THE ROLE OF THE AUXILIARY IN RELATIVE CLAUSE REDUCTION

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How to account for adjectives ? Some few accounts, such as the Noun Phrase Complement theory, treat NP complements, including adjectives, as originating in pre-nominal position (Smith 1964; Stockwell, Schachter & Partee 1973). Unfortunately this theory requires obligatory extraposition for relative clauses. Several accounts postulate these structures as complements to the right of the Noun Phrase, for example Ross' 1969 Chomsky-adjoined model. Jackendoff (1977) treats restrictive relative clauses as N'' complements and non-restrictive as N''' complements. Generally the second, right-branching, structure is favored, however, one criticism of it is that if relative clause reduction takes place a recovery rule must be posited to 'save' the derivation from producing an ungrammatical string (Zwicky 1974). This requires a highly-constrained context-sensitive grammar with ordered transformations. Rather than accept such an ad hoc and hardly learnable grammar let us look at some examples of post-nominal adjectives which are grammatical.

1. a.	the car used	b.	the used car
2. a.	little boy blue	b.	little blue boy
3. a.	the book reviewed	b.	the reviewed book
4. a.	the body electric	b.	the electric body
5. a.	the candidate running	b.	the running candidate

It may be objected that there is a significant semantic distinction between the above pairs. However, this distinction occurs at surface structure and thus cannot be considered an element of the derivation unless one would deem it possible to distinguish the differences in meaning cross-categorically and provide distinct and unique derivations for pre- and post-nominal forms. (See Bolinger 1967 for some discussion of possible interpretation strategies.)

Since at least some post-nominal adjectives are grammatical, why have a recovery rule to rescue them? Or, how restrict a recovery rule to rescue only those which are stylistically displeasing to the linguist?

Levi (1978) discusses some sorts of adjectives which are taken to be completely inadmissable post-nominally, and hence unrelated to relative clauses of the form NP is/has Predicate. For example,

6. The rural policeman . . .

is acceptable, while the string

7. The policeman rural . . .

is not, and neither is the relative clause

8. The policeman who is rural . . .

Levi proposes a more complicated derivation for such adjectives. But this sort of structure is not satisfactorily blocked by constraints on transformations or by deriving it from some other underlying structure which is not intuitively adequate or even learnable. Neither will more complicated phrase structure rules successfully handle this problem. Rather, such structures should be removed by interpretive rules operating on a structure slightly sub-surface. These interpretive rules are quanta-sensitive, and deal with all cases in which heaviness affects "acceptability," for though the string

9. The policeman who is rural . . .

would be filtered out, the heavier string

10. The policeman who is rural five months out of the year and urban the rest . . .

is acceptable and would be allowed.

These interpretive rules are part of a core grammar such as described by Chomsky in " On Binding" (1980).

1. Base rules
2. Transformational rules
3. a. Deletion rules   b. Construal rules
4. a. Filters   b. Interpretive rules
5. a. Phonology and stylistic rules b. Conditions on binding

The base rules represent a version of X-bar theory.

The component Transformational rules actually represents only one major transformation, move α , where α is a category. Rules of the syntax are optional and unordered.   Although most work in trace theory has centered around sentential complements (Chomsky & Lasnik 1977, 1978; Chomsky 1980), some recent work has applied the principles of trace theory to the auxiliary (Lasnik, to appear; Tait 1980b).   By assuming a surface filter which requires auxiliary elements to be attached to a lexical element (as in Lasnik) and by coindexing the relative pronoun with the controlling noun phrase, grammatical strings can be assured.

With learnability a major criterion there is a good deal of motivation for positing a single node for adjectives and relative clauses.   Also, adjectives, which can occur both pre- and post-nominally, should be posited as coming from one underlying node generated in the phrase structure rules.   Generality is obtained by having both adjectives and relative clauses attached post-nominally.   Further generality is gained by relating adjectives to relative clauses transformationally, even in the cases of denominal, deverbal and passivized adjectives which are dis-cussed below.   The derivation of lexical adjectives from relative clauses is fairly well-known.   The modifications required to fit within the framework of trace theory are minimal and can be illustrated by considering the example:

    11.   working t class

(t is the trace of <u>class</u> in the embedded sentence)

which comes from the underlying form

    12. $(_{NP}$class$(_S$class be-ing work))

According to the afore-mentionned filter the affixes must be bound at surface structure, thus, if affix-hopping does not apply the structure will be filtered out.   Similarly, the second noun phrase is indexed as co-referential with the first noun phrase and must be realized as PRO.   Deletion may apply, giving the form

    13.   class t working

which, though stylistically uncommon as a single element, is acceptable.

An optional movement rule may then apply giving the desired surface structure. The movement rule may not occur before the deletion rule because the produced structure would violate the structure-preserving constraint.

