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Have and Be in English Syntax

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A re-analysis of English syntax is proposed, in which the forms have and be in their use as 'main verbs' are eliminated from the base and reintroduced by transformational rules. The rules are shown to be minor additions to rules required on independent grounds. Syntactic arguments are given first, then answers to possible semantic objections. It is further suggested that the use of these forms as auxiliaries can be explained in the same way. The resulting base rules are shown to be somewhat closer to a reasonable set of universal base rules than the corresponding rules of earlier analyses. The paper concludes with a discussion of analogous constructions in a number of different languages.

1. Introduction. In Chomsky's Aspects (1965: 107) the following rule occurs:

$$VP \rightarrow \begin{cases} Copula & Predicate \\ V & \{(NP) & (Prep-Phrase) & (Prep-Phrase) & (Manner) \} \end{cases}$$

$$VP \rightarrow \begin{cases} V & \{(NP) & (Prep-Phrase) & (Manner) \\ S' & Predicate \end{cases}$$

In many languages—for instance Russian, Arabic, Malay, and Tagalog there exist equational sentences consisting of a subject and an immediately juxtaposed noun phrase, adjective, or locational phrase, having no overt verb corresponding to the form be derived from Copula in the grammar of English. In setting up base rules for such languages, or in interpreting rules such as the above as candidates for a universal base component (Chomsky 1965:116-8), we are immediately faced with the following question: Should the element Copula be retained in the base and deleted transformationally in the appropriate places? On first sight such an analysis has something to recommend it, at least in the languages with which I have some acquaintance. For instance, an overt form for the copula is often mandatory in certain tenses, in dependent sentences, and so on. I shall, however, follow another line and argue that, on internal grounds, an analysis of English is to be preferred in which the copula be does not appear in the base but is inserted transformationally. This analysis leads to a reconsideration of another 'non-verb' in English, namely have, which can be treated in a parallel fashion. I shall consider the syntactic evidence first, on the assumption that we must keep such evidence separate from semantic considerations, and only later take up the problems, if any, that arise in the semantic component. The insertion rule for have and be as carriers of the Auxiliary (somewhat like do for affixes) is shown to be a rather minor addition to rules that are already necessary in English to account for nominal modifiers derived by deleting just these two forms. A connection is established between the roles of these two forms in the auxiliary and in predicative and 'possessive' sentences. Finally, I turn to the question of a universal base by looking at related expressions in some other languages. A possible historical mechanism underlying the frequent extension of certain kinds of verbs to auxiliary use is suggested. In carrying out these proposals, I shall have occasion to suggest a number of other modifications and extensions of Chomsky's base rules.

2. First revision. Our first step in a re-analysis might be the following rule:

$$VP \rightarrow egin{cases} \operatorname{Predicate} \\ V \left\{ egin{cases} \operatorname{(NP) \ (Prep-Ph) \ (Prep-Ph) \ (Manner)} \\ \operatorname{S'} \\ \operatorname{Predicate} \\ \end{array} \right\} \end{cases}$$

If V could be made optional, it would be possible to eliminate the repetition of Predicate. Since have occurs with almost all the other elements except Predicate, and since have itself is a rather anomalous form, we are led to consider be and have as variant kinds of linking forms used with predicative and non-predicative nonverbal sentences respectively. Since Manner does not occur with the nonverbal constructions, we reposition it to show its dependence on V and get the following:

$$VP \rightarrow (V \text{ (Manner)}) \begin{cases} Predicate \\ (NP) \text{ (Prep-Ph) (Prep-Ph)} \\ S' \end{cases}$$

This rule is simpler by two symbols than the original rule, and in addition the base component is simplified by the elimination of the lexical entries for be and have. To pay for this saving, we must add two obligatory transformations (as well as a repositioning rule for Manner), which at this point balance or even outweigh the saving in the base. Initially, we may state them thus:

Thave SD: X, Aux, NP, Y
SC:
$$2 > 2 \cap [have]$$
where 3 is not contained in *Predicate*
The SD: same as in Thave, but 3 is *Predicate*
SC: $2 > 2 \cap [be]$

(The notation for the structural change is intended to mean that have and be are to be adjoined at the right to the string dominated by Aux and to be partially dominated by Aux themselves; that is, $_{Aux}[Z]$ becomes $_{Aux}[Z \cap have]$ and $_{Aux}[Z \cap be]$ respectively. It is assumed throughout this paper that structural changes in transformational rules are restricted to substitutions, symbolized by >.)

