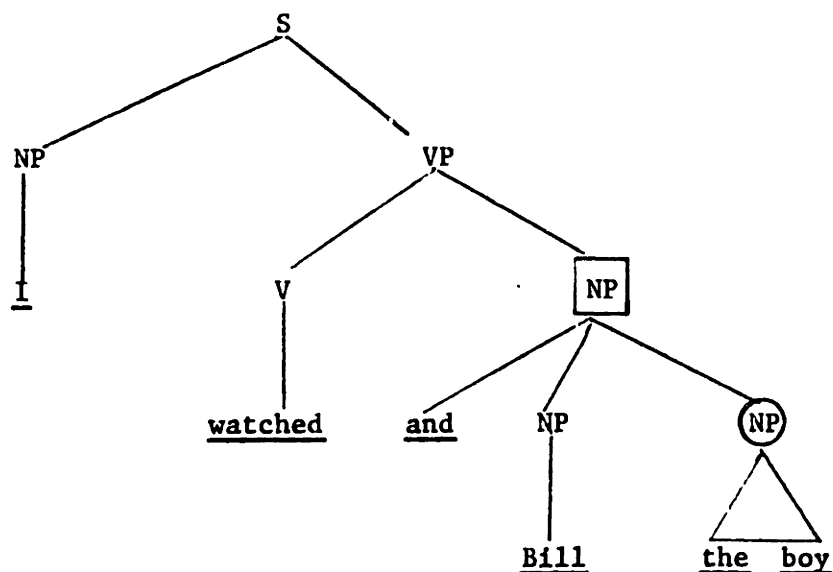
the Coordinate Structure Constraint would not allow the formation

of (4.171):

      (4.171)   * The boy who I watched Bill and was vain.

However, the circled node NP is dominated by the boxed node NP,

and convention (4.166) would allow this higher node to be preposed,

which would result in the ungrammatical (4.172).

      (4.172)   * The boy Bill and who(m) I watched was

                vain.

The ungrammaticality of this sentence indicates the necessity of

revising (4.166) in such a way that if an NP dominating the specified

NP is coordinate, neither it nor any higher NP can be moved. I will

incorporate such a revision into the final version of the convention,

which will be stated in (4.180).

The second inadequacy of (4.166) can be seen in connection with P-marker (4.173).

(4.173)
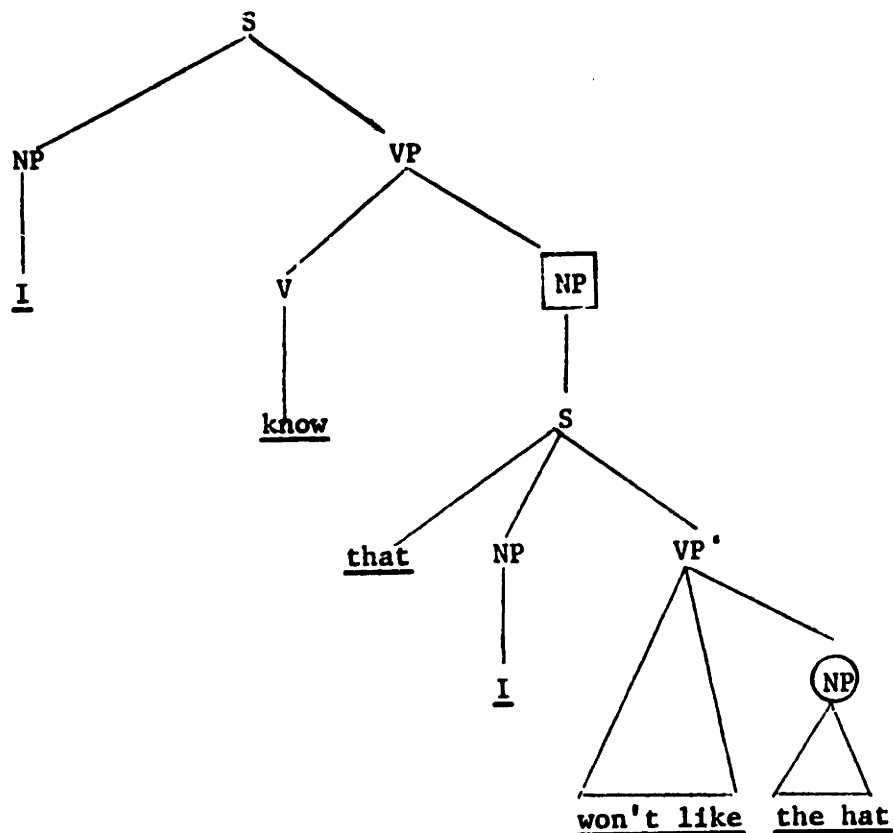
while it is true that the circled node NP can be relativized, as (4.174) shows,

(4.174)   They will give me a hat which I know

that I won't like.

once again, (4.166) would allow the preposing of the boxed node

NP, and the ungrammatical (4.175) would be produced.

(4.175)   * They will give me a hat that I won't

like which I know.

The modification of (4.166) that seems to be required here is that

if a branch of a P-marker has an occurrence of the node S intervening

between two occurrences of the node NP, only the lower one can

be reordered. This restriction does not extend to the node VP,

however, as can be seen from the following example.

The approximate structure of the German sentence in

(4.176) is that shown in (4.177).

(4.176)   Ich habe den Hund zu finden zu versuchen angefangen.

I   have the dog to find   to try   begun

'I have begun to try to find the dog.'

(4.177)
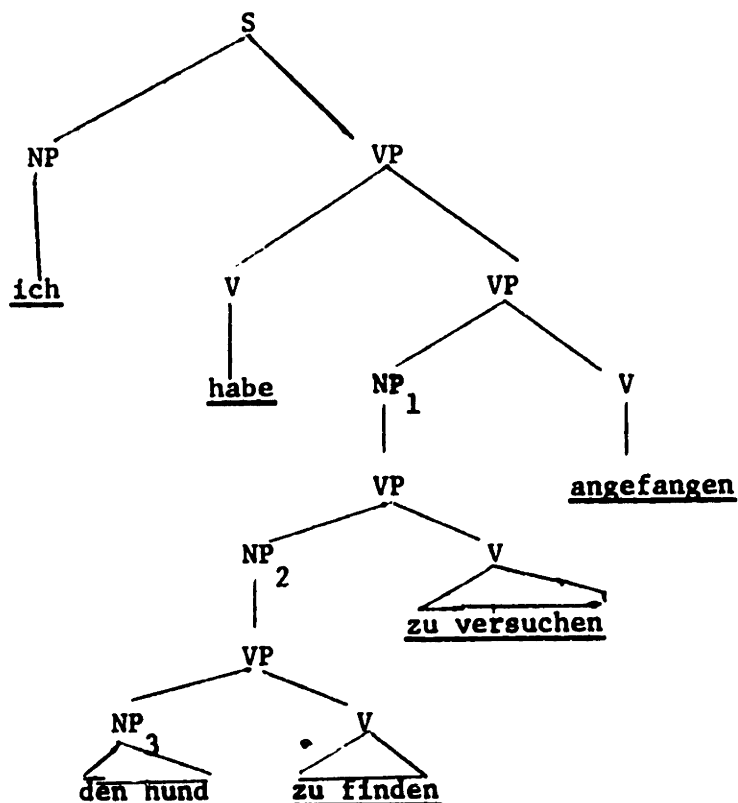
If the structure which underlies (4.177) has been embedded as a relative clause on the subject NP of the structure underlying (4.178),

(4.178)   Der Hund ist ein Bernardiner.

'The dog is a St. Bernard.'

the rule of <u>Relative Clause Formation</u> must produce all three of the clauses in the sentences of (4.179).

(4.179) a.   Der Hund, den ich zu finden zu versuchen

angefangen habe, ist ein Bernardiner.[21]

b.   Der Hund, den zu finden ich zu versuchen

angefangen habe, ist ein Bernardiner.

c.   Der Hund, den zu finden zu versuchen ich

angefangen habe, ist ein Bernardiner.

'The dog which I have begun to try to

find is a St. Bernard.'

In (4.179a), only the specified node, NP_3 in (4.177), has been preposed, while in (4.179b), the phrase dominated by NP_2, which contains NP_3, has been preposed, and in (4.177c), the largest NP, NP_1, had been preposed. Note that these three NP nodes are separated by two VP nodes in (4.177), but that (4.166) still is operative. This then indicates that it is only the node S, as was claimed above, to which reference must be made in revising (4.166).[22]

In (4.180), I have modified the convention given in (4.166) in such a way as to overcome the two inadequacies I have just

discussed.

(4.180)   The Pied Piping Convention 23

Any transformation which is stated in such

a way as to effect the reordering of some

specified node NP, where this node is

preceded and followed by variables in the

structural index of the rule, may apply to

this NP or to any non-coordinate NP

which dominates it, as long as there are

no occurrences of any coordinate node, nor

of the node S, on the branch connecting

the higher node and 'the specified node.

4.3.2.

4.3.2.0.   The convention stated in (4.180) stipulates that any NP

above some specified one may be reordered, instead of the specified

one, but there are environments where the lower NP may not be moved,

and only some higher one can, consonant with the conditions imposed in

(4.180). In other words, pied piping is obligatory in some contexts.[24]

In § 4.3.2.1, I will describe two environments in which pied piping

is obligatory, whether the specified NP is to be moved to the right

or to the left, and in § 4.3.2.2, I will cite several environments

in which pied piping cannot apply. In § 4.3.2.3, I will discuss the

one environment I know of in which pied piping is obligatory if an NP

is moved in one direction, but not if it is moved in the other. In

§ 4.3.2.4, I will show how the constraints on pied piping developed

in these sections interact with the rule of <u>Conjunction Reduction</u>,

and in § 4.3.2.5, I will explore the question of the theoretical

status of the various conditions on (4.180) which are discussed

in §§ 4.3.2.1 - 4.3.2.4.

4.3.2.1.   For English, and for many other languages, the following

constraint, which has the effect of making pied piping obligatory

in the stated environment, obtains:

> (4.181)   <u>The Left Branch Condition</u>
>
> > No NP which is the leftmost constituent of
> >
> > a larger NP can be reordered out of this NP
> >
> > by a transformational rule.

In other words, (4.181) prohibits the NP shown in (4.182) from

moving along the paths of either of the arrows.

(4.182)
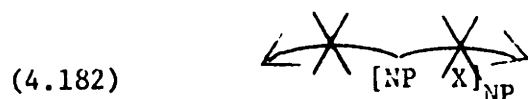
        This constraint accounts for the following facts: if

the structure shown in (4.183) is embedded as a relative clause modifier

of a NP whose head noun is <u>boy</u>, only one output is possible --

(4.184a)

(4.183)
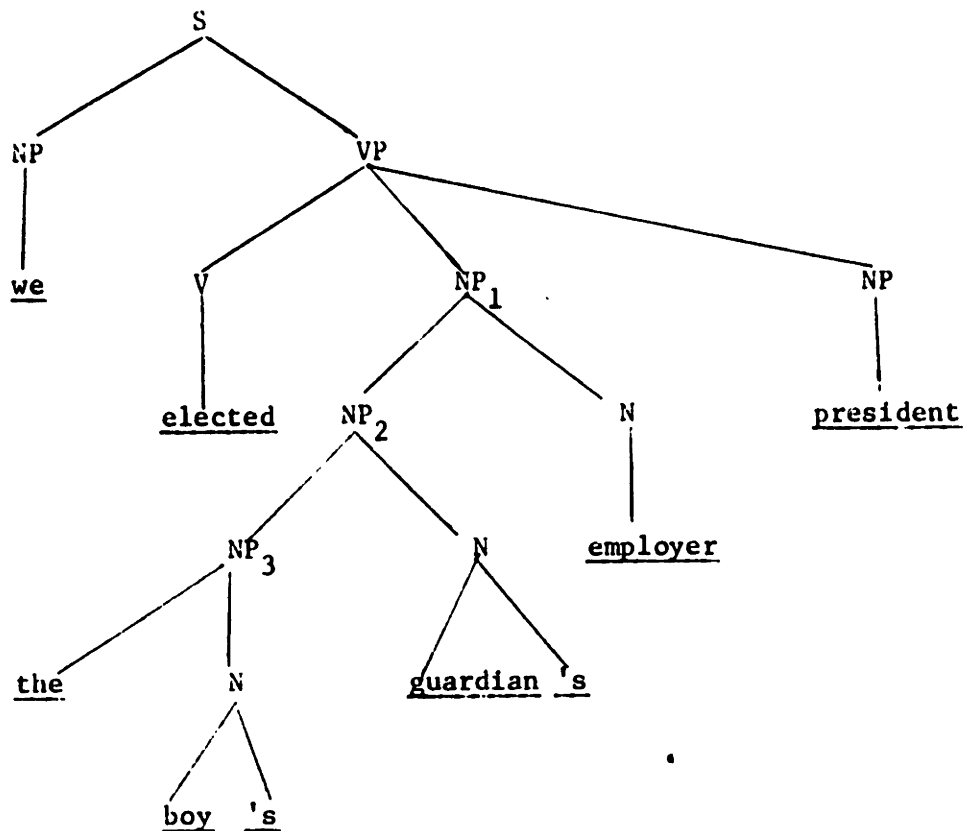
(4.184) a. The boy whose guardian's employer we

elected president ratted on us.

b. * The boy whose guardian's we elected

employer president ratted on us.

c. * The boy whose we elected guardian's

employer president ratted on us.