However, the three classes of adjectives illustrated below require more explication. It is at this level that one may separate the strict lexicalists from the transformationalists. Each of these classes may be dealt with simply as a derived adjective produced in the lexicon - but - there is no reason to shuffle such productive processes unaccounted for into the lexicon when they can be related in principled ways to the transformations operating on phrase markers.

In the next section we will be dealing with the three classes listed below with examples of each at both the simple and complex level.

A. Deverbal adjective

    1) illuminating book

    2) heart-stopping leap

B. Denominal adjectives

    1) striped suit

    2) curly-haired child

C. Passivized adjectives

    1) forgotten people, abused women

    2) self-inflicted wound, oft-repeated adage

These three classes of adjectives are similar in that all are derived through a process more involved than the example of relative clause reduction given above. The modified X-Bar model employed by Akmajian, Steele & Wasow (1979) in their discussion of the auxiliary facilitates this derivation.

This analysis (hence ASW) combines what the authors would characterize as the best features of the phrase structure analysis with the best of the main verb analysis. That is, it retains the strict ordering of auxiliary elements made possible by the phrase structure analysis (Chomsky 1957) and introduces to that the layers of embedding of the main verb analysis (Ross 1969), which ASW indexes for ease of reference in writing restructuring rules and transformations.

Simply put, ASW adopts three layers of V: V''', V'', and V' which dominate V, which is the lexical category verb. They introduce the phrase structure rules which follow:

14. $S \rightarrow NP \quad Aux \quad V'''$

15. $Aux \rightarrow \left\{ \begin{array}{l} \text{tense do} \\ \text{modal} \end{array} \right\}$

16. $V^n \rightarrow \left(\left[\begin{array}{l} +V \\ +Aux \end{array} \right] \right) \qquad V^{n-1} \ldots$

(ASW p. 20)

The notation $\left[\begin{array}{l} +V \\ +Aux \end{array} \right]$ can be realized as <u>have</u> or <u>be</u>.

If such an auxiliary with potentially expandable nodes is postulated a similar derivation is available for all three classes. The third class is derived from an underlying relative clause to which the passive transformation has applied. Given an auxiliary node which can be expanded to <u>be-en</u> it is necessary to allow other auxiliary elements or to formulate elaborate constraints. This seems to be the case since if only the elements of auxiliary represented as part of V''', V'' and V' in the ASW model are present in relative clauses to be reduced successful derivations producing the class one and two adjectives occur. Let us deal first with the class two - the denominals. These are produced by expanding the available V node to <u>have-en</u> (we will assume only one auxiliary node to be expanded to a lexical item in those relative clauses which can undergo reduction, otherwise deletion is blocked). Following Lasnik's constraint, we will assume that all auxiliary elements must be attached to a lexical element at surface structure. In the case of relative clause reduction, as no lexical verb appears in the V' the -en will be attached to the other element of V', the noun, in order to indicate the predicative relationship as opposed to the genitive complement. If, however, relative clause reduction does not apply the auxiliary <u>have</u> is

restructured downward into V , thus disallowing the affix -en
(this as a result of a deletion rule which reduces redundancy by
requiring nouns controlled by a V to be free of verbal affixes).

A similar process involving node-expansion to be-ing pro-
duces the class one - deverbal - adjectives. As be-ing is a
constituent of V'' it needn't be restructured downward (also, it
only co-occurs with a V element). Therefore no deletion of -ing
is necessary in case relative clause reduction does not apply.

These derivations produce:

A. relative clauses

B. post-nominal adjectives

C. pre-nominal adjectives

The degree of acceptability is variant among the realiza-
tions of the three classes in these three potential surface struc-
tures, however it is only acceptability and not grammaticality
which is at issue here. There have been discussions in the past,
working in an earlier theoretical framework, which produced
highly constrained, strictly ordered series of transformations,
some with obligatory recovery rules as mentionned above. With-
in the framework of the revised extended standard theory it is
unnecessary and even undesirable to posit such a complex deriva-
tion.

The varying frequencies of incidence of the three classes
in the three structures is to be accounted for by surface filters,
interpretive rules and stylistic rules. The surface filter in
question is a device, sensitive to quanta, of the form:

17. Not X, but X + Y_1 . . . Y_n

Where X and Y are major lexical categories and n is some
quantity determined variously by the mode utilized and by
the restrictions of memory and noise. This filter, in
dealing with other structures than the one discussed herein,
would reverse itself to take the form:

                    X, but not . . .

This filter would disallow the structure

18.   The box emptied is on the desk.

but would allow the heavier structure.

