

NON-CONJUNCTIVE
AND'S

*

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.

N.B.

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.

not necessarily

not so bad

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.

* no it isn't, cuz 100a asserts "I bought the whisky" and 105a only asserts the intention to do so

- (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 $\left\{ \begin{array}{l} \text{not to} \\ \text{to not} \end{array} \right\}$ 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.

consider and as simple-mentiger

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.

* |

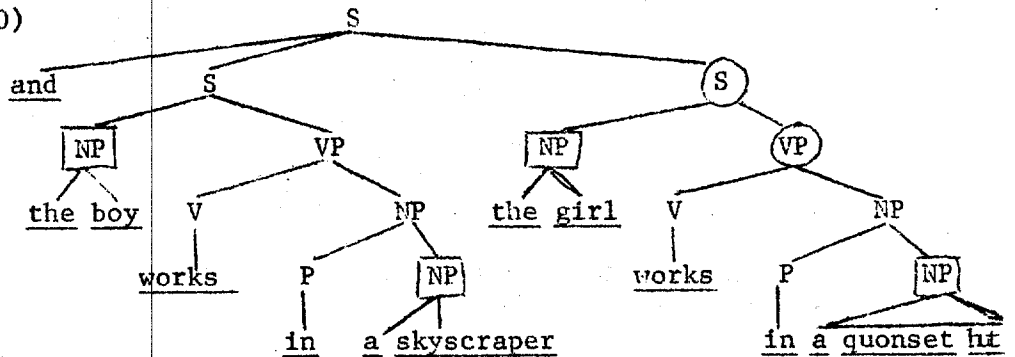
Other dumm

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 Capping (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)



Gapping doesn't delete V or VP or S

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))

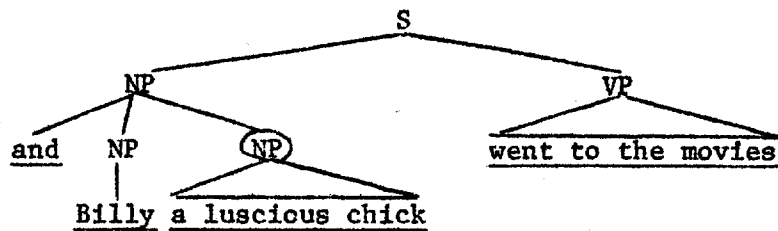
- (4.111) a. *Which boy works in a skyscraper and the girl in a quonset hut?
- b. *The skyscraper which the boy works in and the girl in a quonset hut belongs to Uncle Sam.
- c. *The girl who the boy works in a skyscraper and in a quonset hut has a dimple on her nose.
- d. *Which quonset hut does the 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 and to with and then adjoin the with-phrase to the main VP of the sentence.¹³

(4.112) Billy went to the movies with a luscious chick.

(4.113)

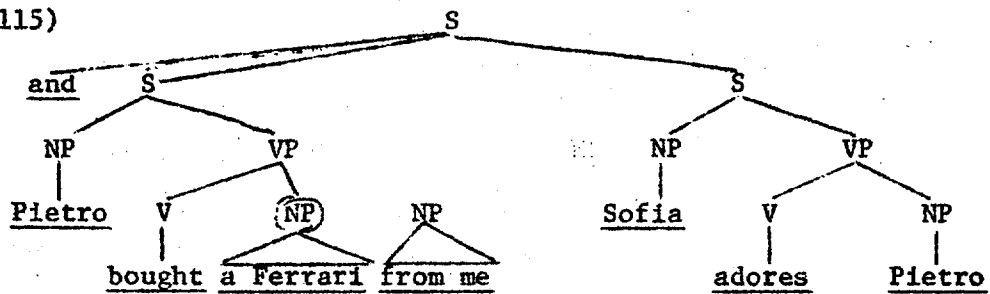


The circled NP is not relativizable unless ^{Ex-} Conjunct Movement has applied (cf. (4.114)):

- (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)



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.

NOTE for paper */// 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.