Sentence (4.184c) is excluded by (4.181), because the

rule of <u>Relative Clause Formation</u> has moved the lowest NP, NP_3,

from the left branch of NP_1. In (4.184b), it is NP_2 that has

been moved from this branch. Since the Left Branch Condition

prohibits both of these operations, only the largest NP which (4.180) allows to be moved, NP_1, can be moved to the front of the sentence, and when this happens, (4.184a) is the result.

Parallel facts can be adduced for non-restrictive relative clauses, which differ from restrictives in being preceded and followed by heavy intonation breaks. They derive from coordinate sentences in deep structure, and they are formed by a different rule than (4.135). If commas are inserted into the sentences of (4.184), after boy and investigated, thus forcing a non-restrictive interpretation of the clauses, their grammaticality is unchanged.

Another rule which is affected by this condition is the rule of Topicalization, (4.185), which converts (4.186a) to (4.186b).

(4.185)   Topicalization

X   -   NP   -   Y

1   2   3 $\overset{OPT}{\Longrightarrow}$

2#[1   0   3]
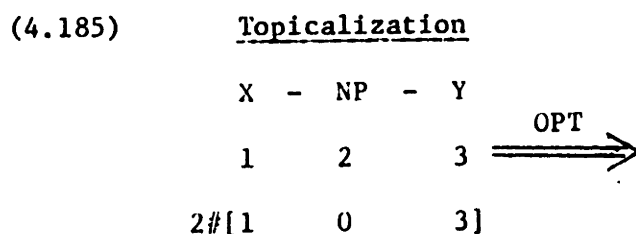
(4.186) a.   I'm going to ask Bill to make the old
              geezer take up these points later.

         b.   These points I'm going to ask Bill to make
              the old geezer take up later.

If rule (4.185) is applied to (4.183), once again it will be seen that only NP_1 can be topicalized, as in (4.187a). If either NP_2 or NP_3 is topicalized, as in (4.187b) and (4.187c), respectively,

ungrammatical sentences result.

> (4.187) a. The boy's guardian's employer we elected
>
> president.
>
> b. * The boy's guardian's we elected employer
>
> president.
>
> c. * The boy's we elected guardian's employer
>
> president.

A rule that was stated in (3.26), <u>Complex NP Shift</u>, which performs almost the same operation as (4.185), except that it moves the NP in the opposite direction, is also subject to the Left Branch Condition. This rule may apply to (4.183) to move NP_1 over <u>president</u> (cf. (4.188a)),[25] but neither NP_2 nor NP_3 can be so moved, as the ungrammaticality of (4.188b) and (4.188c) demonstrates.

> (4.188) a. We elected president the boy's guardian's
>
> employer.
>
> b. * We elected employer president the boy's
>
> guardian's.
>
> c. * We elected guardian's employer president
>
> the boy.

Finally, the <u>Question Rule</u> is subject to the condition: if NP_3 in (4.183) is questioned, it cannot be moved to the front of the sentence alone -- pied piping must apply to carry NP_1 with it, as (4.189) shows.

(4.189) a. Which boy's guardian's employer did we

elect president?

b. * Which boy's guardian's did we elect

employer president?

c. * Which boy's did we elect guardian's

employer president?

One of the facts which supports the analysis of predicate

adjectives which is implicit in diagram (3.25) above is the fact that

when adverbs of degree which occur in pre-adjectival or pre-adverbial

position are questioned, the questioned constituent, how, cannot be

moved to the front of the sentence alone, as in (4.190a) and (4.191a),

but only if the adjective or adverb is moved with it, as in (4.190b)

and (4.191b).

(4.190) a. * How is Peter sane?[26]

b. How sane is Peter?

(4.191) a. * How have you picked up TNT carelessly?

b. How carelessly have you picked up TNT?

These facts can be explained by (4.181), if how is analyzed as deriving

from an underlying NP, and the adjective sane and the adverb

carelessly are dominated by NP at the stage of derivations at

which questions are formed. Note also that if the degree adverb

that in (4.192) is questioned, pied piping must apply to move not

only tall, but also a man to the front of the sentence.

(4.192)   Sheila married that tall a man.

(4.193) a.   How tall a man did Sheila marry?

         b. * How tall did Sheila marry a man?

         c. * How did Sheila marry tall a man?

These facts are accounted for if the structure of (4.193a) at the

point when the <u>Question Rule</u> applies is that shown in (4.194),

(4.194)

```
                              S
            _____/ | _____
           Q              NP                 VP
                          |              ___/  \___
                        Sheila          V         NP₁
                                        |        /    \
                                     married   NP₂      NP
                                             /    \      /\
                                          NP₃      V    /  \
                                          /\       |   a  man
                                         /  \     tall
                                  WH+some extent
```
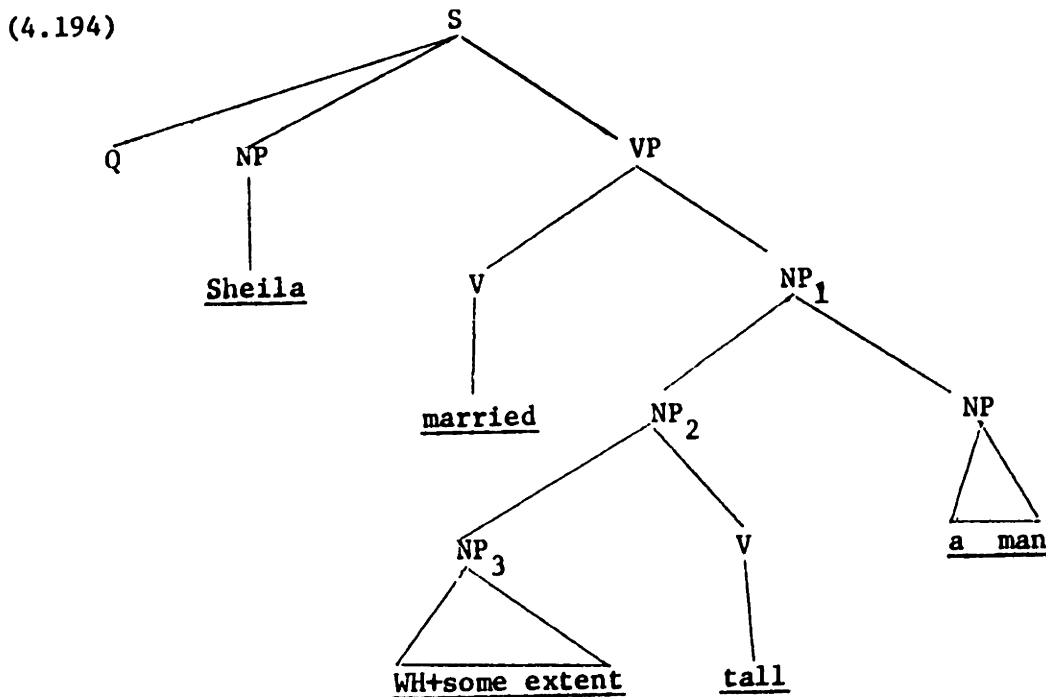
for (4.181) will not permit either NP₃ or NP₂ to be moved out

of NP₁.

          One other set of facts deserves mention in connection with

this analysis of adjectives. In German, it is possible to topicalize

adverbs -- thus the manner adverb <u>genüsslich</u> 'with pleasure' in

(4.195a) can occur at the front of the sentence, as in (4.195b).

(4.195) a.   Wir haben die Bohnen genüsslich   verschlungen.

we have   the beans with pleasure gobbled up.

'We gobbled up the beans with pleasure.'

b.   Genüsslich haben wir die Bohnen verschlungen.

If an analysis in which adverbs are treated as being derived from NP

can be maintained, not only will it be unnecessary to complicate rule

(4.185) to derive (4.195b) from the structure which underlies (4.195a),

but it will be possible to explain the following facts in addition.

In German, the adverb <u>fast</u> 'almost' normally precedes the adjective

it modifies, but it can follow it (cf. (4.196)). The adverb <u>sehr</u>

'very', however, only occurs pre-adjectivally (cf. (4.197)).

(4.196) a.   Walburga ist fast hübsch.

'Walburga is almost pretty.'

b.   Walburga ist hübsch, fast.

(4.197) a.   Liselotte ist sehr hübsch.

'Liselotte is very pretty.'

b. * Liselotte ist hübsch, sehr.

These facts suggest that whatever rule it is that moves

<u>fast</u> around <u>hübsch</u> in (4.196) be made obligatory for degree adverbs

like <u>sehr</u>. If this reordering rule adjoins the adverbs which are

moved around the adjectives to the adjectives, and if this reordering

rule precedes the rule of <u>Topicalization</u>, the fact that <u>fast</u> can be

topicalized with or without <u>hübsch</u> (cf. (4.198)), but _^ <u>sehr</u> cannot be topicalized by itself (cf. (4.199)) is accounted for by the Left Branch Condition.

(4.198) a. Fast hübsch ist Walburga.

b. Fast ist Walburga hübsch.

(4.199) a. Sehr hübsch ist Liselotte.

b. * Sehr ist Liselotte hübsch.

Of course, it is possible to account for these facts concerning adjectives and adverbs in other ways than by assuming that both types of constituents are dominated by NP up to some point in derivations, but the analysis sketched here has the virtue of allowing a simpler statement of the rules of <u>Topicalization</u> and <u>Question</u> and of constraints like (4.181) than can otherwise be achieved, as far as I can see. However, since I have not made a detailed study of adverbs, it may be the case that this analysis will have to be excluded because it engenders complications in other parts of the grammar.

In passing, it should be noted that Case D and Case E of § 2.2, which provide evidence for the A-over-A principle, are special cases of the Left Branch Condition, which will block the derivation of the ungrammatical (2.11) and (2.15).

Another environment in which pied piping is obligatory in German, French, Italian, Russian, Finnish, and in many other languages, is that stated in (4.200).

(4.200)   No NP may be moved out of the environment

$[P \ \_\_]_{NP}$.

In these languages, only sentences like (4.201) are possible -- sentences corresponding to those in (4.202), where a NP has been moved away from its preposition, are ungrammatical.

(4.201) a.   On which bed does Tom sleep?

b.   The bed on which Tom slept was hard.

(4.202) a.   Which bed did Tom sleep on?

b.   The bed which Tom slep on was hard.

Kuroda has pointed out similar facts for English with respect to a certain class of nouns (cf. Kuroda (1964)). Kuroda pointed out that it is just with the class of nouns that cannot be pronominalized, i.e., nouns like time, way, manner, place, etc., that sentences like (4.202) are impossible. That is, the sentences in (4.203) cannot be converted into the corresponding ones in (4.204) by normal rules of pronominalization.

(4.203) a.   My sister arrived at a time when no busses

were running, and my brother arrived at

a time when no busses were running too.

b.   Jack disappeared in a mysterious manner and

Marian disappeared in a mysterious manner too.

c.   I live at the place where Route 150 crosses

Scrak River and my dad lives at the place

where Route 150 crosses Scrak River too.

(4.204) a. * My sister arrived at a time when no

busses were running and my brother

arrived at one too.

b. * Jack disappeared in a mysterious manner

and Marion disappeared in one too.

c. * I live at the place where Route 150 crosses

Scrak River and my dad lives at it too.

Furthermore, prepositions cannot be left behind in such constructions

either (cf. (4.205)).

(4.205) a. * What time did you arrive at?

b. * The manner which Jack disappeared in was

creepy.   .

c. * The place which I live at is the place

where Route 150 crosses Scrak River.[27]

The facts indicate that though the constraint in (4.200)

does not obtain for English, the modified version shown in (4.206)

does:

(4.206)   No NP whose head noun is not pronominalizable

may be moved out of the environment $[P \underline{\quad}]_{NP}$.

The three constraints discussed in this section - (4.181),

(4.200), and (4.206) - are all cases where the optionality which is

built into (4.180) is abrogated in favor of higher NP nodes. That

is, if NP_i dominates NP_j, (4.180) in general allows either NP to

reorder, but the above three constraints limit this freedom: they state environments in which only the higher NP can reorder. In the next section, I will discuss two constraints which have the opposite effect.

4.3.2.2.   After most verb-particle combinations whose object is a prepositional phrase, such as <u>do away with</u>, <u>make up to</u>, <u>sit in on</u>, <u>get away with</u>, etc., while the NP in the prepositional phrase is movable, the preposition may not be moved with it. Thus though the sentences in (4.207) are possible, corresponding ones in (4.208) are not.

(4.207) a.   The only relatives who' I'd like to do away with are my aunts.

b.   Who is she trying to make up to now?

c.   That meeting I'd like to sit in on.

