Chapter 2

THE A-OVER-A PRINCIPLE

2.0.   In a paper written for the 1962 Ninth International Congress

of Linguists, "The logical basis of linguistic theory" (Chomsky (1964a)),

on p. 930-931, while discussing the relative clause transformation and

the question transformation, Chomsky makes the following statement:

> "The same point can be illustrated by an example of a
> rather different sort. Consider the sentences:
>
> (6) (i)   who(m) did Mary see walking toward the
>   railroad station?
>   (ii)   do you know the boy who(m) Mary saw
>   walking to the railroad station?
>
> (7) Mary saw the boy walking toward the railroad
>   station.
>
> (7) is multiply ambiguous; in particular it can have
> either the syntactic analysis (8i) or (8ii)
>
> (8) (i)   NP - Verb - NP - Complement
>   (ii)   NP - Verb - NP
>
> where the second NP in (8ii) consists of a NP
> ("the boy") with a restrictive relative clause.
> The interpretation (8ii) is forced if we add "who
> was" after "boy" in (7); the interpretation (8i)
> is forced if we delete "ing" in (7). But (6i,6ii)
> are not subject to this ambiguity; the interpretation
> (8ii) is ruled out, in these cases. Once again,
> these are facts that a grammar would have to state
> to achieve descriptive adequacy. (Notice that
> there is a further ambiguity, where "Mary" is
> taken as the subject of "walk", but this is not
> relevant to the present discussion.)
>
> The problem of explanatory adequacy is, again,
> that of finding a principled basis for the factually
> correct description. Consider how (6i) and (6ii)

must be generated in a transformational grammar
for English. Each must be formed by transformation
from a terminal string S underlying (7). In
each case, a transformation applies to S which
selects the second NP, moves it to the front of
the string S, and replaces it by a wh-form.[15] [I
have not quoted footnote 15 here, for it does not
bear on the A-over-A principle-JRR] But in the case
of (7) with the structural description (8ii), this
specification is ambiguous, since we must determine
whether the second NP -- the one to be prefixed --
is "the boy" or "the boy walking to the railroad
station," each of which is an NP. Since trans-
formations must be unambiguous, this matter must
be resolved in the general theory. The natural
way to resolve it is by a general requirement
that the dominating, rather than the dominated,
element must always be selected in such a case.
This general condition, when appropriately formalized,
might then be proposed as a hypothetical linguistic
universal. What it asserts is that if the phrase
X of category A is embedded within a larger
phrase ZXW which is also of category A, then
no rule applying to the category A applies to
X (but only to ZXW)."

It is the principle stated in this last sentence which I
will refer to as the A-over-A principle. In terms of tree diagram
(2.1), the principle asserts that all transformations which refer
to A must apply to the topmost instance of A in (2.1), not the
dominated A, which I have circled.

(2.1)
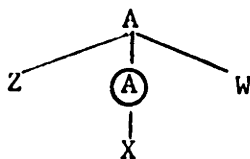
2.1.   Chomsky, in the course of revising the paper quoted above for separate publication as the monograph <u>Current Issues in Linguistic Theory</u> (Chomsky 1964b), realized that the A-over-A principle was too strong. On page 46, in footnote 10, he gives the examples "who would you approve of my seeing?", "what are you uncertain about giving to John?", and "what would you be surprised by his reading?", where in each case the question word, <u>who</u> or <u>what</u>, itself an NP, has been moved out of another NP ($[_{NP}$ <u>my seeing something</u>], $[_{NP}$ <u>giving something to John</u>], $[_{NP}$ <u>his reading something</u>])[1]. Other examples of this sort are not difficult to construct, and there are even cases where the relative clause transformation can move either a dominated NP or any one of an unbounded number of NP's which dominate it.

(2.2)
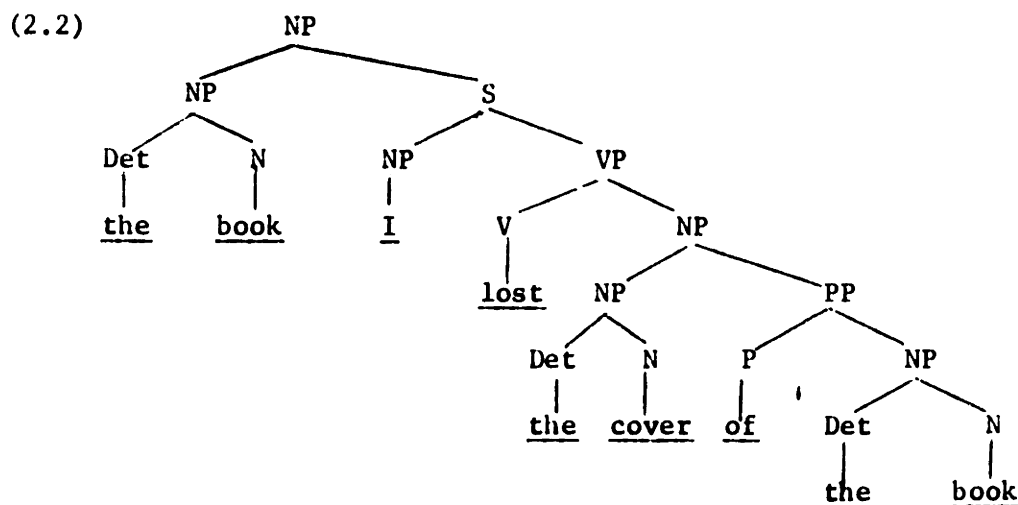
The relative clause rule[2], when applied to (2.2), will produce either <u>the book, the cover of which I lost</u>, or <u>the book which I lost</u>