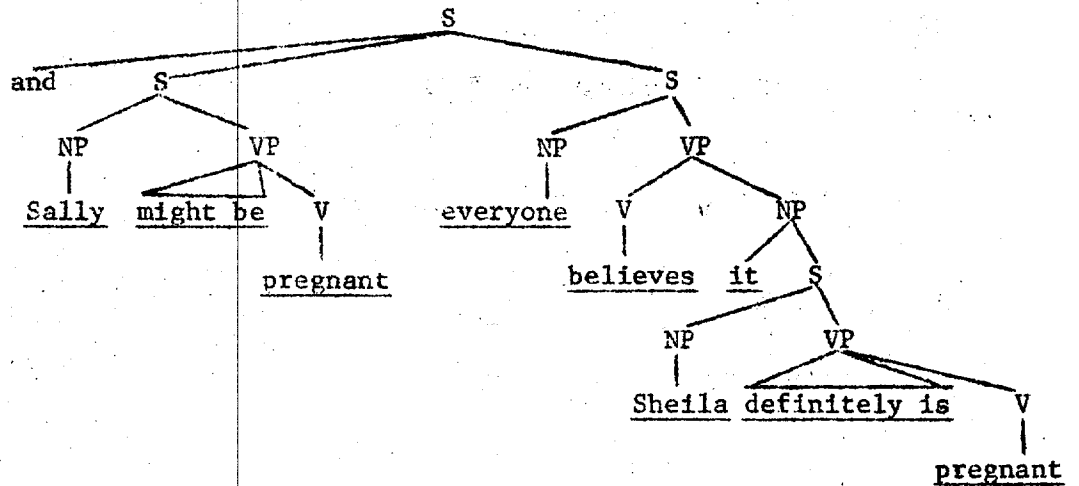
4.2.4.

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 Lakoff 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.

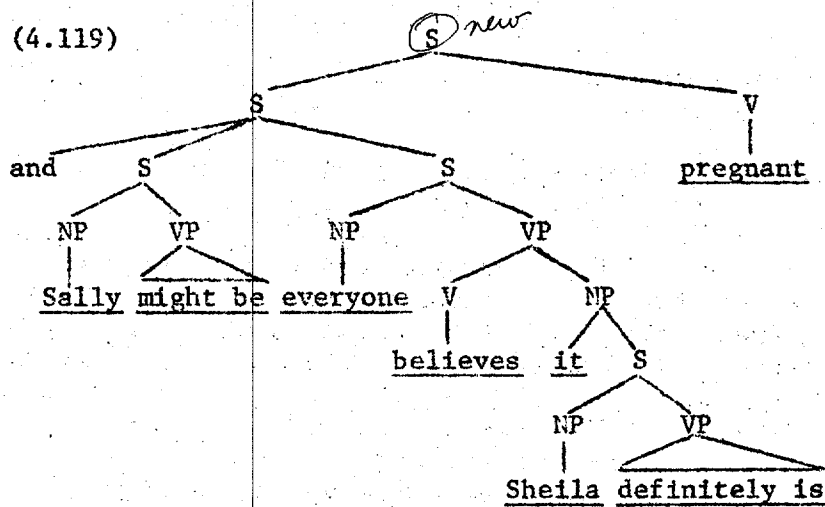
- (4.117) a. Sally might be pregnant, and everyone believes Sheila definitely is pregnant.
 b. Sally might be, and everyone believes Sheila definitely is, pregnant.

We propose a rule of Conjunction Reduction which Chomsky-adjoints 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)