If we assume that symbols in the base and symbols in the structure indices (SD's) of transformations count equally, we have paid for our new analysis by adding about as much complication in the transformations as was eliminated in the base. I am making a number of assumptions about counting symbols in transformational rules: variables like X and Y which flank the rest of the structure index do not count, since they may be assumed always to occur unless specifically excluded (say by # on the right or the left); the abbreviation of one

¹ The VP rule will be further modified below. The constituency of Manner remains rather mysterious in any event. There is also a problem about Prep-Phrase which will be mentioned briefly below, but which might find a real solution along the lines of the speculations of 7.3.

structure index by a reference (even partial as above) to another is to be considered a significant saving, since this principle will maximize the value of analyses in which groupings of constituents are set up which recur in many transformations. If the *Manner* rule needs three symbols—*Manner*, an intervening variable, and some other item—our new rules take six symbols, while we have eliminated at least six from the base (assuming two items for each lexical entry—the form itself and at least one feature complex). If we can find any evidence that other parts of the grammar will be simplified, our new rules will be justified. If in addition we find any other grounds besides the formal criterion of simplicity—either in English or in the general theory—for preferring the new analysis, they will constitute not only evidence for the analysis but for the simplicity criterion itself.

3.1. Syntactic evidence in English: Reduced atrributive clauses. I consider first the rules which develop relative clauses, assuming a general rule that will yield structures of the form ... $N \cap RM \cap S$..., where RM is a general relative marker (like WH) used to trigger further changes, and where a condition of identity between N and some N in S is used to block ill-formed sentences. (The form and justification of such a rule is discussed below in **4**.) I am also following an analysis in which the definite, indefinite, and generic distinctions are treated as features of nouns rather than as independent morphemes in the base; hence the absence of Det in some of the rules below. These details do not affect the main arguments below in any way.

Among the rules in currently available grammars which yield variants of relative clauses are the following:⁸

(1) A rule deleting the relative marker, NP, Aux, and be, to give (with repositioning of Adjective in some sentences) such examples as:

I know the man on the roof.

I saw John, my friend.

I spoke to the angry young man.

I heard something terrible.

The lecture yesterday was excruciating.

(2) A rule deleting the relative marker, NP, Aux, and have, and supplying Gen or of, to yield such sentences as:

I saw the father of the man.

I saw my wife's brother. (two applications)

I met a friend of the dean's.

² Among the arguments for treating the definite and indefinite determiners as features are the following: pronouns and proper names act syntactically like definite nouns in some respects; the definite article is used with modified proper names, otherwise some proper names have it, some do not; many of the rules involving N are simpler if we can omit the determiner until rather late in the transformations. Semantically, proper nouns and definite noun phrases are alike. The advantages of this analysis in other languages are obvious, where we sometimes have suffixes, sometimes proclitics, sometimes both, sometimes only positional characteristics representing definiteness.

³ Since relatively little in the way of detailed analyses using the framework of Chomsky 1965 is available, it is necessary to revert to older treatments like those of Lees 1960 and make various extrapolations. This explains the vagueness of some of my references to 'current analyses' etc.

(3) A rule deleting the relative marker, NP, Aux, and have, and supplying with (or without from with not), for such sentences as:

I saw a man with a hat.

We visited the Cave-without-a-Name.

He was a man without a country.

Each of these rules as stated in current analyses must mention have or be, hence each will be simplified under my analysis, where we start from strings that do not have these forms. Instead of restating such rules as they stand, however, I shall make use of the parallelism among them and show that they are variants of the rule(s) used for inserting have and be.

After a rule for shifting the shared noun (or noun phrase) to the front of the relative clause, the structures underlying each of the above types will be the following:

- (1) ... N RM N Aux Pred ... John RM John Aux my friend ...
- (2) ... N RM N NA ux father RM father the man Aux ...
- (3) ... N RM N Aux N man RM man Aux a hat ...