(4.208) a. * The only relatives with whom I'd like to do away are my aunts.

b. * To whom is she trying to make up now?

c. * On that meeting I'd like to sit in.

For some reason which I do not understand, there are other verbs which seem to be of exactly the same syntactic type for which such constructions as (4.208) are permissible. Thus the sentences in (4.209) are markedly better, for me, than those in (4.208).

(4.209) a. ? The abuse with which she puts up is phenomenal.

b.   For whose rights do you expect me to speak up?

c.   For these principles I have never hesitated

to speak out.

Similar facts obtain for such syntactic idioms as <u>get wind</u> <u>of</u>, <u>make light of</u>, <u>get hold of</u>, etc. Normally, in my speech at least, the preposition must be left behind for most of these idioms -- compare (4.210) and (4.211).

(4.210) a.   One plan which I got wind of was calculated

to keep us in suspense.

b.   Did you notice which difficulties she made

light of?   •

c.   Who are you trying to get hold of?

(4.211) a. * One plan of which I got wind was calculated

to keep us in suspense.

b. ?*Did you notice of which difficulties she

made light?

c. * Of whom are you trying to get hold?

However, there are certain of these syntactic idioms for which the preposition seems to be movable, just as was the case with the verb-particle combinations shown in (4.209).

•

(4.212) a. The only offer of which I plan to take

advantage will give me an eleven-month paid

vacation.

b. ? In the countries of which I've been keeping

track, the existing political systems are

fantastically corrupt.

c. The scenes to which the censors took

objection had to do with the mixed marriage

of a woman and a giant panda.

I believe that sentences like those in (4.209) and

(4.212) are the exception, rather than the rule, so presumably some

constraint like (4.213) must be stated for English.

(4.213) No NP with the analysis $[P \; NP]_{NP}$ may

be moved if it follows an idiomatic V - A

sequence, where A is some single constituent.

The constituent A may be a particle (cf. (4.207) and

(4.208)), an adjective (as in make light of, make sure of, etc.), a

verb (as in make do with, let fly at, let go of, get hold of, get rid of

(if rid should be analyzed as a verb here)), lay claim to, hold sway over,

pay heed to, etc.), a noun (as in get wind of, set fire to, lay siege to,

make use of, lose track of, take charge of, take umbrage at, etc.), or

possibly a noun phrase (e.g., get the drop on, make no bones about,

set one's sights on).

There is a possibility, as Paul Kiparsky has pointed out
to me, that the difference between (4.211) and (4.212) may correlate
with whether the idiom in question has a single or a double passive.
That is, in many cases, verbs like those in (4.212), where the
preposition may be moved, allow either the first element after the
verb or the object of the preposition to become the subject of the
passive.

(4.214) a.   Advantage will be taken of his offer.

         b.   His offer will be taken advantage of.

(4.215) a. ? In this experiment, track must be kept of

              fourteen variables simultaneously.

         b.   In this experiment, fourteen variables

              must be kept track of simultaneously.

(4.216) a.   Objection was taken to the length of our

              skirts.

         b. ? The length of our skirts was taken objection

              to.

The sentences of (4.214) - (4.216) attest to the fact
that the syntactic idioms of (4.212), whose prepositions are not
subject to (4.213), have double passives. But the idioms in (4.210),
whose prepositions are shown to be subject to (4.213) by the ungrammati-
cality of (4.211), have only one passive, as can be seen from the
ungrammaticality of the a-versions of sentences (4.217)-(4.219).

(4.217) a. * Wind was gotten of a plot to negotiate

an honorable end to the war in Vietnam.

b.   A plan to negotiate an honorable end to

the war in Vietnam was gotten wind of.

(4.218) a. * Light was made of her indiscretions.

b.   Her indiscretions were made light of.

(4.219) a. * Hold has been gotten of some rare old

manuscripts.

b.   Some rare old manuscripts have been

gotten hold of.

The correspondence between the class of syntactic idioms

which allow passives like those in (4.214a), (4.215a), and (4.216a),

and the class of idioms whose prepositions are not subject to (4.213)

is too close to be merely coincidental, but for me, at least, it is

not exact. If it were, the differences in acceptability between the

a and b-sentences below would not exist.

(4.220) a.   Use was made of Sikolsky's pigeon-holing

lemma.

b. ? The lemma of which I will make use is due

to Sikolsky.

(4.221) a.   Tabs were kept on all persons entering

the station.

b. ??The persons on whom we kept tabs all

proved to be innocent.

(4.222) a. * Faith was had in all kinds of people.

b. ? The only representative in whom I have

faith is still in the Bahamas.

But I have not made a close study of all cases which

run counter to Kiparsky's suggestion, to see if they can be explained

away. I believe that it will eventually become possible to incorporate

this suggestion into a revised version of (4.213), even though I am

unable to do so now. But it is clear that some other explanation

must be devised for the sentences of (4.209), which also constitute

counter-evidence to (4.213). The whole problem of what syntactic

properties various types of idioms have has been neglected grievously --

I suspect that intensive research into this problem would yield rich

rewards for many areas of syntax besides this one.

In Danish, there are many environments in which pied

piping is blocked. Thus, while the preposition på 'in' can be left

behind or moved to the front of the sentence, when a manner adverb

is questioned (cf. (4.223)),

(4.223) a.   Hvilken måde gjorde han det på?

which   way   did   he it   in

'How did he do it?'

b.   På hvilken måde gjorde han det?

In which   way   did   he it

prepositions in a prepositional phrase which is immediately dominated

by VP can never be moved to the front of the sentence: (4.224c) is

ungrammatical.

> (4.224) a. Han fandt på den historie.
>
> he invented that story
>
> b. Hvilken historie fandt han på?
>
> which story invented he
>
> 'Which story did he invent?'
>
> c. * På hvilken historie fandt han?

This means that in the grammar of Danish, the following condition must be stated:

> (4.225)   No NP with the analysis $[P \ NP]_{NP}$
>
>   may be moved if it is immediately
>
>   dominated by VP.

The full set of facts in Danish is quite a bit more complex -- a more detailed presentation is given in Blass (1965). I will not attempt a recapitulation of all the facts of Danish, for my purpose here is not to suggest a complete analysis of all constructions involving prepositions in Danish or in English, but merely to demonstrate that just as there are environments where pied piping is obligatory (cf. § 4.3.2.1. above), so there are environments where it must be blocked.

4.3.2.3.   The first condition on pied piping, (4.181), prevents the reordering of an NP on a left branch of the larger NP, no matter in which direction the NP being reordered is to move. Thus

neither the rule of <u>Topicalization</u>, which moves noun phrases to

the left, nor the rule of <u>Complex NP Shift</u>, which moves them to

the right, can apply to NP_3 or NP_2 in tree (4.183), as the

ungrammatical sentences of (4.187) and (4.188) demonstrate. And

the same is true of the other conditions stated in § 4.3.2.1 --

(4.200) and (4.206). The first of these asserted that it is

impossible to "strand" a preposition in German, and various other

languages, by moving its object NP away from it. Thus, in

German, when the NP <u>diesen Kasten</u> 'this box' in (4.226a) is

questioned, it cannot be moved to the front of the sentence

alone, as would be possible in English, (cf. the ungrammaticality

of (4.226b)). When the <u>Question Rule</u> applies, (4.200) requires

that the larger NP, <u>in welchen Kasten</u>, 'into which box' be

preposed, as it is in (4.226c)

(4.226) a. Vladimir wollte das Buch [in [diesen

Vladimir wanted the book into this

Kasten]$_{NP}$]$_{NP}$ schmeissen.

box throw.

'Vladimir wanted to throw the book into

this box.'

b. * Welchen Kasten wollte Vladimir das Buch

Which box wanted Vladimir the book

in schmeissen?

into throw?

c. In welchen Kasten wollte Vladimir das

    into which box   wanted Vladimir the

    Buch schmeissen?

    book throw

    'Into which box did Vladimir want to throw

    the book?'

Just as it is impossible to strand a preposition in
German by moving its object NP away from it to the left, so it is
impossible to do so by moving the NP to the right. An example
of a rule which moves NP to the right in German is the rule which
converts sentences like (4.227a) into ones like (4.227b), which,
though marginal, must be generated.

(4.227) a. Er wollte denen   ein wunderbares Bilderbuch geben.

             he wanted to them a wonderful   picture book give.

             'He wanted to give them a wonde.ful picture book.

         b. Er wollte denen geben ein wunderbares Bilderbuch.

This rule corresponds roughly to the English rule of Complex NP Shift,
although the English rule is not so restricted as the German one. Since
I have not studied the conditions under which such sentences as (4.227b)
can be produced, I will not attempt a precise statement of the rule
here; the formulation of Complex NP Shift which was given in (3.26)
is adequate for my present purpose.

Note that Complex NP Shift, if applied to (4.226a), can
only move the larger NP, in diesen Kasten (cf. (4.228)). If the

object of the preposition is moved, the impossible (4.228b) results.

(4.228) a. Vladimir wollte das Buch schmeissen

in diesen Kasten.

b. * Vladimir wollte das Buch in schmeissen

diesen Kasten.

This shows that (4.200), just like (4.181), constrains transformations which move NP to the right, as well as those which move NP to the left.

In English, however, we find a different situation. While prepositions may be stranded if their object NP is moved to the left, they may not be if it is moved to the right. The rule of _Topicalization_ may strand the preposition _to_ of (4.229a), as in (4.229b), or it may take it along, as in (4.229c).

(4.229) a. Mike talked to my friends about politics

yesterday.

b. My friends Mike talked to about politics

yesterday.

c. To my friends Mike talked about politics

yesterday.

But _Complex NP Shift_ cannot apply to the NP _my friends_ in (4.229a): it can only apply to the larger NP _to my friends._

(4.230) a. Mike talked about politics yesterday to

my friends.

b. * Mike talked to about politics yesterday

my friends.

Thus it can be seen that the theory of grammar must be strengthened so that conditions making pied piping obligatory or impossible can make reference to the direction in which the specified NP is to be reordered. It will be necessary to add to English condition (4.231), which is a weaker form of (4.200).

(4.231)   No NP may be moved to the right out

of the environment $[P \underline{\quad}]_{NP}$.

It might appear that (4.213) would have to be modified along these lines, in the light of such sentences as those in (4.232),

(4.232)   a. ? They got wind, eventually, of the counter-

plot to fluoridate the bagels.

b. ? Carrie did away, systematically, with her

nephews from Chattanooga.

c. ??She made light, not too surprisingly, of

the difficulties we might have at the

border.

d. ? I got hold, fortunately, of Lady Chatterley's ex.

for superficially at least, the prepositional phrases which follow V – A syntactic idioms of the type discussed in connection with (4.213) seem to have been moved, possibly by the rule of <u>Complex NP Shift</u>. I suspect, however, that (4.213) does not have to be modified and that some other rule than <u>Complex NP Shift</u> is being used in the generation of the sentences in (4.232). The rule in question is probably related to the <u>Scrambling Rule</u>, (3.48); it allows sentence adverbs to be

positioned between any major constituents of a clause.[28] Note

that the sentences in (4.232) are almost totally unacceptable if

the commas are removed, but that no commas are necessary in such

clear cases of <u>Complex NP Shift</u> as (4.233).

> (4.233)   I gave to the officer in charge the
>
> blackjack which I had found in the
>
> cookie jar.

The sentences in (4.232) thus seem to be accountable for

by other means than assuming the existence of a second condition on

pied piping like (4.231), a condition in which the direction of

reordering would make a difference. So, although I know of no

other facts which motivate the postulation of any other direction-

dependent conditions, the facts discussed in connection with (4.231)

seem to require, at least for the present, a theory of language

in which such conditions can be stated.

4.3.2.4.   In this section, I will point out one puzzling fact

about the interaction between the rule of <u>Conjunction Reduction</u> and

two of the conditions on pied piping which were discussed above --

the Left Branch Condition and (4.231).

In § 4.2.4.1, I gave a brief, informal description of

the rule which converts (4.118) into (4.119). Since the adjective

<u>pregnant</u> appears on a right branch of both conjoined sentences in

(4.118), it can be raised and Chomsky-adjoined to the coordinate node

by the rule of <u>Conjunction Reduction</u>. The same is true of the two

occurrences of the NP <u>a successful outing at the track</u> in (4.234),

as the grammaticality of (4.235)shows.