<u>the cover of</u>, the second of which would be ruled out by the A-over-A

principle. The example can be made more complicated by embedding

the NP in ever larger NP's, and as far as I know, this process

can be repeated without limit. Thus if the structure underlying (2.3)

(2.3)   The government prescribes the height of the

lettering on the covers of the reports.

is embedded as a relative clause into an NP whose head noun is

<u>reports</u>, the relative clause rule must produce (at least) four

relative clauses: <u>the reports, the height of the lettering on</u>

<u>the covers of which the government prescribes; the reports, the</u>

<u>lettering on the covers of which the government prescribes the</u>

<u>height of; the reports, the covers of which the government</u>

<u>prescribes the height of the lettering on</u>; and <u>the reports which</u>

<u>the government prescribes the height of the lettering on the</u>

<u>covers of</u>. The problem of how to formulate the relative clause

rule so that it will produce all four of these is an important

and difficult one which I will discuss in some detail later

(cf. §4.3 below); but for the purposes of the present discussion

it is enough to note that the A-over-A principle would exclude

all but the first of these four clauses. Many other examples of

the same kind, which show that the principle as originally stated

is too strong, can be found, so it would appear that it must

either be modified somehow, or abandoned and replaced by some

weaker principle. I have not been able to find any successful

modification, and therefore, I have pursued the latter course.

2.2. Of course, it was not merely to handle certain restrictions on question and relative clause formation that the A-over-A principle was proposed. And it is incumbent upon anyone who wishes to modify or replace this principle to take into consideration all cases which it dealt with satisfactorily. As far as I know, the following is a complete list of all cases which the principle handled convincingly. In all of these, I have been able to construct an alternative explanation which still allows the generation of such sentences as were demonstrated in § 2.1 to be improperly excluded by the A-over-A principle. In all of the cases but one, I will not present here the alternative I have found, but rather postpone the explanation until a more natural time in the sequence of exposition. For ease of reference, I will repeat here several examples which I have already discussed, so that all cases which seem to support the A-over-A principle are grouped together.

A. Elements of relative clauses may not be questioned or relativized. Thus, the sentence I chased [the boy who threw [a snowball] at our teacher] can never be embedded as a relative clause in an NP whose head noun is snowball: sentence (2.4) is ungrammatical.

(2.4) * Here is the snowball which I chased the

boy who threw at our teacher.

It is easy to see how the A-over-A principle

would exclude this: in the source sentence the NP <u>a</u>

<u>snowball</u> is embedded within a larger NP <u>the boy who</u>

<u>threw a snowball at our teacher</u>, and the principle

dictates that only dominating, not dominated, nodes can

be affected by the operation of a rule.

This restriction also applies to elements of

reduced relative clauses (i.e., those in which the

initial <u>which is</u> has been deleted[3]): the NP <u>bikinis</u>

is impossible to question or relativize in the following

sentence: <u>she reported</u> [<u>all the girls wearing</u>
                           NP

[<u>bikinis</u>]] <u>to the police</u>.   Thus the following question
NP
is impossible:

(2.5) * Which bikinis did she report all the

girls wearing to the police?

B.   Elements of sentences in apposition to such sen-

tential nouns as <u>fact</u>, <u>idea</u>, <u>doubt</u>, <u>question</u>,

etc., cannot be questioned or relativized.

Thus the sentence <u>Tom mentioned</u> [<u>the fact that</u>
                                     NP

<u>she had worn</u> [<u>a bikini.</u>]] cannot be embedded
                 NP
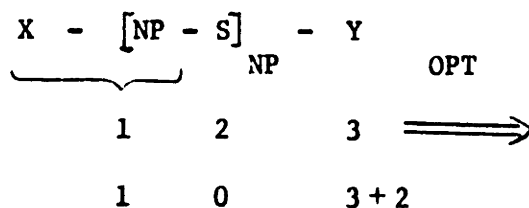as a relative clause into an NP whose head

noun is <u>bikini</u>: sentence (2.6) is ungrammatical:

(2.6) * Where's the bikini which Tom mentioned

the fact that Sue had worn?