The fourth possible combination is that in which the shared noun is the predicate nominal in the embedded sentence:

(4) ... $N \cap RM \cap_{Pred}[N] \cap N \cap Aux ...$

Such strings would underlie sentences like *I know a man that John is*, at best of dubious status. To my knowledge, this result of relative clause embedding has not been discussed.

All the above types differ from other embedded sentences in that Aux is followed by a string that does not begin with V. We make use of this fact in stating the following structure index for the various transformations:

SD: X, N, RM, N, Y, Aux, Z, R

$$1$$
 2 3 4 5 6 7 8
where $7 \neq V \cap W$
 $S \Rightarrow 4 \dots 7$
 $NP \Rightarrow 2 \dots 7$

(The last two conditions mean that the relevant segments are dominated by S and NP respectively.) Instead of giving various structural changes leading to the short variants of relative clauses mentioned above (differing according to the shape of Y and Z), I give a simple structural change which takes us only part of the way to those results:

SC:
$$3^4 > \text{null}$$

There are two compelling reasons for this factorization of the rule into two steps. First, the rule as given above is not at all a special rule for just this type of reduction, but merely a special case of the rule which deletes the relative pronoun to give such sentences as *I* saw the man you saw. The structure index is exactly the same; all we need to do is change the first condition as follows:

where
$$5 = NP$$
 or $7 \neq V \cap W$

 ullet Without a detailed set of base rules, many of the descriptions and examples given here must remain relatively imprecise. In particular, it is not clear whether N or NP should appear in a number of instances.