(4.234)

am confident
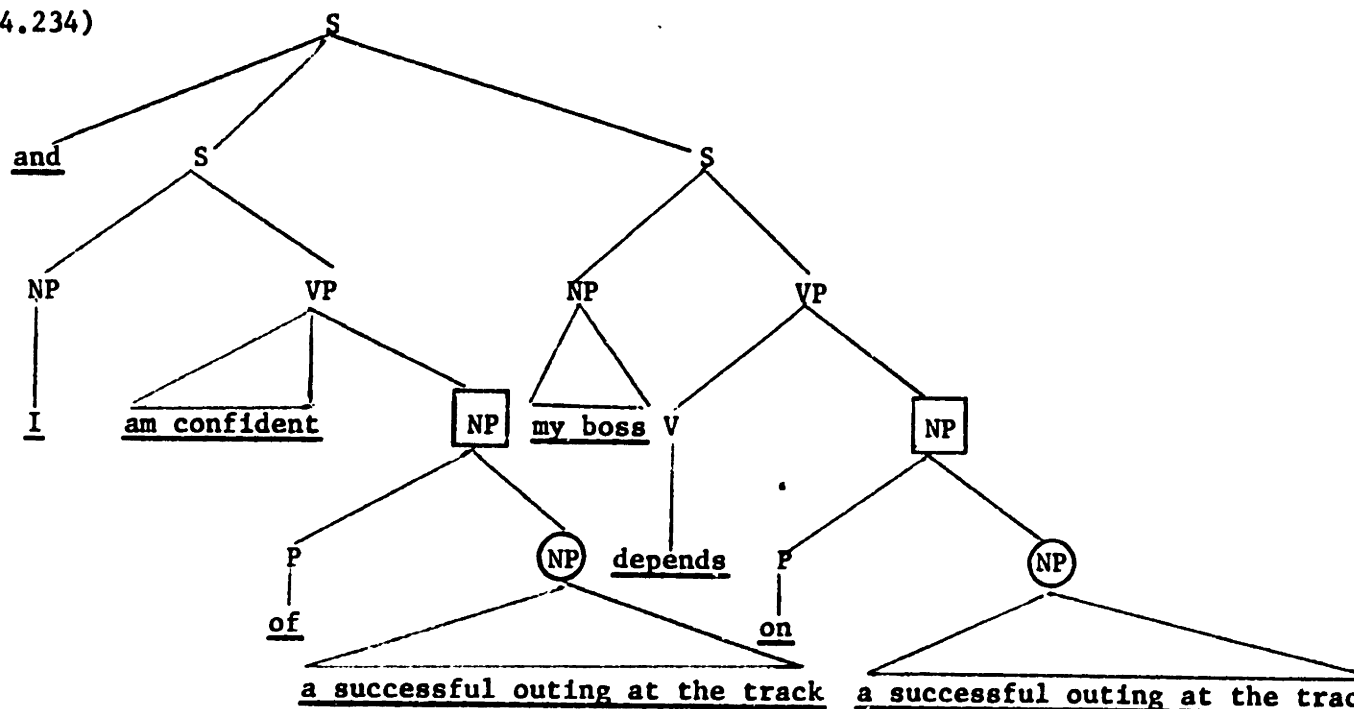
depends

(4.235)   I am confident of, and my boss depends on,

a successful outing at the track.

Since (4.235) is grammatical, some condition must be built

into (4.231) which weakens it so that it does not affect the operation

of the rule of <u>Conjunction Reduction</u>. As (4.231) is now stated, it

would prevent the circled NP nodes in (4.234) from being raised,

for they are contained in the boxed NP nodes, which start with

prepositions. I do not understand why (4.231) should not constrain

Conjunction Reduction, for it is not in general true that conditions

on pied piping do not apply to Conjunction Reduction, as the following

example will show.

Up to this point, I have only discussed examples of the

operation of Conjunction Reduction where the identical constituent

was on a right branch, but the rule will also work on constituents

which appear on left branches. Thus in (4.236), the circled noun

phrases can be Chomsky-adjoined to the coordinate node -- the result

is sentence (4.237).

(4.236)
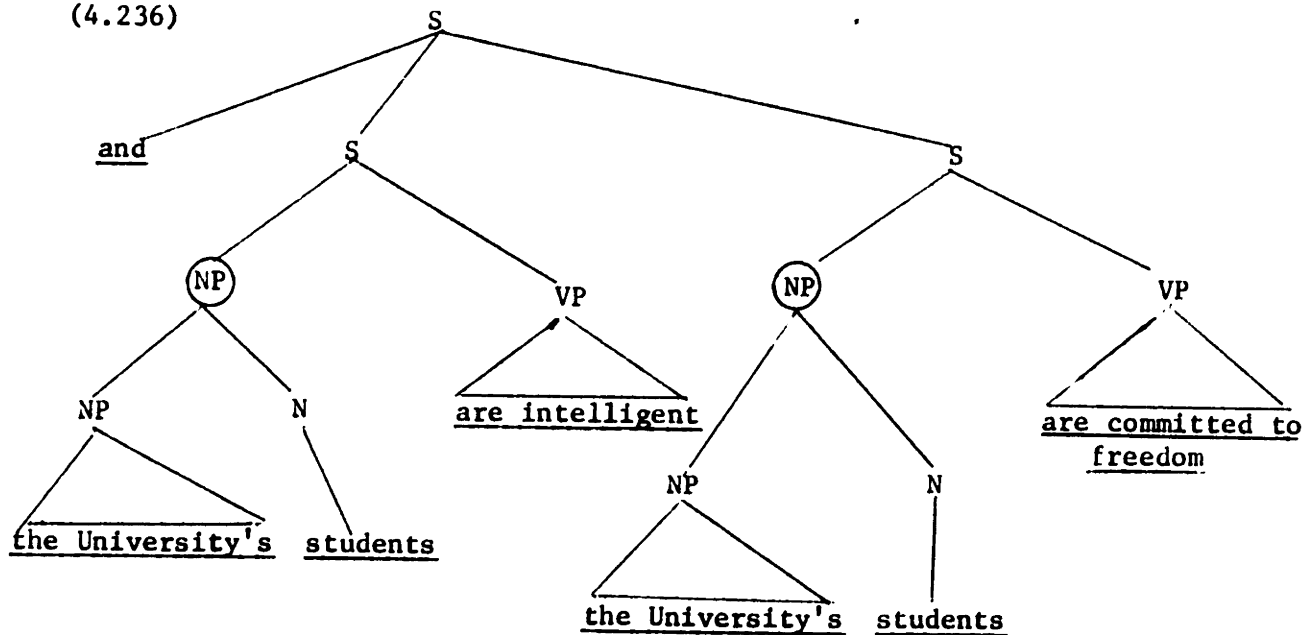
(4.237)   The University's students are intelligent

and (are)[29] committed to freedom.

But note that if the input structure is that shown in (4.238), Conjunction Reduction must be blocked.

(4.238)
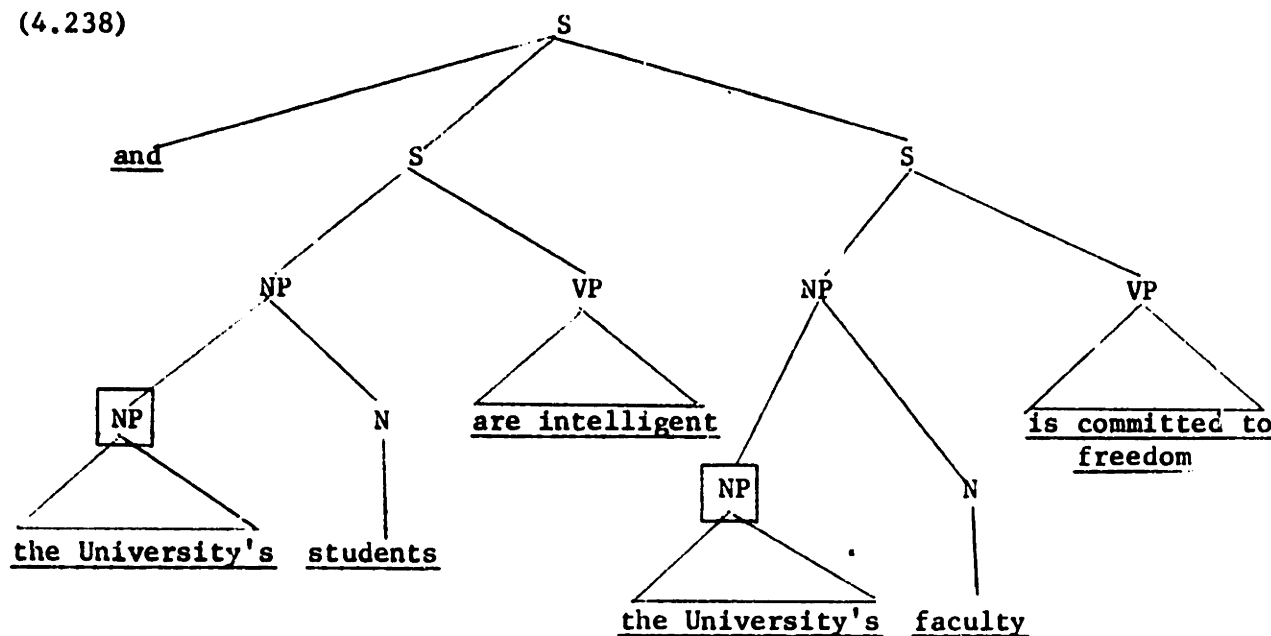
The only identical nodes in (4.238) are the two occurrences of the boxed NP the University's. If Conjunction Reduction is allowed to apply to these nodes, the ungrammatical (4.239) results:

(4.239)   * The University's students are intelligent

and faculty is committed to freedom.

It is not necessary to add any condition to the rule of Conjunction Reduction to avoid generating (4.239): the Left Branch Condition, (4.181), will prevent the boxed NP's in (4.238) from being raised, because each is on the left branch of a larger NP. These facts are indicative clearly that it is not in general the case that conditions

on pied piping are not in effect for the rule of <u>Conjunction Reduction</u>, so it will be necessary to add a clause to condition (4.231), stating that this particular condition does not apply to the rule of <u>Conjunction Reduction</u>.

For some reason, there is one environment in which (4.181) also behaves idiosyncratically with respect to <u>Conjunction Reduction</u> -- even though the constituents to be raised are on the left branches of larger NP's, these constituents can be raised, if the larger NP's are conjuncts of a coordinate NP. For example, the two circled NP nodes in (4.240) can be raised and adjoined to the boxed NP node, yielding (4.241).

(4.240)
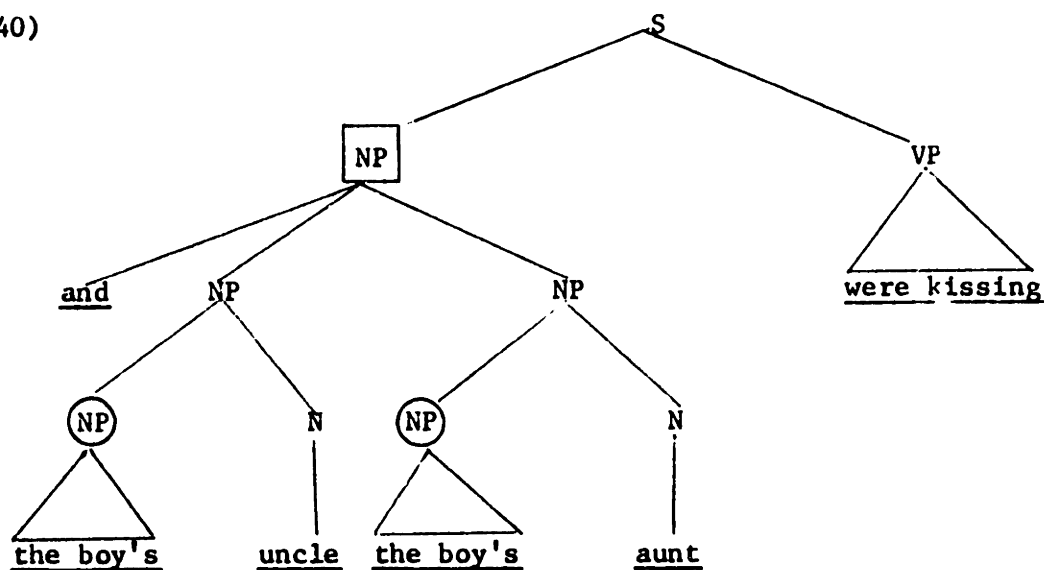
(4.241)   The boy's uncle and aunt were kissing.

It is not necessary that the NP being raised and adjoined be immediately dominated by a conjunct: the NP shown in (4.242a) can be reduced to the one shown in (4.242b), by raising the two occurrences of the NP the boy's.

(4.242) a.

NP

and NP NP

(NP) N NP N

the boy's uncle (NP) N grandmother

the boy's aunt's

b.