Once again, it is easy to see how the A-over-A

principle can be made use of in excluding this sentence.

C.   An extraposed clause may never be moved outside

"The first sentence up," as was discussed

briefly in § 1.0. Assuming that an approximately

correct formulation of the rule for <u>Extraposition</u>

<u>from NP</u> is the one which was given in (1.10),

which I repeat here for convenience,

(1.10) <u>Extraposition from NP</u>

$$X \; - \; \underbrace{[NP \; - \; S]}_{NP} \; - \; Y \qquad OPT$$

$$\begin{array}{cccc} 1 & 2 & 3 & \Longrightarrow \\ 1 & 0 & 3+2 & \end{array}$$

we see that unless it is somehow restricted, it

will have two results when it is applied on the

topmost cycle of the structure shown in (2.7).

(2.7)
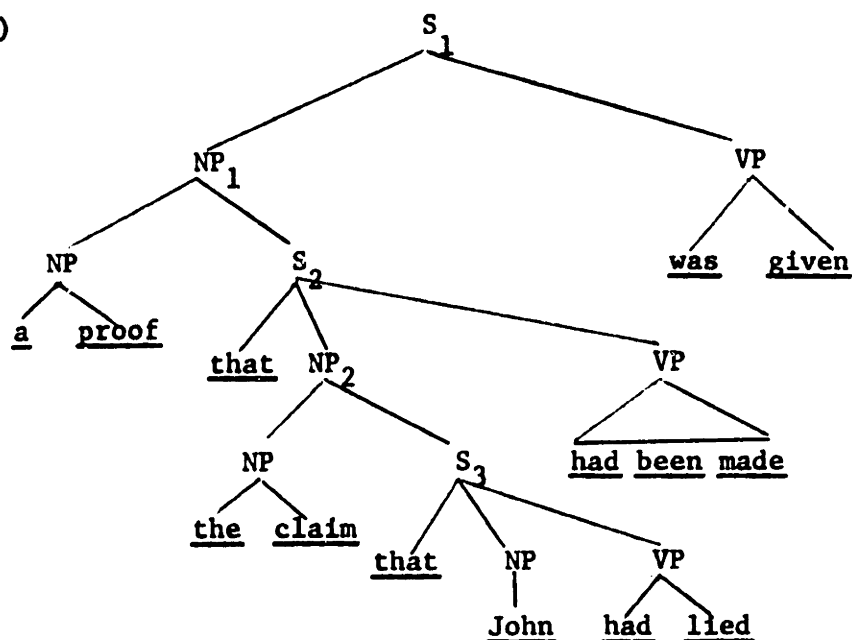
Either S_2 (the subscripts have no systematic significance and are merely inserted as an aid to exposition) could be moved to the end of S_1, which would yield the grammatical sentence (2.8),
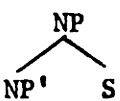
> (2.8)   A proof was given that the claim that
>
> John had lied had been made.

or S_3 could be moved to the end of S_1, which would result in the ungrammatical (2.9),

> (2.9) * A proof that the claim had been made was
>
> given that John had lied.

Sentences like (2.9) could be avoided if the A-over-A principle was strengthened somewhat so that if a P-Marker had two proper analyses with respect to

the structural index of some transformation[4], where

one proper analysis "dominated" the other, in a sense

which is intuitively fairly clear, but would probably

be difficult to state formally, then the transforma-

tion in question would only perform the operations

specified in its structural change[5] with respect to

the "dominating" proper analysis. Begging the question

of how these notions could be made precise, it should

be clear that the sequence of nodes $[NP \quad S]_{NP}$ which

is immediately dominated by NP_1 in (2.7) "dominates",

in the intended sense, the sequence of nodes $[NP \quad S]_{NP}$

which is immediately dominated by NP_2; so Extraposition

from NP could not produce (2.9) from (2.7), if the

strengthened version of the A-over-A principle which

was sketched immediately above were adopted.

D.   In a relative clause structure, $\overset{\displaystyle NP}{\overset{\displaystyle \bigwedge}{NP' \quad S}}$, it is

not possible to question or relativize the

dominated NP'. This is the case discussed

by Chomsky in the passage quoted in § 2.0

above. An example of the kind of sentence

that must be excluded is the following: it

is not possible to question (2.10) by moving

someone to the front of the sentence and

leaving the relative clause who I was

acquainted with behind.

(2.10)   He expected $[[someone]_{NP}$ who I was

acquainted with$]_{NP}$ to show up.