19.   The box emptied by those children is on the desk.

We have seen how this filter works with simple adjectives.
There are several other instances in the literature where heavi-
ness is a criteria for the application of movement rules, e. g.
heavy NP shift, particle movement. It need not be considered a
serious drawback to the grammar to posit such a quanta-filter,
though in general the model has been formulated in terms of
markedness and Boolean logic.

These filters, stylistic rules are language-specific, and
are the area of the model to which performance and sociolinguistic
considerations apply. The grammar may generate many strings
which would be deemed inappropriate because of excessive length,
awkwardness, taboo lexical items, etc. Two sentences, only
differentiated by a movement rule, may be strikingly different in
degree of interpretability. But neither is ungrammatical. The
base component of the grammar cannot be expected to produce
only rhetorically elegant strings. Any such constraints and
filters one feels to be necessary can only operate on the surface
structure. However, in pursuing the goal of reducing the power
of the transformational component in order to enhance learnability
and the description of a universal base one must not simply com-
plicate those filters which operate on the surface. But, there is
good reason to favor a more constrained surface over a more
constrained transformational component as the rules operating
on the surface can be more or less complicated according to the
register and mode (written or spoken) of the utterance and can
vary according to the regional and socio-economic position of the
speaker.

Interpretability factors can also be seen affecting the base
and transformational rules. However, these factors are not to be
confused with the formalized interpretive rules operating at
surface structure. This can clearly be seen in the case of subor-
dinate clauses. To avoid ambiguity subordinate clauses must be
marked as such so as to differentiate them from the matrix sen-
tence. Various strategies are used to accomplish this. The
most prevalent device in English is the lexical complementizer.

This is the case in sentential complements (that, for to, etc.)
and in relative clauses (who, which, that). Two less common
strategies are 1) tenseless verbals occurring post-nominally
(relative clause reduced to gerundive phrase, for example), and
2) verb final word order in fronted heavy reduced relative clauses,
e.g.

    20. as yet unplumbed depths

    21. heart-stopping leap

    This strategy is similar to that of marking subordinate
clauses in German in which the tensed verb occurs finally. This
similarity cannot be accounted for by tracing the structure
through earlier, related forms of the two languages. Therefore,
this is best accounted for by postulating that these various
strategies are available through the base, which is to be consider-
ed the universal component. If this is the case it would follow
that non-Germanic, even non-Indo-European languages would
share this strategy.

    In closing, it is necessary to briefly address the problem
of the lexicalist hypothesis. This hypothesis which has discour-
aged the application of trace theory to relative clause reduction
was perhaps correctly invoked initially by Chomsky to limit
transformational accounts of nominalizations. However, its
application to denominal and deverbal adjectives is pointless
given a well-motivated transformational derivation. It would be
only a notational variant to propose that these derivations do occur,
but within the lexicon. However, it becomes unfeasible to assume
an origin in the lexicon in the case of what have been herein
called heavy reduced relative clauses. If such were to be entered
whole into the lexicon this would render the lexicon something of
an anachronism of pure descriptivism. On the other hand, if
such multi-element derivations were to occur in the lexicon there
would be little effective distinction between the base and the
transformations.

REFERENCES

Akmajian, A., S. Steele and T. Wasow (1979) "The Category AUX in Universal Grammar," Linguistic Inquiry 10, 1-64.

Chomsky, N. (1980) "On Binding" Linguistic Inquiry 11, 1-46.

Chomsky, N. and H. Lasnik (1977) "Filters and Control" Linguistic Inquiry 8, 425-504.

Chomsky, N. and H. Lasnik (1978) "A Remark on Contraction" Linguistic Inquiry 9, 268-274.

Jackendoff, R. (1977) X-Bar Syntax: A Study of Phrase Structure Linguistic Inquiry Monograph 2, MIT Press, Cambridge, Massachusetts.

Lasnik, H. (1980) to appear in N. Hornstein and D. Lightfoot, eds., Explanation in Linguistics.

Levi, J. (1978) The Syntax and Semantics of Complex Nominals, Academic Press, New York.

Ross, J. (1969) "Auxiliaries as Main Verbs" in W. Todd, ed., Studies in Philosophical Linguistics -- Series 1, Great Expectations Press, Evanston, Illinois, 77-102.

Smith, C. (1964) "Determiners and Relative Clauses in a Generative Grammar of English", Language 40.1, 37-52.

Stockwell, R., P. Schachter, and B. Partee (1973) The Major Syntactic Structures of English , Holt, Rinehart, and Winston, New York.

Tait, M. (1980a) "Target Structures in Middlemarch" in R. Haller ed., Papers from the 1979 Mid-America Linguistics Conference, Lincoln, Nebraska.

Tait, M. (1980b) "Restructuring the Auxiliary: Introductory Notes" unpublished paper given at 1980 summer LSA.

Zwicky, A. (1974) "Taking a False Step" Language 50.215-24.