NP 30

(NP) NP

the boy's and NP NP

N NP N

uncle N grandmother

aunt's
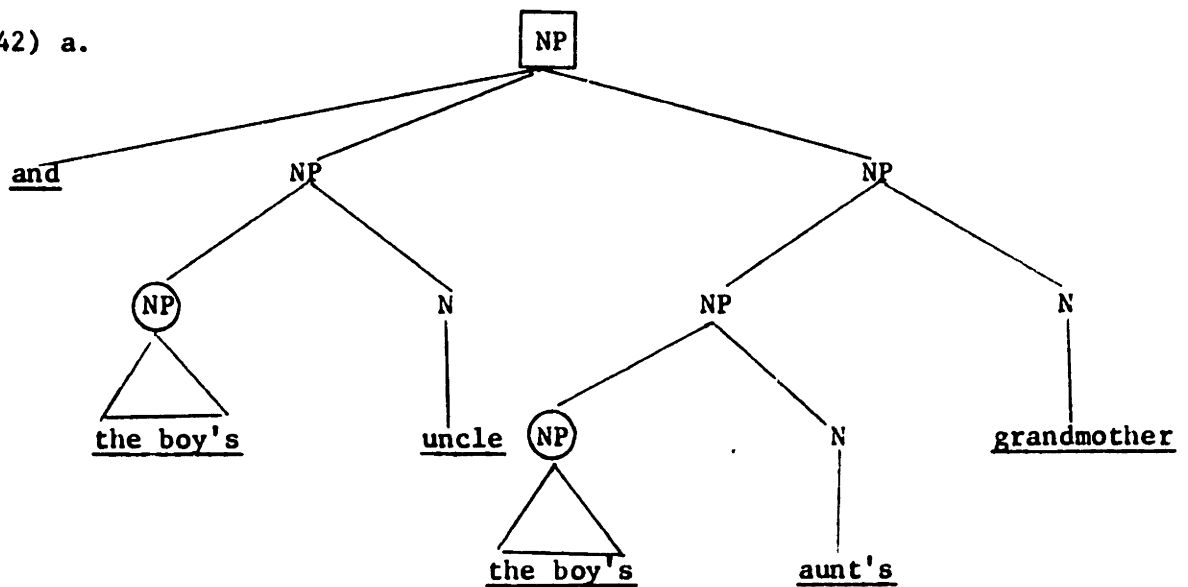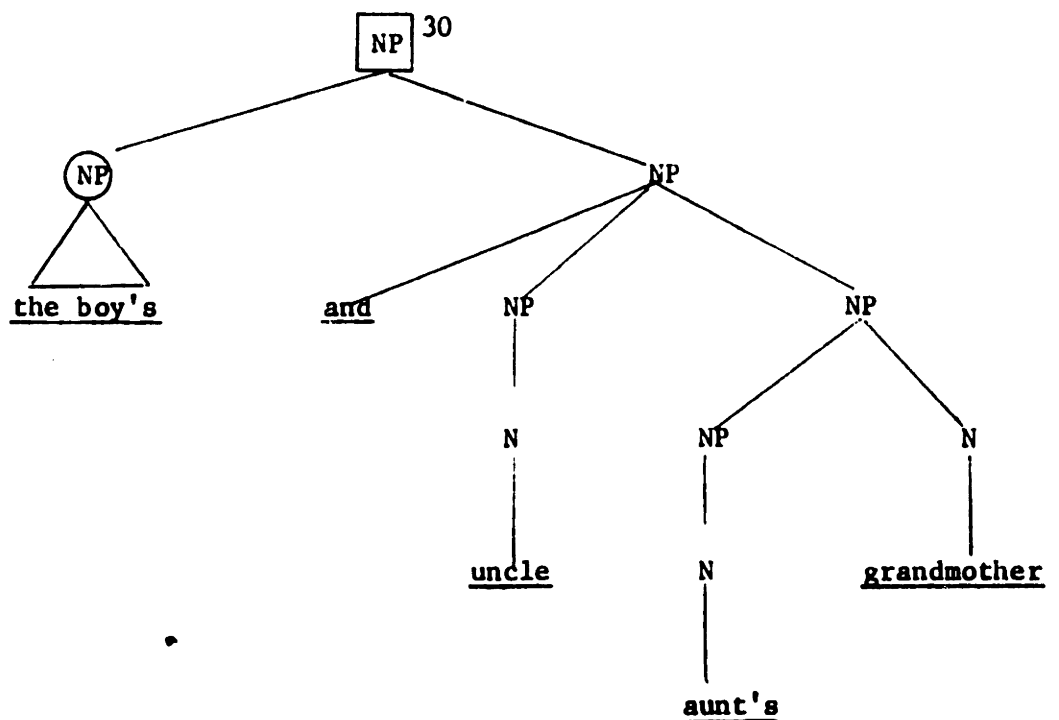
I can think of no explanation for this strange fact -- it will simply have to appear as an _ad hoc_ rider on (4.181). However, this rider can be used to explain the otherwise extremely puzzling difference between the grammatical (4.243a) and the ungrammatical (4.243b).

(4.243)   a.   The boy whose uncle and aunt's grandmother were kissing was furious.

b. * The boy whose uncle and Tom's aunt's grandmother were kissing was furious.

The relative clause in (4.243a) comes from a sentence whose subject is the NP shown in (4.242a). If <u>Conjunction Reduction</u> applies before <u>Relative Clause Formation</u>, thus converting (4.242a) into (4.242b), then the circled NP <u>the boy's</u> in (4.242b) will be relativizable, because it will then no longer be contained in a coordinate structure. Since it is on the left branch of the boxed NP, when it moves, this larger NP will pied pipe with it, as (4.181) requires.

But the relative clause in (4.243b) would have the NP shown in (4.244) as its subject:

(4.244)

```
                               NP
              _____/|_____
             /          |                        \
           and        [NP]                        NP
                      /    \                      /  \
                  (NP)      N                  NP      N
                  /  \      |                 /  \     |
                 /____\   uncle             NP    N  grandmother
              the boy's                    /  \
                                         NP    N
                                         |     |
                                       Tom's  aunt's
```
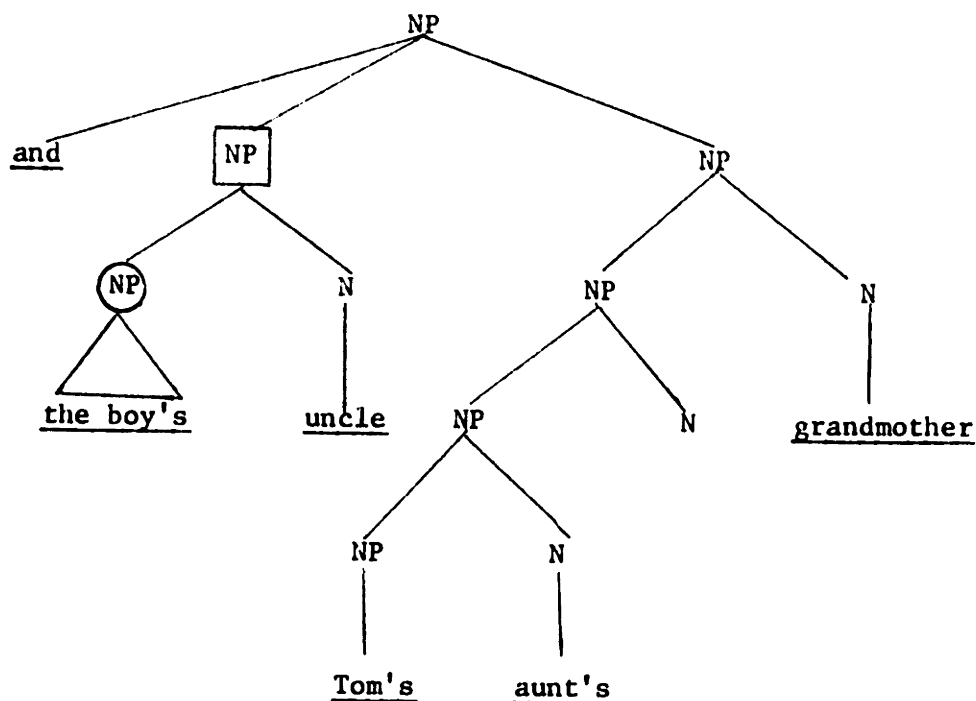
Since the circled NP in this tree does not occur in all conjuncts, the rule of <u>Conjunction Reduction</u> cannot apply to it. Therefore, when relativization of this NP is attempted, (4.181) will specify that the boxed NP node in (4.244) must pied pipe, for the NP being relativized is on its left branch. But the boxed NP is a conjunct, and thus cannot be moved, by virtue of the Coordinate Structure Constraint, (4.84). And since there is a clause in the Pied Piping Convention, (4.180), which specifies that coordinate nodes cannot pied pipe (recall the ungrammaticality of (4.172)), the top NP node of (4.244) will not pied pipe either. Thus the circled NP node is frozen solidly in position -- (4.181) prevents it from reordering, and the way (4.84) and (4.181) have been stated prevent any NP node

above it from pied piping -- so the rule of <u>Relative Clause Formation</u>, if it applies to this circled NP, will produce an ungrammatical sentence. The contrast between the sentences in (4.243) is thus only to be explained on the basis of quite far-reaching theoretical constructs.

4.3.2.5.   What is the theoretical status of constraints like (4.181), (4.200), (4.206), (4.213), (4.225) and (4.231)? It is obvious that (4.200), which prohibits the stranding of prepositions, is not universal, for prepositions may in general be stranded in English. (4.206), which prevents the stranding of prepositions the head of whose objects is not pronominalizable, is not universal either, for prepositions can be stranded in this environment in Danish, as (4.223a) shows. (4.225) is not universal, for the prepositions of English prepositional phrases directly dominated by VP can be stranded, as (4.245) shows.

(4.245)   Who are you gawking at?

It may be that (4.231) is universal -- I know of no counterexamples at present.

The Left Branch Condition, although it is in effect in such languages as English, German, French, Danish, Italian and Finnish, is not universal, for it is not in effect in Russian and Latin. In Russian, the possessive adjective <u>čuju</u> 'whose' can be preposed in questions, whether or not the noun it modifies appears with it at

the front of the sentence.

    (4.246) a. Čuju knigu ty čitaješ?

               Whose book you are reading

               'Whose book are you reading?'

          b. Čuju ty čitaješ   knigu?

               Whose you are reading book

               'Whose book are you reading?'

The same applies to the interrogative adjective <u>skolko</u> 'how many',
as can be seen in (4.247).

    (4.247) a. Skolko   let u nim byli?

               how many years to him were

               'How many years old wąs he?' (=how many

               years did he have?)

          b. Skolko   u nim byli let?

               how many to him were years

               'How many years old was he?'

In Latin, too, sentences which parallel (4.246b) can be found –
cf. (4.248).

    (4.248)   Cuius legis   librum?

               whose you are reading   book

               'Whose book are you reading?'

As far as I know, it is only in highly inflected languages, in whose
grammars the rule of <u>Scrambling</u> appears, that the Left Branch Condition
is not operative, but it is not the case that it is not operative in

all such languages. In Finnish, for example, sentences like (4.248)

are not possible. At present, therefore, I am unable to predict

when a language will exhibit the Left Branch Condition and when not.

Thus it appears that with the possible exception of

(4.231), all of the constraints on pied piping which were discussed

in §§ 4.3.2.1 - 4.3.2.4 must be stated in the grammar of each language

that exhibits them. But must each such condition be stated on each

rule which it influences? Must the Left Branch Condition be built

into the English rules of <u>Relative Clause Formation</u>, <u>Appositive Clause</u>

<u>Formation</u>, <u>Topicalization</u>, <u>Complex NP Shift</u> and <u>Question</u>? To

repeat the Left Branch Condition on each of these five rules is to

make the claim that it is an accidental fact about this particular

set of five rules that they are all subject to (4.181). I am making

the opposite claim: that <u>any</u> reordering transformation would be

subject to (4.181). To reflect this claim formally, the theory of

grammar must be changed. At present, the theory only permits conditions

which are stated on particular rules, like the identity condition

on <u>Relative Clause Formation</u>, or meta-conditions, like the Complex NP

Constraint, which are stated in the theory. But the constraints on

pied piping which are under discussion cannot be correctly accommodated

under either of these possibilities: they are not universal, and to

state them on each transformation which they affect is to miss a

generalization. What is necessary is that the grammar of every natural

language be provided with a <u>conditions box</u>, in which all such language-

particular constraints are stated once for the whole language. By a universal convention of interpretation, all conditions in the conditions box will be understood to be conditions on the operation of every rule in the grammar.

To give some concrete examples, for English, the conditions box will contain, among others, (4.181), (4.206), (4.213) and (4.231). For French, Italian and German, it will contain (4.181), (4.200) and (4.231). It should not be thought that only conditions on pied piping will appear in this box. In Finnish, for example, it is the case that no element can be moved out of complement clauses which are introduced by että 'that'. That is, while such sentences as (4.249a) are possible in English, no correspponding sentence is possible in Finnish, as the ungrammaticality of (4.249b) shows.

> (4.249) a. Which hat do you believe (that) she never
>
> wore?
>
> b. * Mitä hattua uskoit   ettei   hän
>
> which hat   you believed that not she
>
> koskaan käyttänyt?
>
> ever   used.

Thus far, with one exception, which I will discuss in footnote 15 of Chapter 5, all the constraints which I know to appear in the conditions box of any language are constraints on reordering transformations, but there is of course no reason to expect that no

other types of constraints will be found to occupy condition boxes in other languages.