Thus (2.11) is ungrammatical:

(2.11)   * Who did he expect who I was

acquainted with to show up?

In (2.10), if the NP someone is to be questioned,
the whole NP which dominates it, someone who I was
acquainted with, must be moved forward with it, yielding
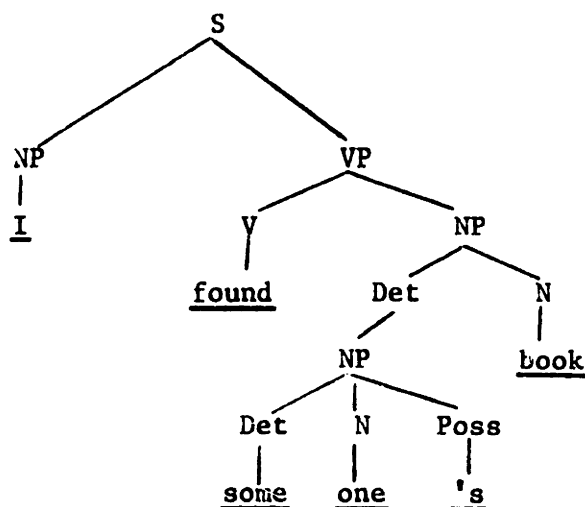(2.12), or, by later extraposition, (2.13)

(2.12)   Who who I was acquainted with did he

expect to show up?

(2.13)   Who did he expect to show up who I

was acquainted with?

It should be obvious how the A-over-A principle
would exclude (2.11).

E.   A NP which is exhaustively dominated[6] by a

Determiner cannot be questioned or relativized

out of the NP which immediately dominates that

Determiner. Thus, from (2.14) it is impossible

to form (2.15):

(2.14)

```
                        S
                   ╱        ╲
                 ╱            ╲
               NP             VP
                │          ╱      ╲
                I        V          NP
                      found      ╱     ╲
                              Det        N
                             ╱            │
                           NP            book
                        ╱   │   ╲
                      Det    N    Poss
                       │     │     │
                      some  one    's
```

(2.15) * Whose did you find book?

Only (2.16) is possible:

(2.16)   Whose book did you find?

and the A-over-A principle correctly makes this assertion.

F.   An NP which is a conjunct in a coordinate NP

        structure cannot be questioned or relativized.

        Thus, in (2.17), neither of the conjoined NP's

        may be questioned -- (2.18) and (2.19) are both

        impossible.

        (2.17)   He will put the chair between$_{NP}$ [$_{NP}$ [some

                  table]$_{NP}$ and [$_{NP}$ some sofa]$_{NP}$]$_{NP}$.

        (2.18) * What sofa will he put the chair bet-

                   ween some table and?

        (2.19) * What table will he put the chair

                   between and some sofa?

Once again, the A-over-A principle will exclude these last two sentences.

G.   The last example was suggested by James McCawley (cf. McCawley (1964)). He points out that if the **Adjective Shift Rule**, the rule which permutes a reduced relative clause with the noun it modifies, if the clause is only a single adjective, and not a phrase, is formulated as in (2.20),

(2.20)   X   N   Adj   Y
          1   2   3   4 $\Longrightarrow$
          1 3 2   0   4

Then it is necessary to invoke the A-over-A principle; for otherwise, when **which is** has been deleted from (2.21), the adjective **big** will permute with the noun **case**, instead of with the whole compound noun **book case**.

(2.21)
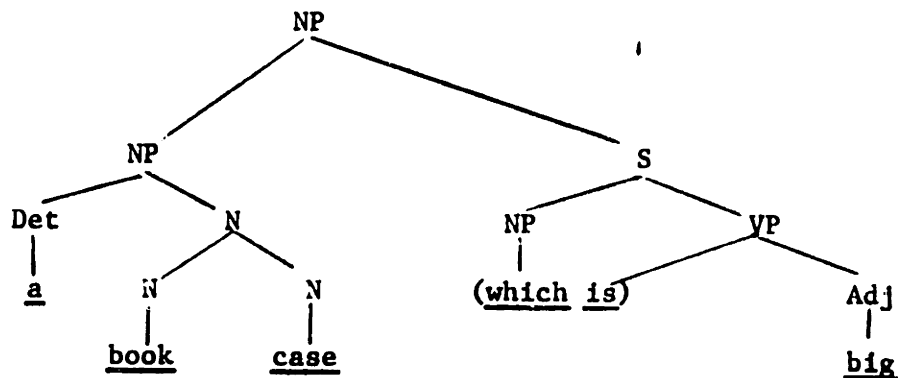
Thus, without the stronger version of the
A-over-A principle which was discussed above
in connection with Extraposition from NP,
rule (2.20), when applied to (2.21) would
yield the incorrect * a book big case
instead of the desired a big book case.