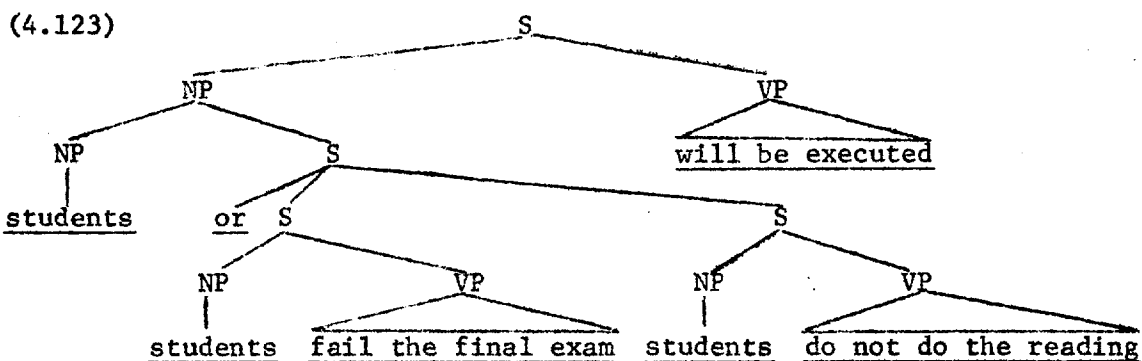


It is important to note that Conjunction Reduction must work "across the board" -- the element adjoined to the coordinate node must occur in each conjunct. Thus (4.120a) can be converted to (4.120b), but not (4.121a) to (4.121b).

- (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.



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

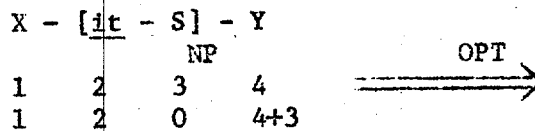
- (4.125) a. John has been captured by the cops and I'm afraid he'll talk.
 b. I heated up the coffee and Sally wiped the table off.
 c. That Peter showed up is a miracle and it is doubtful that he'll ever come again.

4.2.4.2. At present, since I 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, Extrapolation, 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-adjointed 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:

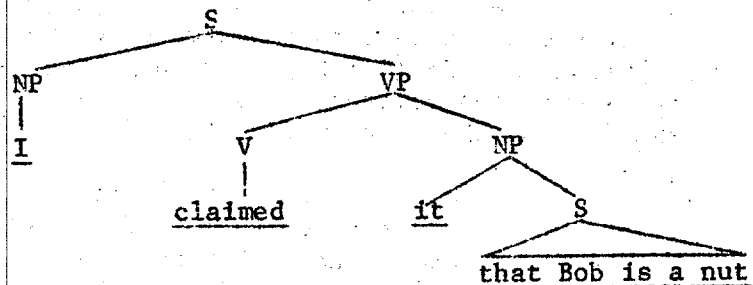
The rule of Extrapolation sister-adjoints the sentence to a variable, as can be seen from the formal statement of this rule in (4.126).

(4.126) Extrapolation



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)



Thus the next rule in the ordering, It Deletion, could be formulated as shown in (4.128).

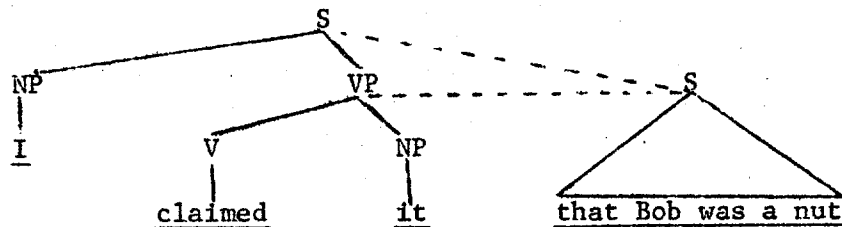
*where is (4.2) ?
On p. 65!*

(4.128) It Deletion

X - [<u>it</u> - S] - Y				
		NP		
1	2	3	4	OBLIG
1	0	3	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)



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.

too strong

(4.130) X - <u>it</u> - S - Y				
1	2	3	4	OBLIG
1	0	3	4	→

(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 it¹⁶ 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.

right!

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)).

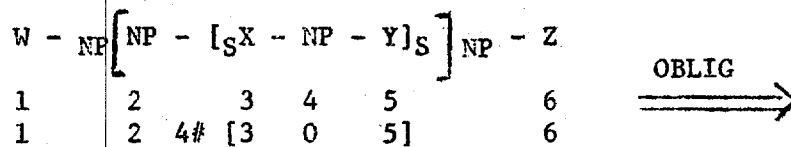
(4.133) The boy and the girl embraced.