4.3.3.   To recapitulate the discussion of pied piping, the existence of structures like (4.162), which allow for an in principle unbounded number of relative clauses to be formed, clearly indicates the need for a convention of some sort. Rather than devise some notational convention under which an infinite family of rules like those in (4.135), (4.164) and (4.165) could be abbreviated by some sort of finite schema -- a notational convention which would only be made use of to handle these facts, I have chosen the convention stated in (4.180), which, though still somewhat ad hoc, is weaker than a new notational convention would be, and thus yields a more restrictive characterization of the class of possible transformations, and hence of the notion of natural language. In § 4.3.2 I discussed a number of cases where pied piping is obligatory and suggested that the theory of grammar be changed so that every particular grammar contains a conditions box in which constraints of various types,which affect all rules of the grammar,can be stated. Such constraints are intermediate in generality between particular conditions on particular rules and meta-constraints like the Complex NP Constraint and the Coordinate Structure Constraint.

4.4.   The Sentential Subject Constraint

4.4.1.   Compare (4.250a) with its two passives, (4.250b) and (4.250c).

> (4.250) a.   The reporters expected that the principal
>
>   would fire some teacher.
>
>   b.   That the principal would fire some teacher
>
>   was expected by the reporters.
>
>   c.   It was expected by the reporters that the
>
>   principal would fire some teacher.

Noun phrases in the that-clauses of (4.250a) and (4.250c) can be relativized, but not those in the that-clause of (4.250b), as (4.251) shows.

> (4.251) a.   The teacher who the reporters expected that
>
>   the principal would fire is a crusty old
>
>   battleax.
>
>   b. * The teacher who that the principal would
>
>   fire was expected by the reporters is a
>
>   crusty old battleax.
>
>   c.   The teacher who it was expected by the
>
>   reporters that the principal would fire
>
>   is a crusty old battleax.

How can (4.251b) be blocked? A first approximation would be a restriction that prevented subconstituents of subject noun phrases from reordering, while allowing subconstituents of object noun phrases

to do so. But such a restriction would be too strong, as can be seen

from the grammaticality of (4.252).

> (4.252)   Of which cars were the hoods damaged by
>
> the explosion?

The approximate structure of (4.252), at the time when the Question

Rule applies, is that shown in (4.253).

(4.253)
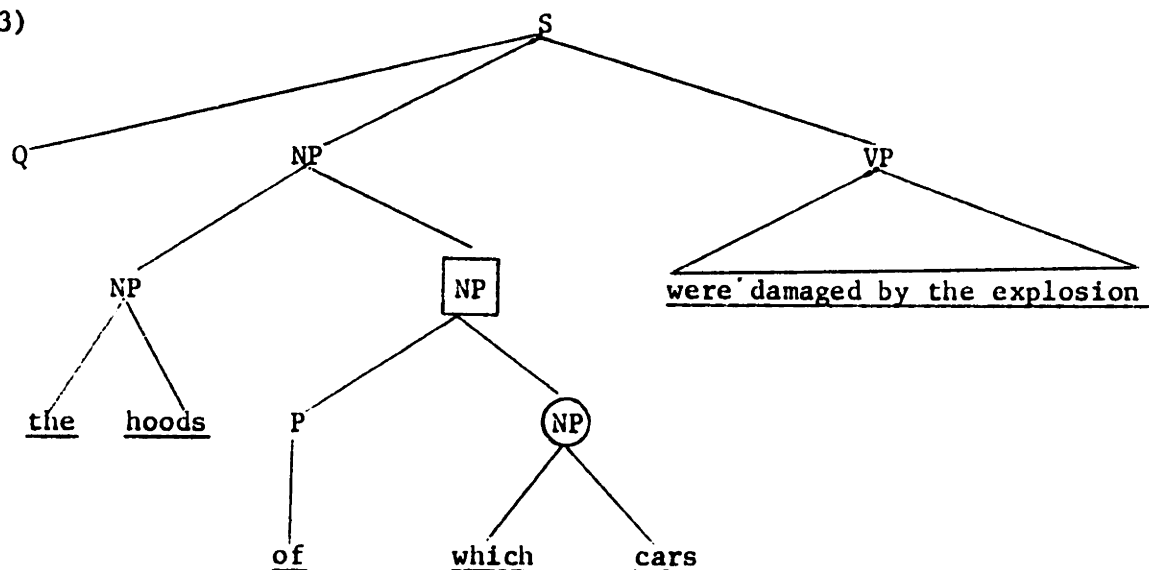
It can be seen that in converting (4.253) to the structure

which underlies (4.252), the boxed NP, a subconstituent of the

subject of (4.253), has been moved to the front of the sentence, so

the suggested restriction is too strong.[31] But there is an obvious

difference between (4.252) and the ungrammatical (4.251b): the subject

of the latter sentence is a clause, while the subject of the former is

only a phrase. The condition stated in (4.254) takes this difference

into account.

(4.254)   The Sentential Subject Constraint

No element dominated by an S may be
moved out of that S if that node S
is dominated by an NP which itself is
immediately dominated by S.

This constraint, though operative in the grammars of
many languages other than English, cannot be stated as a universal,
because there are languages whose rules are not subject to it. In
Japanese, for instance, although the circled NP in (4.256), which
is the approximate structure of (4.255), falls within the scope of
(4.254), it can be relativized, as the grammaticality of (4.257)
shows.

(4.255)   Mary ga sono boosi o kabutte ita koto

Mary   that hat   wearing was thing

ga akiraka da.

obvious   is

'That Mary was wearing that hat is obvious.'

(4.256)
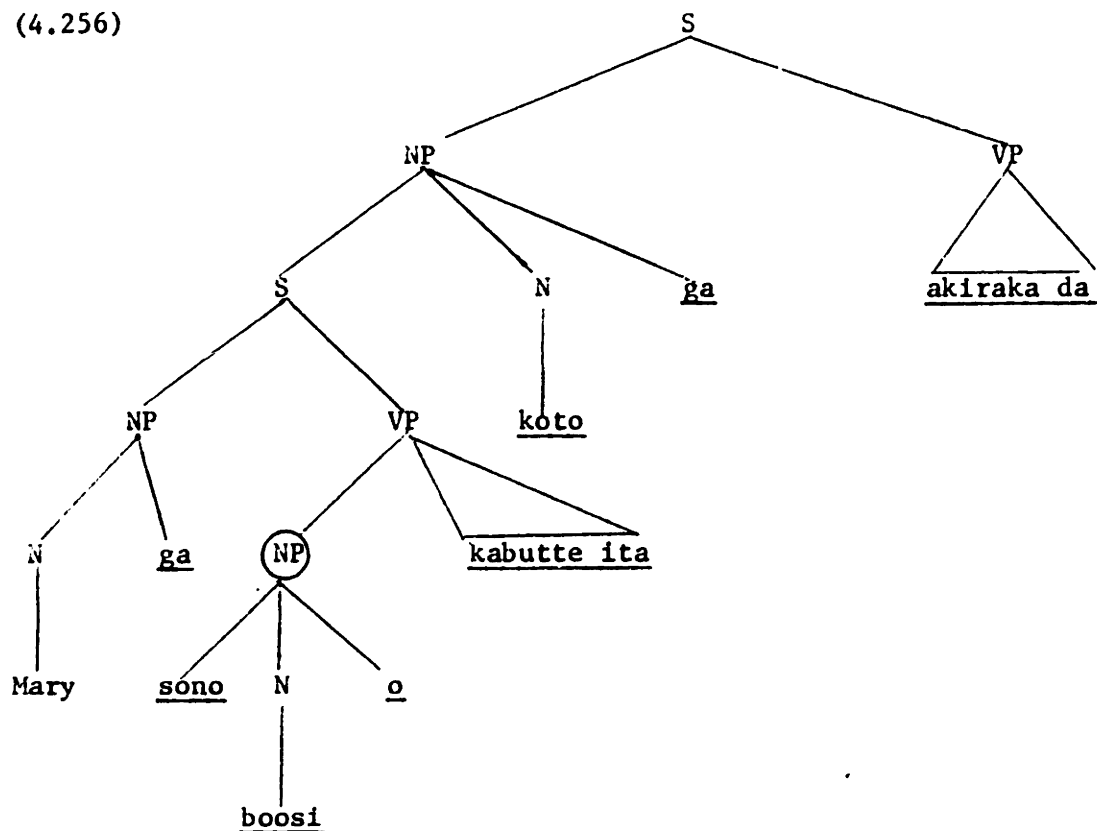
(4.257)   Kore wa Mary ga kabutte ita koto   ga

               this   Mary   wearing was thing

               akiraka na boosi da.

               obvious is hat   is.

               'This is the hat which it is obvious that

               Mary was wearing.'

That the languages whose rules I know to be subject to
(4.254) far outnumber those whose rules are not so constrained suggests
that a search be made for other formal properties of these latter
languages which could be made use of to predict their atypical behavior

with respect to this constraint. At present, however, whether or

not (4.254) is operative within any particular language can only be

treated as an idiosyncratic fact which must be stated in the

conditions box of the language in question.

4.4.2.   George Lakoff has po nted out to me that on the basis

of only the facts considered so far, it would be unnecessary to state

the Sentential Subject Constraint, for it is a special case of (3.27),

the output condition which makes sentences containing internal

$[_{NP} S]_{NP}$ unacceptable. Thus, since (4.251b) contains the internal

clause <u>that the principal would fire</u>, and since this clause is dominated

exhaustively by NP, condition (3.27) would account for its unacceptability.

But the two arguments below seem to me only to be accountable for

if condition (4.254) is assumed to be operative in the grammar of

English.

        Firstly, consider sentence (4.258), and its associated

constituent structure (4.259).

        (4.258)   That I brought this hat seemed strange to

                the nurse.

(4.259)
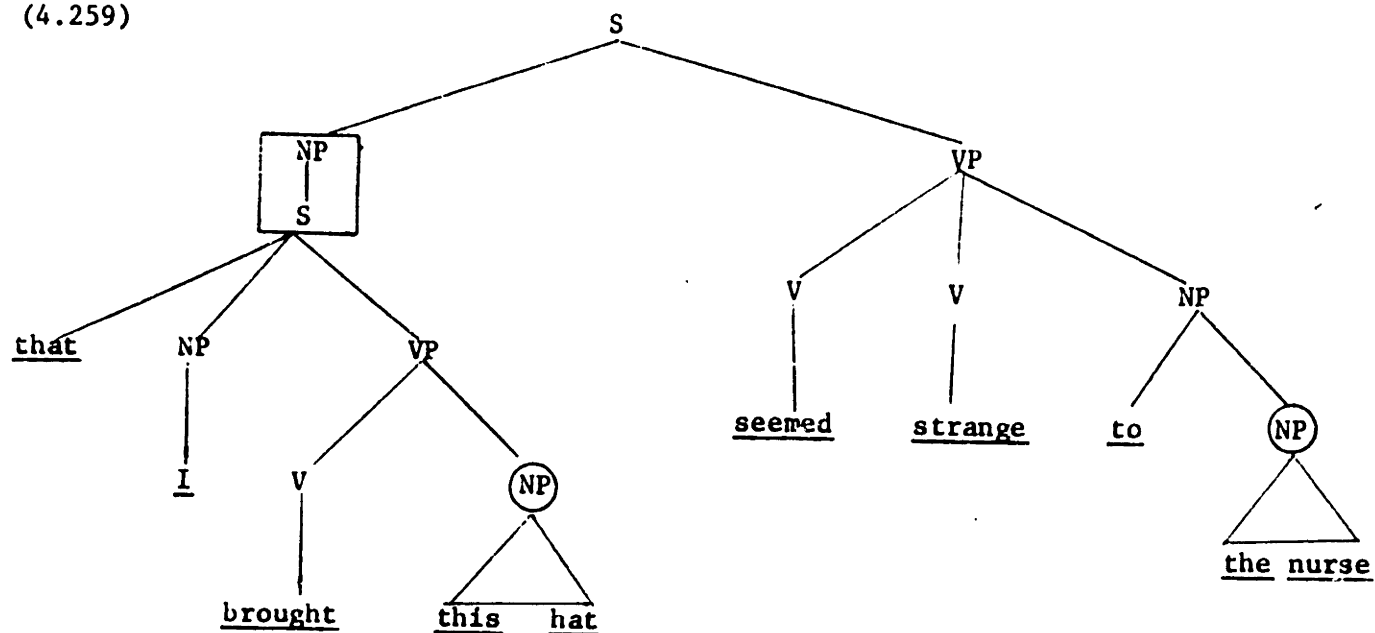
Relativizing either of the circled 'NP's in (4.259) will produce sentences which are not fully acceptable (cf. (4.260)),

> (4.260) a. * The hat which that I brought seemed strange
>
> to the nurse was a fedora.
>
> b. ? The nurse who that I brought this hat
>
> seemed strange to was as dumb as a post.

because both relative clauses in (4.260) will contain the boxed NP over S of (4.259) as an internal constituent. Condition (3.27) will be adequate to characterizing both as being unacceptable, but it will not be able to account for the clear difference in status between (4.260a) and (4.260b). The latter sentence is admittedly awkward, but it can be read in such a way as to be comprehensible. The former

sentence, however, seems to me to be beyond intonational help. I

conclude that (4.260b) should be labeled grammatical but unacceptable,

but that (4.260a) must be deemed ungrammatical. To do this,

(4.254), or some more general constraint, must be assumed to be

operative in English, as well as (3.27).