2.3.   As was stated above, I have been able to find alternative
explanations for all seven of the cases discussed in § 2.2 above.
Cases A, B, and C will be accounted for by the Complex NP Constraint,
which will be discussed below, in § 4.1. In case D, ungrammatical
sentences like (2.11) will be shown to be excluded by either of two
independent conditions: the Complex NP Constraint of § 4.1, or the
Pied Piping Convention, which will be discussed in § 4.3, in connection
with relative clauses. The Pied Piping Convention will also be used
to exclude the ungrammatical sentences which arose in case E. And
case F will be accounted for by a special condition of great
generality which will be discussed in § 4.2 -- the Coordinate
Structure Constraint.

    Case G remains to be explained without invoking the
A-over-A principle, and it seems to me that the most likely line
of explanation lies in rejecting the assumption that the correct
statement of the Adjective Shift Rule is the one given above in
(2.20). The rule of (2.20) must have many restrictions placed on it,

for otherwise it will transform I painted it red into the ungrammatical

* I painted red it [7], and we showed the children untranslatable passages

into * we showed the untranslatable children passages, etc. Clearly

it is necessary to restrict the operation of this rule to adjectives

which are part of the same NP as the N over which the adjective

permutes. One simple way to do this would be to modify (2.20) so

that it is stated as shown in (2.21):

$$(2.22) \quad X \quad [_{NP} \text{ Det} \quad - \quad N \quad - \quad \text{Adj}]_{NP} \quad - \quad Y$$

$$\underbrace{\phantom{X \quad [_{NP} \text{ Det}}}$$

$$1 \qquad\qquad 2 \qquad 3 \qquad\qquad 4 \Longrightarrow$$

$$1 \quad 3 \qquad 2 \qquad 0 \qquad\qquad 4$$

Although the formulation in (2.22) avoids the difficulty

pointed out by McCawley, recent work (cf. Lakoff and Ross (op. cit.))

indicates that it is still inadequate. I will not discuss this inadequacy

here, for to do so would be unnecessary for my present purpose: examples

of ungrammatical sentences like * I painted red it suffice to show

that McCawley's formulation of the Adjective Shift Rule is too strong

and must be replaced by some rule formulated along the general lines

of (2.22). Thus case G provides no support for the A-over-A principle.

2.4.

2.4.0. In Current Issues in Linguistic Theory (Chomsky (1964b)),

having realized that the A-over-A principle was too strong, Chomsky

proposed two other conditions on the relative clause and question rule.

These need to be scrutinized carefully, so that it can be ascertained

to what extent they can replace the A-over-A principle. Admittedly,

Chomsky at no time claims that these two conditions will have the same coverage as the principle, but since the facts given in cases A through F have to be accounted for anyway, it is of interest to see how far his two conditions can go towards this end.

In the quote that follows, '(6)' refers to the following rule, which Chomsky states on p. 38, and which he asserts is the basic rule in question and relative clause formation.

(6)   Y - Wh + X - Z $\Longrightarrow$ Wh + X - Y - Z

2.4.1.   The first of the proposed conditions on this rule is on pp. 43-44:

> "Notice that although several noun Phrases in a sentence may have Wh attached to them, the operation (6) must be limited to a single application to each underlying terminal string. Thus we can have 'who saw what?', 'you met the man who saw what?', 'you read the book that who saw?','you saw the book that was next to what?', etc., but not 'who what saw?', you saw the book which which was next to' (as a declarative), and so on, as could arise from multiple applications of this rule. These examples show that (6) cannot apply twice to a given string as a Relativization and cannot apply twice as an Interrogative transformation, but it is equally true that it cannot apply to a given string once as a Relativization and once as an Interrogative transformation. Thus if rule (6) has applied to form a string which is embedded as a relative clause, it cannot reapply to this embedded string, preposing one of its Noun Phrases to the full sentence. Thus we can have the interrogative 'he saw the man read the book that was on what?', but not 'what did he see the man read the book that was on'; and we can have 'he wondered where John put what?', but not 'what did he wonder where John put'; etc."

My first objection to this condition, which I will refer to as Condition 1, is that is seems to me to be somewhat too strong. That is, I find the sentences in (2.23) all more or less acceptable:

(2.23) a. He told me about a book which I can't

figure out $\left\{\begin{array}{l}\text{whether to buy or not.}\\ \text{how to read.}\\ \text{where to obtain.}\\ \text{what to do about.}\end{array}\right\}$

  b. He told me about a book which I can't

figure out $\left\{\begin{array}{l}\text{why he read.}\\ \text{?whether I should read}\\ \text{??when I should read.}\end{array}\right\}$

  c. Which books did he tell you $\left\{\begin{array}{l}\text{why}\\ \text{?whether}\\ \text{??when}\end{array}\right\}$

he wanted to read?