(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

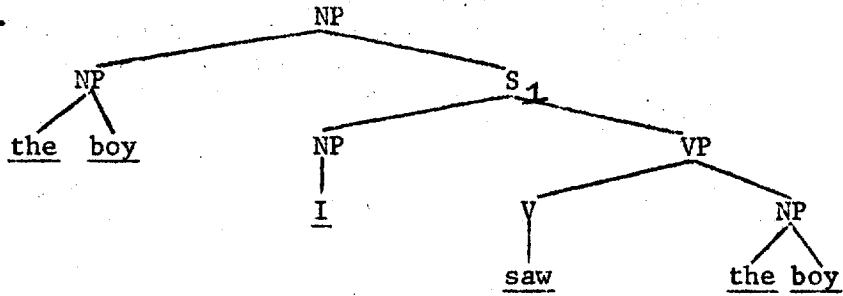
coref NP moved out of embedded S



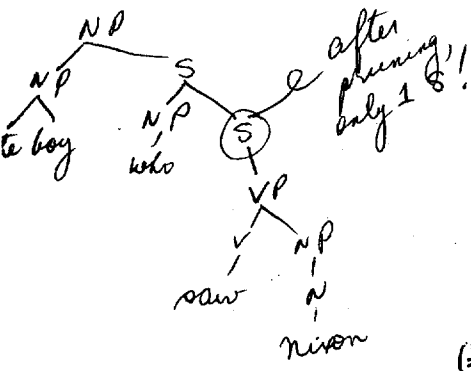
Condition: 2 = 4

* 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

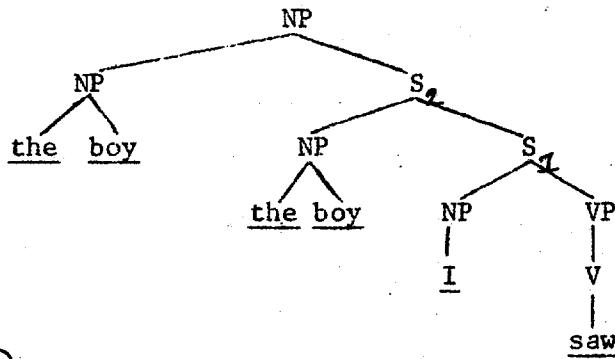
(4.136) a.



N.B.
the boy # the boy saw Nixon #
↓



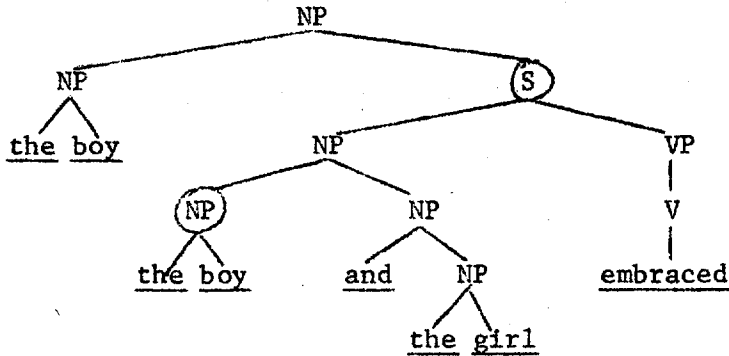
b.



(CSC)

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)



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.

← how, now?

*

Oh. Maybe he's saying: Rel Cl Form moves relativized NP out of embedded S. BUT if rel'd NP is in a coord structure, CSC blocks its getting anywhere. Yes.

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 { and / or } 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

2 WH Qs
 IMP + {Spec / Fv}
 2 {yes-no Q / past}
 WH Q + Yes

doesn't explain this to me

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 the boy in (4.133) that 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 Relative Clause Formation 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 whether-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 { and / or } 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 mita '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 sakana 'fish' with the question word nani 'what' and add the question morpheme ka 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 $\left. \begin{array}{l} \text{mita ka (to)} \\ \text{mite} \\ \text{mi} \end{array} \right\}$, 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. (4.149)), 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 please 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

{ the cat is dead
I've studied Greek
Jack left }

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.