Second, the further changes (deletion of Aux, supplying of with, of etc.) can be brought about by minor additions to our original rules for supplying have and be. I restate that rule with these additions:

```
Tob: Nonverbal sentences
SD: X, N, Aux, Y, Z
where 4 \neq V \cap W

SC: (a) 3 > \text{null}
where 4 = \text{Predicate} and \text{NP} \Rightarrow 2 \dots 4
(b) 3 > 3 \cap [be]
where 4 = \text{Predicate}
(c) 3 > \text{with}
where 4 = \text{N} and \text{NP} \Rightarrow 2 \dots 4
(d) 3 > \text{null}, 2 > 2 \cap \text{of}
where 1 = W, N and \text{NP} \Rightarrow 1b \dots 3
(e) 3 > 3 \cap [have]
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The structural changes must be applied in the order given. A later rule will give without from negative sentences, but since the positioning of not is problematical, I shall not take care of this detail. It should be noted that (d) is assumed to be the source for genitive constructions by a later rule. The structural changes are related to the type illustrated above as follows: (a) gives type (1), (d) type (2), (c) type (3), while (b) and (e) give non-reduced sentences in have and be. With only a minor adjustment, this rule will also give phrases like the sun's golden orb and that skunk of a professor from the questionable type (4) mentioned above: the golden orb that the sun is and that skunk that the professor is. Actually, (d) in this form may not be necessary at all, since of seems to be predictable in a large number of instances as a kind of automatic 'N-cluster' breaker where a series of N's are dominated by a single NP: some of, all of, the city of Berlin, of or Gen with the subject or object of nominalized sentences, and so on. The form of then acts much like no in Japanese or the e of the so-called izafet construction in Persian. If this turns out to be so, (a) and (d) can be collapsed into a single rule following (c) and based on the condition of NP-domination.

It is now apparent that, far from complicating our grammar by eliminating have and be from the base, we have been able to show that the insertion of the forms can be accomplished by rather minor additions to rules already necessary, and that in fact a number of separate rules can be given in a more general form as variants of a single rule. Where before we had distinct rules for several reductions of relative clauses, we can now use essentially one structure index. Moreover, the structures entering into some parts of this rule are shown to be special cases resulting from the deletion of relative noun phrases.

3.2. Segmentation of the auxiliary. Let us consider next a number of rules based on the division of Auxiliary such that a unit is formed by the sequence of

Tense plus either Modal, be, or have (Lees 1960:35-44; Chomsky 1962:144, rules 3-8):

John Pres — play in the band can go to New York be angry be ing run the show have a Jaguar have en be in New York

Based on this segmentation, various rules give the following sorts of sentences (with do supplied as a carrier of unattached affixes):

Does John play in the band? What does John play in? Is John running the show? Has John (got) a Jaguar? Does John have a Jaguar? John does not play in the band. John cannot go to New York. John isn't running the show. John's been in New York. ... John does too. ... John has too.

... and so can John.

No possible complication can arise in these rules from our new analysis, since we can just assume that the insertion rule is ordered before these particular rules. But the present analysis actually makes possible a slight simplification in each of the rules. The relevant part of the structure index of each such rule can be given as follows:

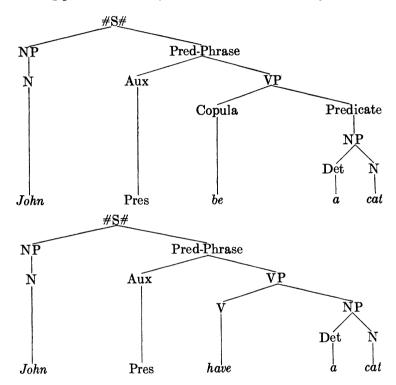
NP, Tense \hat{F} , X where F is the next single formative in Aux

This specification replaces that of current analyses which mention *Modal*, have, be, and VP.

It will be noted that the saving here arises from the inclusion by attachment of all occurrences of have and be within the Aux constituent. (Under any analysis so far proposed, the special behavior of got with have must be taken care of in an ad hoc fashion. My analysis is no better or worse than others in this respect.) It may be objected that these arguments could be used just as well to say that be and have in all uses could be introduced from Aux in the base. There are two answers to this objection. The first is that we would then lose the parallelism between reduced attributive clauses and the insertion of have and be: what is essentially the same conditioning environment would have to be given twice in the grammar. The second answer is more cogent. It is true that the various uses of have and be as aspect markers in the Aux and in the sentences discussed above should be treated in a parallel way. But, as will be shown below, this can be done by extending the application of our insertion rule to cover not only the aspectual uses but a number of other constructions in have and be. This further step leads

to an explanation of why it is precisely be and have that occur in all these constructions. Before presenting these further arguments, I shall summarize what has been done thus far and then make some further suggestions for revising the base rules.

An analysis which eliminates have and be from the base component can be justified even when most of the other details of Chomsky's rules and earlier more complete analyses remain intact. The reasons for this justification can be seen in the following phrase markers (based on the standard analysis):



It is apparent that there are a number of redundancies both in differentiating these structures from each other and from sentences involving full verbs (that is, verbs that receive full stress as neither have nor be does in non-contrastive utterances). To distinguish the two sentences above and predict the occurrence of the proper linking forms, it is sufficient to have a difference between sentences with Predicate and those without. To differentiate sentences with Predicate and those without. To differentiate sentences with Predicate from those with full verbs, it is sufficient to oppose sentences with Predicate from those without. In phonology we exploit redundancies by eliminating predictable feature specifications from the underlying forms. The same principle applies here. When we look at some other languages, we see that the use of a special form like Predicate is a peculiarity of English. The suggested revisions of the base rules make them look much more like universal base rules than before. The considerations from universal grammar give added support to this analysis, but it must be emphasized that the analysis can be justified in terms of English alone. If there are