The second argument for (4.254) concerns the following

two sentences:

> (4.261) a.   I disliked the boy's loud playing of the
>
> piano.
>
> b.   I disliked the boy's playing the piano
>
> loudly.

Lees gives a number of arguments which show these to be different.[32]

I will assume that the derived structure of (4.261a) is that shown

in (4.262), and that of (4.261b) is that shown in (4.263).

(4.262)

```
                    S
          ┌─────────┴─────────┐
         NP                   VP
          │          ┌────────┴────────┐
          I          V                 NP
                     │        ┌─────────┴──────────┐
                 disliked    NP                    NP
                       ┌──────┴──────┐        ┌─────┴─────┐
                     (NP)           NP        P           NP
                    /△\         ┌────┴────┐   │          /──\
                  the boy's     V         NP  of       the piano
                                │          │
                              loud         N
                                           │
                                           V
                                           │
                                        playing
```

(4.263)

```
                         S
             ┌───────────┴────────────┐
            NP                         VP
             ┆              ┌──────────┴──────────┐
             I              V                     NP
                         disliked                  │
                                                   S
                                        ┌──────────┴──────────┐
                                      (NP)                    VP
                                      /─△\            ┌────────┼────────┐
                                    the  boy's        V        NP       ?
                                                   playing  the piano  loudly
```
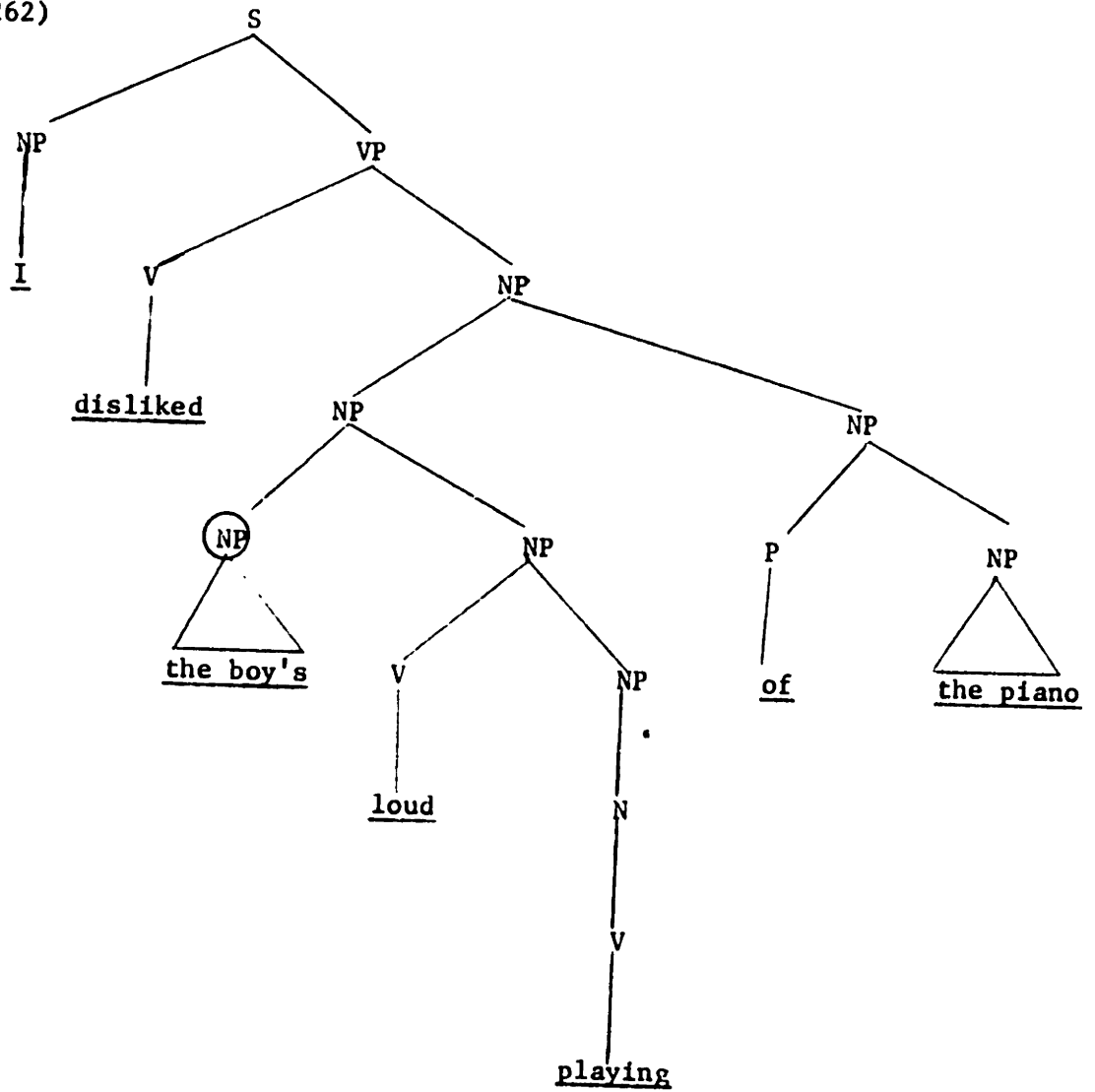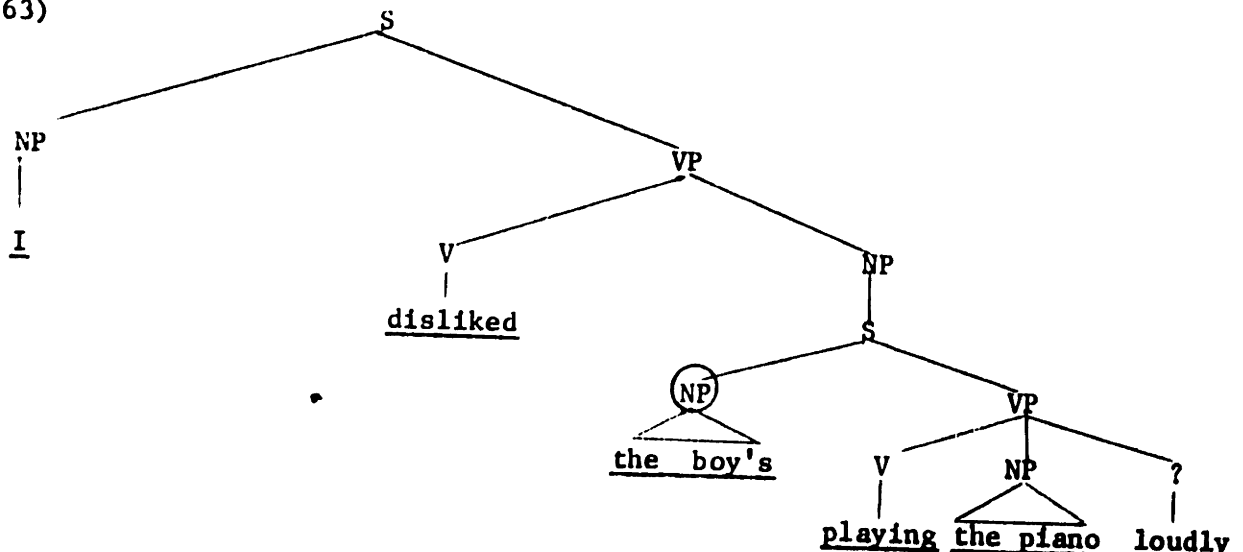
I have assumed that the word _playing_ in (4.262) has the derived status of a noun, to account for the appearance of the preposition _of_ before the object of _playing_, parallel to the _of_ which occurs after such substantivized verbs as _construction, refusal, fulfillment_, etc. (cf. _his construction of an escape hatch, our refusal of help, her fulfillment of her contract_).

That the latter structure has a clausal object, while the former does not, can be seen from the difference in relativizability of the circled NP's in (4.262) and (4.263). This NP can be relativized in the former structure (cf. (4.264a)), but not in the latter (cf. the ungrammaticality of (4.264b)).

(4.264)   a.   The boy whose loud playing of the piano

I disliked was a student.

b. * The boy whose playing the piano loudly

I disliked was a student.

Although the circled NP of (4.262) is on a left branch of an NP when the _Relative Clause Formation Rule_ applies, pied piping can be invoked to effect the adjunction of the boxed NP to the node S which dominates the clause, so a well-formed relative clause will result.

But in (4.263), if the circled NP is moved, the boxed NP cannot pied pipe, because there is a node S which intervenes between the two NP nodes, and under these conditions, pied piping

cannot take place, as was pointed out in § 4.3.1 above.

Note that the object NP of playing, the piano, is relativizable in both (4.262) and (4.263).

    (4.265) a. ? The piano which I disliked the boy's loud playing of was badly out of tune.

             b. The piano which I disliked the boy's playing loudly was badly out of tune.

But if the action nominal or the factive gerund nominal appears in subject position, as in (4.266), the NP the piano can only be relativized out of the action nominal as (4.267) shows.

    (4.266) a. The boy's loud playing of the piano drove everyone crazy.

             b. The boy's playing the piano loudly drove everyone crazy.

    (4.267) a. That piano, $\left\{ \begin{array}{l} \text{?which the boy's loud playing of} \\ \text{the boy's loud playing of which} \end{array} \right\}$ drove everyone crazy, was badly out of tune.

             b. * That piano, $\left\{ \begin{array}{l} \text{which the boy's playing loudly} \\ \text{the boy's playing which loudly} \end{array} \right\}$ drove everyone crazy, was badly out of tune.

How can (4.267b) be excluded? The bottom line of (4.267b) can be blocked on the same grounds as (4.264b): since the subject NP of (4.266b) dominates the node S, pied piping cannot take place. But unless (4.454), the Sentential Subject Constraint, is added to the grammar, the top line of (4.267b) will not be excluded. Note that

even condition (3.27) cannot be invoked here, because this condition
must be reformulated as shown in (4.268).

> (4.268)   Grammatical sentences containing an internal
>   NP which exhaustively dominates an S are
>   unacceptable, unless the main verb of that
>   S is a gerund.

This reformulation is necessary in any case, in order
to account for the difference in acceptability between (4.269a) –
(4.269c) and (4.269d).

> (4.269) a. * Did that he played the piano surprise you?
>
> b. * Would for him to have played the piano
>   have surprised you? ·
>
> c. * Is whether he played the piano known?
>
> d.   Did his having played the piano surprise
>   you?

Thus it appears that there are two reasons for insisting
that both (4.268), the revised version of (3.27), and the Sentential
Subject Constraint be included in the grammar of English. In the
first place, condition (4.268) is not adequate to distinguish between
(4.260a) and (4.260b), and in the second, between (4.267a) and (4.267b).
These two facts indicate the necessity of adding to the conditions
box of English something at least as strong as (4.254).

4.4.3.　　　It will be remembered, in connection with (4.249), that

in the conditions box for Finnish, there is a constraint which prevents

elements of clauses headed by _että_ 'that' from being moved out of

these clauses (cf. the ungrammaticality of (4.249b)).

　　　In her recent paper (Dean (1967)), Janet Dean has pointed

out a condition in English that is probably related to the Finnish

condition. There is a class of verbs in English which can take _that-_

clauses as objects but for which the rule which normally can optionally

delete the _that_-complementizer cannot apply. After _believe_, for

example, the complementizer is optional (cf. (4.249a)), but after

verbs like _quip, snort, rejoice_, etc., the complementizer must be

present, as the ungrammaticality of (4.270b) shows.

　　　(4.270)　a.　Mike quipped that she never wore this hat.

　　　　　　　b. * Mike quipped she never wore this hat.

Dean discovered that no element of the complement clauses of these

verbs can be moved out of them (cf. the ungrammaticality of (4.271)).

　　　(4.271)　a. * Which hat did Mike quip that she never wore?

　　　　　　　b. * Which girl did Mike quip never wore this

　　　　　　　　　　hat?

　　　It is not clear at present how these facts should be

handled. It may be possible to assume that the English conditions

box, like the Finnish one, contains the constraint that no element

may be moved out of _that_-clauses, and that the object clauses of

verbs like _believe_ do not come to be headed by _that_ until after all

reordering transformations have applied, while the object clauses of

verbs like <u>quip</u> are prefixed by <u>that</u> at a very early stage in derivations. This then raises the possibility that the condition that no element be moved out of a <u>that</u>-clause need not be stated in the conditions boxes of Finnish and English, but is instead universal. Dean has suggested (op. cit.) that this condition is only a subcase of a far more general condition, (4.272).

> (4.272)   No element of a subordinate clause may be
>   moved out of that clause.

There are several difficulties with this condition which at present prevent me from accepting it. The first is that it is not strong enough to explain the differences among the sentences in (4.251), and would therefore seem to have to be supplemented by the Sentential Subject Constraint. The second is that (4.272) would incorrectly exclude all the sentences of (2.23), which differ among themselves in acceptability, but some of which seem perfectly normal to me. And the third objection is that elements of clauses with <u>Poss - Ing</u> or <u>for - to</u> complementizers can be relativized, as can be seen from the grammaticality of (4.265b) and (4.273).

> (4.273)   The only hat which it bothers me for her
>   to wear is that old fedora.