at least future

*good out**

** remember for paper that it's a large Q*

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. *not so bad*
 b. ?I suspect that the contract which I wanted to peruse before filing away may have some loopholes. *OK*
 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. *OK*
- (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. *OK*

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

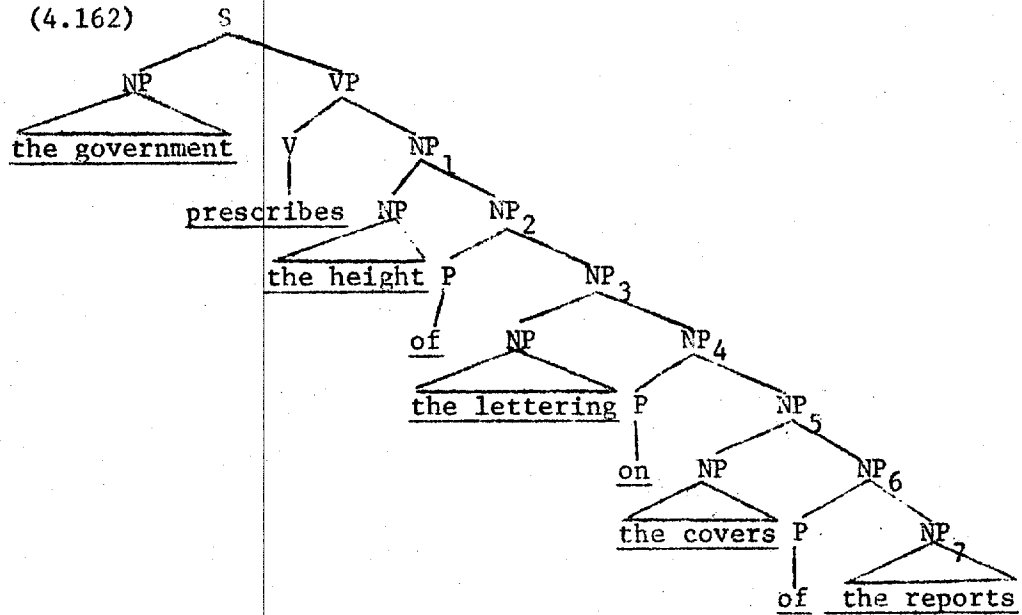
the sentences of (4.155) which are exactly reversed in the sentences of (4.161). That is, while (4.155a) is far more awkward for me than (4.155b), which in turn is slightly more awkward than the fully grammatical (4.155c), in (4.161), it is the a-version which is fully grammatical, the b-version which 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 Appositive Clause Formation, 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.



- (4.163) 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) $W - \overset{\text{reports}}{NP} - [S^X - \left\{ \begin{array}{c} \emptyset - NP \\ \left[\begin{array}{c} NP \\ NP \end{array} \right] P - NP \end{array} \right\} - Y]_S - Z$

1	2	3	4	5	6	7	⇒ OBLIG
1	2[45]#[3	0	0	6]	7		

Condition: 2 = 5

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

$$(4.165) \quad W - \left[\begin{array}{c} \text{NP} \\ \text{NP} \end{array} - [S^X - \left\{ \begin{array}{c} \emptyset - \text{NP} \\ [\text{NP} \text{NP} p - \text{NP}] \\ [\text{NP} \text{NP} P [\text{NP} \text{NP} p - \text{NP}]] \end{array} \right\} - Y]_S \right] \text{NP} - Z$$

1	2	3	4	5	6	7	OBLIG
1	2[4 5]#[3		0	0	6]	7	7 \Rightarrow

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 NP₁ - NP₇ 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 NP₇, the reports, or NP₆, of the reports, or NP₅, 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;

"1st"
PIED
PIPING
C

see p. 114 for polished version

- (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 always 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.

heavier than
Q

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.