For some reason that is obscure to me, I find sentences like those in (2.23a), where the embedded question[8] consists of a wh-word followed by an infinitive, by and large more acceptable than corresponding sentences, like those in (2.23b), where the wh-word is followed by a clause with a finite verb. And yet there are many sentences which differ in no way which I can descern from those in (2.23b-c) but which I find totally unacceptable. (Chomsky's example, "* what did he wonder where John put?" is a good case in point). So, for speakers who agree with me in finding at least some sentences like those in (2.23) acceptable, Condition 1 is too strong as it stands, although examples like Chomsky's make it clear that it is partially true. This all indicates that much more work needs to be done on this condition, so that a weaker version of it may be found.

It is apparent that even a correct version of Condition 1 must be supplemented somehow by other principles; for, of the six cases which were discussed in § 2.2, Condition 1 can only account for case A. And it should be noted that even in case A, it is not obvious how Condition 1 should be stated so that it will apply to embedded questions, full relative clauses, and reduced relative clauses. That is, in (2.24a) and (2.24b), it is easy to state formally that, in Chomsky's terms, "operation (6)" has applied once, for there is a substring which is headed by a wh-word.

(2.24) a. I know who is mad at John.

b. I know a boy who is mad at John.

But in (2.25), which has been derived from (2.24b) through the operation of the Relative Clause Reduction Rule, there is no longer any wh-word in the sentence which could be used as an indication that Condition 1 must be invoked.

(2.25) I know a boy mad at John.

The fact that NP's in the position of John in (2.25) cannot be relativized or questioned (cf. the ungrammaticality of * who do you know a boy mad at?) would have to be stated in some other way than in terms of wh-words, possibly, for instance, as follows:

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

But this condition is strong enough to account for cases A and (with

suitable modification) B, of § 2.2; and in fact, condition (2.26), when suitably formalized, is the cornerstone of what I have called the Complex NP Constraint, and will be discussed in detail in § 4.1.

It appears, therefore, that Condition 1 is of limited utility, except insofar as it can be given in a weakened reformulation which will allow some of the sentences in (2.23) to be generated, but will exclude others, like Chomsky's example of "* what did he wonder where John put?". I should add that none of the conditions I will propose in Chapters 4 or 5 can be modified, in any way that I know of, to exclude this last example; so it is evident that some version of Condition 1 must appear in the grammar of English, or, if this condition should prove to be universal, in linguistic theory.

2.4.2. The second condition which Chomsky proposes for his rule, (6), is stated as follows:

> "Finally, it is clear that the first
> segment Y of the structural condition of rule
> (6) must be suitably restricted. Thus we cannot
> have such interrogatives as 'what presumably
> did Bill see' from 'presumably Bill saw something',
> and so on. This suggests that we restrict Y
> in (6) to the form NP + ... With this further
> condition, we also succeed in excluding such
> non-sentences as 'what for me to understand
> would be difficult?', although the perfectly
> correct form 'what would it be difficult for
> me to understand?' is still permitted. Thus
> this condition would account for a distinction
> between the occurrences of 'for me to understand
> something' in the contexts '---- would be
> difficult' and 'it would be difficult ----',

so far as applicability of (6) is concerned.[10]"
(op. cit. pp. 45-46) [I do not quote footnote
10 here, because its content has been discussed
in § 2.1 above, and it is of no direct relevance
to the point at hand -- JRR].

This condition, which I will refer to as "Condition 2",
bears close scrutiny, even though it is clear that there is no overlap
at all between it and the A-over-A principle -- none of the ungrammatical
sentences discussed in cases A through F of § 2.2 will be
excluded by Condition 2.

In the first place, the first example is not convincing.
The fact that Chomsky's example * what presumably did Bill see? is
ungrammatical has nothing to do with the fact that an adverb starts
the sentence; as was noted in footnote 8 above, questions are
incompatible with sentence adverbs in any position. Thus, neither
in Bill presumably saw something nor in Bill saw something, presumably
can the word something be questioned: * what did Bill presumably see?
and * what did Bill see, presumably? are both probably to be
excluded. It may be that Condition 2 is correct anyway, but if it
is, all of the sentences in (2.27), (2.28), and (2.29) must be
explained away, for they appear to be counterexamples.

    (2.27)   After maintaining that you were sick, why did

    you get out of bed?

    Although you've never been in one, what would

    you do in a typhoon?

    In light of this promotion, how long will you

stay here?

Furthermore, what prompted you to hit John?

If it rains, will you finally give up and go

home?

(2.28) Why, after maintaining that you were sick, did

you get out of bed?