That such phrases must be considered to be dominated by S follows from the fact that <u>Reflexivization</u> cannot "go down into" them (cf. the ungrammaticality of (4.274)),

(4.274)   a. * I dislike it for him to tickle myself.

b. * I dislike his tickling myself.

from the fact that elements of these clauses can undergo "backwards" pronominalization (cf. (4.275)),[33]

(4.275)   a.   For Anna to tickle him drives Frank crazy.

b.   Anna's tickling him drove Frank crazy.

and from my proposed explanation of the difference in acceptability between the sentences of (4.264). This last objection cannot be gotten around by modifying (4.272) by attaching a condition that the main verb of the subordinate clause be finite, for no elements of the infinitival and gerund clauses in sentences like (4.276) can be moved, as the ungrammaticality of (4.277) shows.

(4.276)   a.   We donated wire for the convicts to build cages with.

b.   They are investigating all people owning parakeets.

(4.277)   a. * The cages which we donated wire for the convicts to build with are strong.

b. * What kind of parakeets are they investigating all people owning?

These three arguments against Dean's proposed constraint strike me at present as being strong enough to reject it for the time being. It is, however, a bold and important hypothesis, for if it can be established, it will make my Complex NP Constraint and Sentential

Subject Constraint superfluous, thus substantially simplifying both

the theory of language and those grammars in which the latter constraint

is operative. For this reason, a lot of future research should be

directed at the three objections to (4.272) which I have discussed,

to see if they can satisfactorily be explained away.

4.5.   To summarize briefly, in this chapter I have proposed two

universal constraints, the Complex NP Constraint and the Coordinate

Structure Constraint; also, a universal convention of pied piping; and

a variety of language particular constraints, which are to be stated

in particular grammars in a conditions box, which the theory of

language must be revised to provide. I make no claim to exhaustiveness,

and I am sure that the few conditions I have discussed are not only

wrong in detail, but in many major ways. Not only must further work

be done to find other conditions, but to find broader generalities,

such as the condition proposed by Dean, so that the structure of

whatever interlocking system of conditions eventually proves to be

right can be used with maximum effectiveness as a tool for discovering

the structure of the brain, where these conditions must somehow be

represented.

1.   Subscripts indicate identity of reference.

2.   This term is defined in Ross (1967a). There I argue that

     pronouns may only precede the NP they refer to if they

     are dominated by a subordinate clause which does not dominate

     that NP. Cf. also § 5.3 below.

3.   Evidence that this rule must be placed late in the rule

     ordering is given in Lakoff and Ross (op. cit.). Cf. also § 5.1.1 below.

4.   The Japanese words <u>wa</u>, <u>ga</u>, <u>o</u>, <u>ni</u>, etc. have been called

     "particles". They correspond very roughly to case endings

     and prepositions. <u>Ga</u> and <u>wa</u> are adjoined by transformations

     to the right of subject noun phrases, <u>o</u> to the right of
                           <u>ni</u> to the right of
     direct objects,∧agent phrases etc. The syntax of these

     postpositional particles and other problems in Japanese

     syntax have been investigated intensively by Kuroda (cf. Kuroda

     (1965)), and I will not discuss it further here. In the

     word-for-word glosses of Japanese examples, I will leave

     the particles untranslated.

5.   The structure shown in (4.25) is vastly oversimplified and

     the analysis of <u>tabete iru</u> 'is eating' is simply wrong: actually

     <u>iru</u> should be the main verb of a higher sentence into which

the base string <u>kodomo sakana tabe</u> 'child fish eat (stem)' would

be embedded. Also, the determiner <u>sono</u> 'that' would probably not

appear as a constituent of the deep structure of (4.24), but rather

as a feature on the noun <u>sakana</u> 'fish' in the matrix sentence.

But such niceties are not at issue here - (4.25) will serve for

the purpose at hand.

6.   Postal made this proposal in a talk given at the LaJolla

Conference on English Syntax on February 25, 1967.

7.   Professor Barbara Hall Partee has informed me (personal

communication) that in a survey of relative clause constructions

in a wide variety of languages that she conducted, she found

that in languages which exhibit relative pronouns which have

been moved from their original position, these pronouns

invariably appear at the end of the relative clause closest

to the head noun. Relative pronouns thus move leftwards in

English, German, French, etc., and although I at present can

cite no examples of rightward movement, Professor Partee has

assured me that they exist. It therefore seems necessary to

assume that if movement occurs in the formation of Japanese

relative clauses, it must be movement to the right, not to

the left.

These facts point to a needed change in the theory of grammar. In order to account for the facts discovered by Professor Partee, it is necessary to add to linguistic theory a convention for automatically reordering the formal statement of transformational rules. If such a convention is made available, the statement in universal grammar of a relative clause skeleton rule will be possible, for the rule of <u>Relative Clause Formation</u> in Japanese is simply the mirror image of the rule shown in (4.2). In which direction the rule will reorder constituents depends entirely upon whether relative clauses are generated by the rule NP → NP S or by the rule NP → S NP. I will present further evidence which supports this convention for automatic reordering in a paper now in preparation, "Gapping and the order of constituents."

8. Some speakers appear to find (4.40a) and sentences like it grammatical, which indicates that for their dialect, the Complex NP Constraint must be modified somehow. I have no idea how to effect a modification of this principle, which otherwise seems to be universally valid, so I can only indicate the existence of this problem now.

9. For an account of such segmentalization rules, see Postal (1966a).

10. If it should turn out to be possible to treat disjunction as the negation of conjunction, (4.85) will admit of simplification. This problem is discussed in Peters (in preparation).

11. Sentence (4.92b) is perfectly grammatical, and it means 'But she wants to dance, (so) I want to go home.' I have only starred it because it is not related to (4.91).

12. There is evidence, first noted by Chomsky, that a type of adjunction operation is required which produces one of the two structures below, if B is adjoined to A,

```
        A                        A
       / \                      / \
      B   A         or         A   B
```

depending on whether it is adjoined to the left or right of A. The motivation for the creation of the new node A is as follows: in such a sentence as the boy is erasing the blackboard, it seems clear that the result of adjoining the present participle ending, -ing, to a verb should be a node of some sort. But the stress rules will only work properly if the formative erase is dominated exhaustively by the node V (for a discussion of the stress rules of English, cf. Halle and Chomsky (to appear)). This would indicate that the correct derived structure is

```
          V
         / \
        V   ing
        |
      erase  .
```
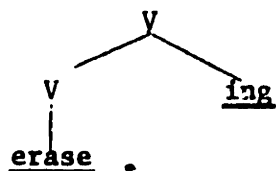
To distinguish this kind of adjunction from what has been called "sister adjunction" (cf. Fraser (1963)), I refer to it as <u>Chomsky-adjunction.</u> It is at present an open question as to whether both types of adjunction need be countenanced within the theory of derived constituent structure. Some consequences of using Chomsky-adjunction in the complement system are explored in Lakoff and Ross (op. cit.), where the proposed analysis of sentence coordination is based in an essential way upon this kind of adjunction.

13. As (4.84) is presently formulated, such a rule would be impossible: no conjunct can be moved. But in § 6.3 below I will show that Lakoff-Peters rule of <u>Conjuct Movement</u> is formally different in one crucial respect from the rules of <u>Relative Clause Formation</u> and <u>Question,</u> and that it is this difference which makes the former possible and the latter two impossible.

14. (4.116a) is acceptable only if strong pauses follow <u>bought</u> and <u>him,</u> i.e., if the second clause of (4.115) has become a parenthetical insert into the first clause and is therefore no longer coordinate with it.

15. This term is Rosenbaum's. Cf. Rosenbaum (1965).

16. Actually, _it_ should be replaced, in (4.130) as well as in (4.126) and (4.128), by a more abstract representation, but this fact has no consequences for my argument.

17. It would probably be possible to order the rules which copy the conjunction and later delete the first of the conjunctions in such a way that at the time at which _Relative Clause Formation_ applied, the NP _the boy_ in (4.133) would still be preceded by _and_, so the variable would not be null and (4.84) could be invoked to explain the ungrammaticality of (4.134). But such a solution, even if it should prove to be possible for English, which has not been demonstrated, would break down in any language whose relative clauses followed their head noun, as in English, and whose conjunctions followed their conjuncts, as is the case in Japanese. It does not seem unlikely that such a language might exist, so the solution I have proposed in the text is powerful enough to work even for such a language.

18. Of course, (4.136b) is not the correct derived structure for the NP _the boy who I saw_, because many details of the correct rule of relative clause formation have been omitted in the formulation given in (4.135).

19. I am not sure of the grammaticality of sentences conjoined

with __and__ whose conjuncts contain both yes-no questions and

WH-questions, e.g.,

       ? Did you have a good time and what did you

       bring me?

       ? What's for supper and is the cat back yet?

I am sure I say such sentences often, but most of them seem some-

how disconnected. At any rate, whatever the exact restrictions

on them may be, they are not my main concern here.

20. I believe it is possible to restrict convention (4.166) to cases

where one noun phrase is contained within another, i.e., that

it is not necessary to generalize it so that it applies to

all category types. So until additional facts turn up which

would force this more general version, I will propose the weaker

one of (4.166).

21. The verb __habe__ 'have' has been moved to the end of the relative

clauses in (4.179) by a rule which moves verbs to the end of all

dependent clauses.

22. Actually, there is some question as to whether the occurrences

of the node S which NP_2 and NP_1 dominate in deep structure

will have been pruned by the time the rule of <u>Relative Clause</u>

<u>Formation</u> applies. At present, I am not sure that pruning must

have already applied. If it has not, the problems under

discussion multiply enormously, for then it would presumably be

necessary to distinguish between sentences with finite main

verbs and those with non-finite main verbs in the revised

version of (4.166).

23. I am grateful to Robin Lakoff for suggesting this descriptive

and picturesque terminology. Just as the children of Hamlin

followed the Pied Piper out of town, so the constituents of

larger noun phrases follow the specified noun phrase when it

is reordered. This choice of terminology from the realm of

fairy tales should not, however, be construed by an overly

literal reader as a disclaimer on my part of the psychological

reality of (4.180).

24. There are certain nomenclative <u>Feinschmeckers</u> who have taken

issue with the formulation of this sentence, pointing out that

following the original Pied Piper was obligatory for all the

children of the town except one, who was lame, so that the

phrase "obligatory pied piping" is a case of terminological

coals to Newcastle. These critics suggest that since convention

(4.180) describes optional accompaniment, such accompaniment

should best be dubbed "fellow traveling," or the like, with the
term "pied piping" being reserved for cases of mandatory accompaniment,
such as those described below.

While the point they make is valid, I have chosen to disregard it,
eschewing an exact parallel to the fairy tale in question in the
interests of a less elaborate set of terms.

25. The fact that NP_1 does not dominate S, and that (4.188a) is
still grammatical, simply indicates that (3.26) is formulated
incorrectly, and that Condition 1 on that rule must be
revised. It is abandoned entirely in (5.57), the final statement of this rule.

26. I have starred (4.190a) because it is unrelated to (4.190b) --
the how in (4.190a) does not replace to what extent, but rather
something like in what respect or in what way. Note also that
the echo-questions for these two sentences differ: (4.190a) is
related to Peter is sane HOW? but (4.190b) to Peter is HOW sane?
Similarly, although (4.191a) is grammatical, it is not related
to (4.191b).

27. Note that place is ambiguous: it can mean 'residence, dwelling',
and in this sense, the preposition can be left behind (Whose
place do you live at?).

28. This problem is discussed at some length in Keyser (1967).

29. It may be that (4.237) is not grammatical unless <u>Conjunction</u> <u>Reduction</u> applies again to reduce the parenthesized <u>are</u>, but I will disregard this problem here.

30. Later rules will convert (4.242b) into <u>the boy's uncle and</u> <u>aunt's grandmother</u>.

31. There is, however, an additional restriction which pertains to structures like (4.253): while it is possible to move the boxed NP, it is not possible to move the circled one -- the string *<u>Which cars were the hoods of damaged by the explosion?</u> is ungrammatical. It is not in general the case that the preposition <u>of</u> in the NP <u>the hoods of the cars</u> cannot be stranded (witness the grammaticality of <u>Which cars did the</u> <u>explosion damage the hoods of?</u>) so another clause must be added to condition (4.206), making pied piping in the environment [P __]$_{NP}$ also obligatory where the prepositional phrase is dominated by an NP which is immediately dominated by S. In passing, it should be noted that the statement of this condition will require quantifiers or some equivalent notation, such as node subscripts. This means that the formal apparatus which

is available for stating conditions in a conditions box must
be stronger than that available for stating conditions on
particular rules.

32. Cf. Lees (1960), pp. 65-67. I will follow his terminology in
calling the nominalization in (4.261a) the <u>action nominal</u>, and
I will refer to the nominalization in (4.261b) as the <u>factive
gerund nominal</u>.

33. For a fuller discussion of the conditions under which "backward",
or right-to-left, pronominalization is possible, as well as some
remarks about the notion of <u>subordinate clause</u>, cf. Ross (1967a)·
and § 5.3 below.