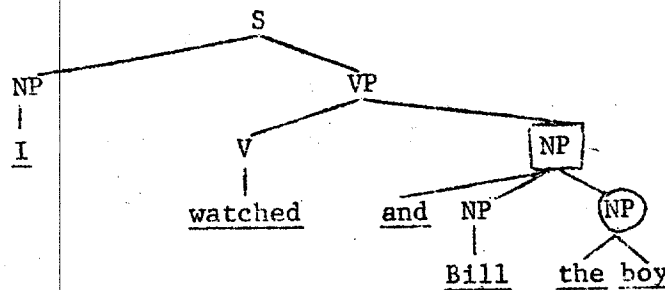
- (4.169) a. Which Greek authors does he have books by?
 b. *By which Greek authors does he have books?

but note:
"by" is a funny prep. related to story verbs

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):

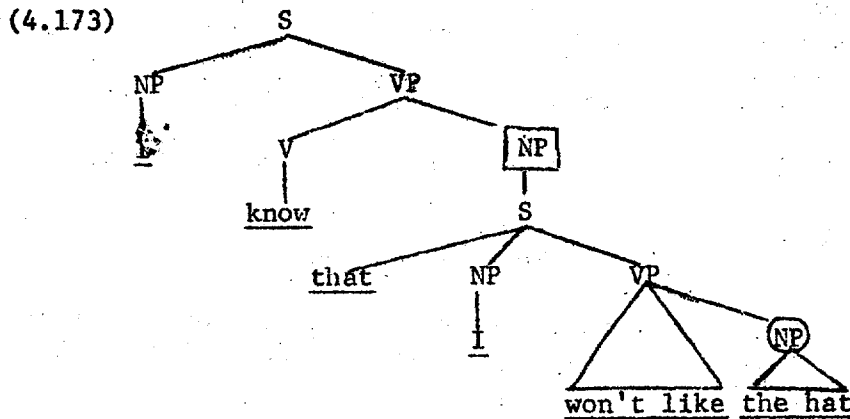
(4.171) *The boy who I watched Bill and was vain.

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).



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.

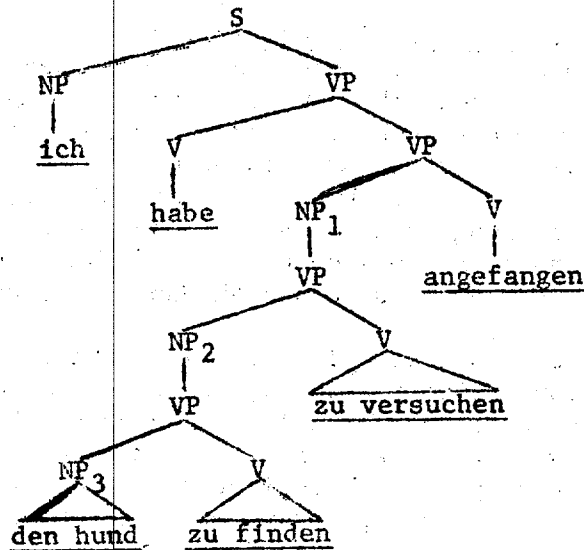
(4.175) *They will give me a hat that I won't like which I know.

* 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 NP, 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 Relative Clause Formation 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.'

Wow!

In (4.179a), only the specified node, NP₃ in (4.177), has been preposed, while in (4.179b), the phrase dominated by NP₂, which contains NP₃, has been preposed, and in (4.179c), the largest NP, NP₁, 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 Convention²³

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. 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 Conjunction Reduction, 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) The Left Branch Condition

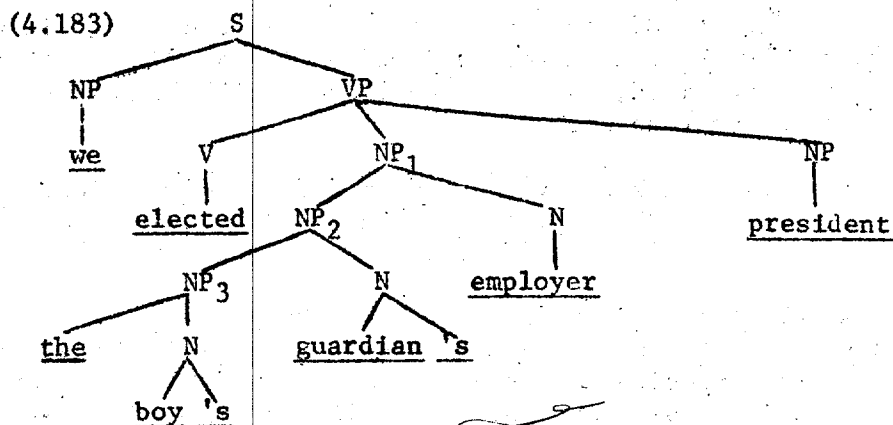
No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule.