What, although you've never been in one, would

you do in a typhoon?

How long, in light of this promotion, will

you stay here?

What, furthermore, prompted you to hit John?

What, presumably, did Bill see?

(2.29) $\begin{Bmatrix} \text{And} \\ \text{But} \\ \text{For} \end{Bmatrix}$ what can you do with the wounded?

The type of explanation which at first seems attractive
is one involving rule ordering. That is, one might suggest that the
Question Rule   should apply first, and that then the adverbial
elements which start the sentences in (2.27) should be moved to the
front of the sentence, past the wh-words, to yield the sentences in
(2.27). Subsequently, a second adverb movement rule might move the
preposed adverbs to the position immediately following the wh-word,
and insert pause markers on either side of them. To give an example,
the second sentence in (2.27) and (2.28) would be derived as follows:

Base: you would do wh + something in a typhoon, although you've

never been in one.

$$\Downarrow$$ question formation

what would you do in a typhoon, although you've never been

in one?

$$\Downarrow$$ 1st adverb movement

(2.27)   Although you've never been in one, what would

you do in a typhoon? $\Downarrow$

2nd adverb movement

(2.28)   What, although you've never been in one, would

you do in a typhoon?

Note that if this proposal is adopted, Condition 2 can

be dispensed with anyway, for at the time at which the question rule

applies, no adverbs have yet been moved into sentence-initial position.

But there is still some doubt in my mind as to whether the rule-

ordering explanation is possible, because the sentences of (2.30) have

such low acceptability that I doubt they should be generated at all.[9]

(2.30)   a.   ? I wonder, after maintaining that you

were sick, why you got out of bed.

b. ? Tom will ask you, although you've never

been in one, what you would do in a typhoon.

c. ?*I wonder, if it rains, whether he will

finally give up and go home.

d. *It is not known, if it rains, whether he

will finally give up and go home.

e. *She raised the question $\left\{\begin{matrix} \text{as to} \\ \text{of} \end{matrix}\right\}$, if it

rains, whether he will finally give up

and go home.

Since the sentences in (2.30) all contain embedded

questions, the first adverb movement rule, which produces the sentences

of (2.27), will also generate the ones in (2.30), unless it can be

restricted somehow, which seems doubtful to me. And if the first

adverb movement rule cannot be prevented from generating them, then

the second adverb movement rule, which converts sentences like those

in (2.27) to ones like those in (2.28), must somehow be made obligatory

when it operates on embedded questions. It does not appear to me as

if conditions of either of these kinds on the adverb movement rules

cannot be stated, but it does begin to seem that the rule-ordering

mode of explanation may not be the optimal one.

If the correct explanation is not to be found in the

ordering of the rules, then some version of Condition 2 may be necessary.

I say "some version", because it seems to me that the sentences in

(2.29) constitute clear (though rather trivial) counterexamples

to the condition as it was originally stated.

I would like to call particular attention to the last sentence of (2.28), what, presuambly, did Bill see? This sentence seems perfectly acceptable, as long as heavy pauses separate presumably from the rest of the sentence. This fact is especially baffling, since it seems that presumably can occur nowhere else in the questioned sentence, unless I was wrong in excluding the question which has it occurring finally, preceded by a comma: ?* what did Bill see, presumably? It is obvious that much more work will have to be done in this area before answers to many of the questions I have raised can be attempted.

One last comment about Condition 2 should be made: although it is strong enough to exclude Chomsky's example, * what for me to understand would be difficult?, I will show below in § 4.4 that sentences like this can be excluded by a much more widely applicable condition than Condition 2, and one that is independently motivated. So it appears that although Condition 2 may be correct, the only support for it is to be found in the confused mass of cases which have to do with the interrelationship of the two adverb movement rules and the question formation rule.

2.5.   In summary, I have tried to demonstrate in this chapter that the three conditions on the relative clause and question formation

rule which Chomsky has proposed all suffer from defects of various kinds. The A-over-A principle, while shown in § 2.1 to be too strong in a non-trivial way, still is the most important of the three, because of the wide range of cases it successfully accounts for. Condition 1 seems to be somewhat too strong, in some way which I cannot yet delimit precisely; but insofar as it is correct in the restrictions it imposes upon the relativizing or questioning of elements in embedded questions, it is valuable and should be added either to the rules of English grammar or to the theory of grammar. But it seems that this condition, if it is to apply both to full and to reduced relative clauses, cannot be formulated in terms of Chomsky's notion of "single application of rule (6) to a string"; rather, it must be formulated along the lines suggested in (2.26), and, as will be shown in § 4.1, (2.26) contains, in rough form, the central notion of the Complex NP Constraint, which has much independent motivation. In any case, Condition 1 fails to account for most of the six cases of § 2.2. The status of Condition 2 is undecided, because of the present lack of knowledge about the complex syntactic phenomena which may provide support for it. But whether it is eventually adopted or not, it can account for none of the six cases of § 2.2.