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 boy, only one output is possible -- (4.184a)

the boy's guardian's employer



- (4.184) a. The boy whose ^{boy's} guardian's employer we elected president ratted on us. _{NP1}
- b. *The boy [whose guardian's] we elected employer president ratted on us. _{NP2}
- c. *The boy (whose we elected guardian's employer president ratted on us. _{NP3}

Sentence (4.184c) is excluded by (4.181), because the rule of Relative Clause Formation has moved the lowest NP, NP₃, from the left branch of NP₁. In (4.184b), it is NP₂ 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, NP₁, can be moved to the front of the sentence, and when this happens, (4.184a) is the result.

NOTE

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	OPT
1	2	3	⇒
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.

? = Y movement?

✓ If rule (4.185) is applied to (4.183), once again it will be seen that only NP₁ can be topicalized, as in (4.187a). If either NP₂ or NP₃ 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), Complex NP Shift, 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 NP₁ over president (cf. (4.188a)),²⁵ but neither NP₂ nor NP₃ 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 Question Rule is subject to the condition: if NP₃ in (4.183) is questioned, it cannot be moved to the front of the sentence alone -- pied piping must apply to carry NP₁ 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?

hmm 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?

*i.e. a ≠ b
 (a ok on diff reading)*

* // 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

*how = ~~in~~ what way
 to what degree*

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.

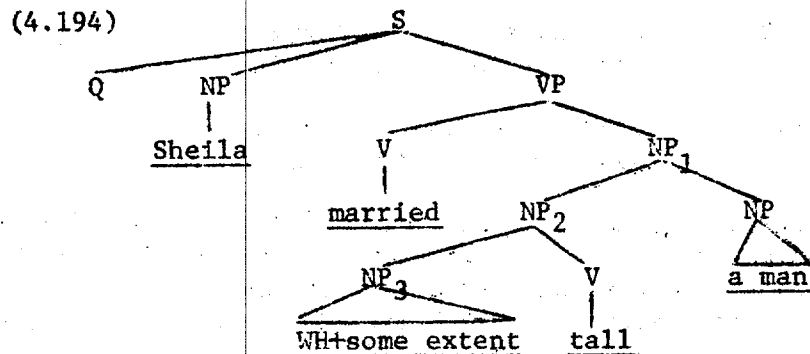
(4.192) Sheila married that tall a man. *"to that degree"*

(4.193) a. How tall a man did Sheila marry? *"to what degree?"*

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 Question Rule applies is that shown in (4.194),



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 genüsslich '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 fast 'almost' normally precedes the adjective it modifies, but it can follow it (cf. (4.196)). The adverb sehr '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 fast around hübsch in (4.196) be made obligatory for degree adverbs like sehr. 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 Topicalization, the fact that fast can be topicalized with or without hübsch (cf. (4.198)), but that sehr cannot be topicalized by itself (cf. (4.199)) is accounted for by the Left Branch Condition.

- (4.198) a. Fast hübsch ist Walburga.
 Fast ist Walburga hübsch.

 (4.199) a. Sehr hübsch ist Liselotte.
 *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 Topicalization and Question 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 slept 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]_{NP}.

* The three constraints discussed in this section -- (4.181), (4.200), and (4.206) --^a 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 do away with, make up to, sit in on, get away with, 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. **I'd like to do aw*
 b. *To whom is she trying to make up now? **she often tries to make up*
 c. *On that meeting I'd like to sit in. *? * I often 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.

perhaps herein lies diff
He often speaks up/out

Similar facts obtain for such syntactic idioms as get wind of, make light of, get hold of, 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).