I hope that in my criticisms of the three conditions proposed by Chomsky I have not given the impression that I wish to belittle them, merely because they can be proven to be wrong today;

for the contrary is true: these conditions, in particular   the

A-over-A principle, provide the basis for the present work.   For

as Chomsky remarked,

>   "Precisely constructed models for
> linguistic structure can play an important
> role, both negative and positive, in the process
> of discovery itself.   By pushing a precise but
> inadequate formulation to an unacceptable
> conclusion, we can often expose the exact source
> of this inadequacy and, consequently, gain a
> deeper understanding of the linguistic data."
> (Chomsky (1957), p.5)

The main task of this work is to provide a set of

constraints which will avoid the defects pointed out in § 2.1

and will account for all the cases in § 2.2.   Before this can

be attempted, in Chapter 4, one digression must intervene:

Chapter 3, in which the notion of tree-pruning, which interacts in

various ways with the constraints of Chapters 4 and 5, is discussed.

Chapter 2

FOOTNOTES

1. For a justification of the assignment of NP status to these
    embedded sentences, cf. Rosenbaum (1965).

2. For justification for the claim that the rule NP → NP S
    is the correct deep structure of relative clauses, a claim
    which is implicit in Chomsky's earlier discussion of relative
    clauses (cf. Chomsky (1964a), p. 930 bottom, and p. 933 top),
    cf. Lakoff and Ross (in preparation b).

3. For a discussion of the relative clause reduction rule,
    cf. Smith (1961).

4. The most complete discussion of the notions P-Marker,
    proper analysis and structural index is contained in
    Chomsky (1955). A shorter account is given in Fraser (1963).

5. For an explanation of the term "structural change" cf. the
    references of fn. 4, or Chomsky (1957), or Lees (1960).

6. The relation <u>exhaustively dominates</u> is the converse of the converse of the ISA relation (cf. Fraser (1963)). I use the term <u>(weakly)</u> <u>dominate</u> as follows: if A (weakly) dominates B, then A exhaustively dominates XBY, where X and Y are (possible null) variables and B is a single symbol or a string of symbols. A <u>immediately dominates</u> B if and only if A dominates B and there is no Z such that A dominates Z and Z dominates B.

7. Sentences like <u>I painted red all the houses which had white doors</u> are derived by a different rule which moves "complex" NP (for an attempted partial explanation of this term, cf. § 3.1.1.3.2. below) to the end of the first S above them. Some results of this rule are the sentences <u>I would consider unwise any attempt to visit her now</u>, <u>Pete attributed to Masaccio a beautiful old fresco which Joan swooned over</u>, <u>They elected president a man who had never run for public office before</u>, etc.

8. There are two facts about such sentences as those in (2.23) which indicate that the clauses in them that start with a <u>wh</u>-word are in fact questions, and not the type of clause which has been called "the free relative clause," such as the <u>wh</u>-word clauses in <u>I eat what she cooks</u> or <u>I live where he lives</u>.

1. Questions exclude sentence adverbs, like <u>perhaps</u>, <u>probably</u>, <u>possibly</u>, etc., as was pointed out by Katz and Postal (cf. Katz and Postal (1964), p. 87-88). Thus the following sentences are impossible:

    * Did John probably hurt himself?

    * What will she perhaps wear?

    * Where did you possibly find this?

The same restriction, however it is to be stated, which is far from being clear, obtains after such verbs as <u>ask</u> and <u>wonder</u>,

    * I wonder whether to probably leave.

    * Tom asked where he should possibly put the car.

although after <u>ask</u> there are contexts where these adverbs can occur; e.g., <u>Tom asked where Jane probably put the car.</u> There is still much to be explained here.

2. The word <u>else</u> can appear after the <u>wh</u>-word in questions

    What else did he say?

    Where else did you stop?

    Why else would he have come?

and after the <u>wh</u>-word in clauses after <u>wonder</u>, <u>ask</u>, <u>know</u>, <u>find out</u>, <u>determine</u>, <u>guess</u>, etc.

I wonder what else he said.

Tom asked where else I stopped.

? I know why else he would have come.

but it cannot appear after the <u>wh</u>-word of a free

relative clause

* I ate what else she cooked.

* I live where else he lives.

9.   I will occasionally wish to designate more than two degrees

of acceptability; when I do so I assert that I find that

sentences prefixed with an asterisk are completely unacceptable;

those prefixed with a question mark followed by an asterisk

are only barely acceptable, if at all; those prefixed with a

question mark are not quite fully acceptable; and those with

no prefix are completely acceptable.