universal base rules, then they should in general be supported by the optimal analysis for each individual language.

4. Further revisions. Relative clauses in most current analyses (including Chomsky's) are derived from an optionally occurring #S# coming from the determiner constituent. I propose that they be derived instead from the same sequence of S's that we may assume to underlie conjunctions of sentences with and (however we obtain these, perhaps from a rule schema $S \to (S\#)^n$; cf. Chomsky 1965:224, fn. 7). Then the initial relative clause rule could be given as follows:

SD: X, N, Y, #, S, #, Z
SC:
$$2 > 2 \cap RM \cap 5$$
, $4 \dots 6 > null$ where 5 contains 2

Further rules, covering not only relative clauses but several other constructions, would pronominalize and shift the repeated N (or NP) in the embedded sentence. The argument for this analysis is one of simplicity. In any analysis it is necessary to have a transformational rule based on the condition of noun identity and removing the sentence boundaries. Since the number of symbols necessary in that rule is only one less than in the rule above (no Y is necessary), and since the base rules directly introducing #S# in the NP (or Det) need three symbols (two boundary symbols and S), the rule given here is a simplification. Further support for this analysis is given by the close syntactic and semantic connection between sentences conjoined with and and sentences with relative clauses (with differences between restrictive and nonrestrictive clauses coming from differences in the definiteness and related properties of the nouns in each sentence). Without attempting to go into details, which would demand another study, I suggest a possible treatment by giving a series of related sentences:

- (1) I see a man and a man is walking down the street.
- (2) I see a man and the (that) man is walking down the street.
- (3) I see a man and he is walking down the street.
- (4) I see a man such that the man is walking down the street.
- (5) I see a man such that he is walking down the street.
- (6) I see a man that he is walking down the street. (cf. I saw the man that Rita lives in the house that belongs to him.)
- (7) I see a man that is walking down the street.
- (8) I see a man walking down the street.

(The last has two interpretations, of course.) These sentences exhibit varying degrees of acceptability in colloquial English, but even the less acceptable ones have perfectly ordinary counterparts given certain conditions, and most come from variants of rules that are needed for other constructions. For instance, the rule that shifts the relativized noun to the front of its sentence (applying vacuously above) is a special case of a rule that shifts topics and questioned forms, and

⁵ For some thoughts on relative clauses in English and some other languages, see Bach 1965. I have profited from reading a paper by S.-Y. Kuroda, 'A note on English relativization', to appear in *Language*.

it obeys similar constraints:

A Martini I don't need.

* A Martini I see someone who is drinking.

What do I need?

* What do I see someone who is drinking.

Here is the Martini that you asked for.

* Here is the Martini that you wondered who was drinking.

In the last example, however, it is possible to add it and have an acceptable, if somewhat colloquial, sentence. This fact suggests that it is a restriction on the shifting of the marked noun rather than on the formation of relative clauses which is crucial to prevent the last sentence, while the use of the pronoun shows the connection between relativization and pronominalization.

If this analysis of the relative clause can be justified, we will have eliminated one place where the recursive symbol S occurs in the base rules. Might its occurrence not be restricted even more severely? In Chomsky's rules, S is reintroduced in two further places, in the VP rule cited at the beginning of this study and in the rule for noun phrases:

$$NP \rightarrow (Det) N (\#S\#)$$

We have tentatively eliminated the determiner constituent (and the embedded S for relative clauses coming from it). Let us consider the other element in the NP, namely S. This constituent is used in the subcategorization of nouns to give such constructions as the fact that he is here, where fact has the feature [+Det $_S$ ']. Besides fact, Chomsky (1965:100) mentions opportunity, idea, habit (of working hard). One might add prospect, belief, reason, result, etc. Many such forms are obviously derived from verbs and adjectives by nominalizations:

he believed that he would go > his belief that he would go

he expected that ... > his expectation that ...

he assured us that ... > his assurance that ...

he promised that ... > his promise that ...

he was delighted that ... > his delight that ...

he was eager that we go > his eagerness that we go

At first glance there do not seem to be any such sources for some of the nouns listed above, in particular the ones mentioned by Chomsky. But a closer look shows that there are basic sentence types from which one may derive all the phrases of the form $N \cap that \cap S$ given above. Not unexpectedly, these sentences involve the forms have and be.

Consider first some facts about fact. Besides NP's of the form the fact that S, we have sentences like It is a fact that I love you. In such sentences, the phrase with fact (a fact that S) is not a single NP; rather, the sentence has a structure parallel to It is true that I love you. Presumably, such sentences have an underlying form in which the that-clause is subject: That I love you is a fact. Nouns like fact, as well as certain adjectives like true, must have a subcategorization feature

 $^{\circ}$ No difference is intended between S' and #S#. The first is used in Chomsky 1965 before he has taken up the question of eliminating generalized transformations; after this step, the latter is used.

allowing them to stand in the predicate of sentences with sentences as subjects. Let us call this feature [+S-subject]. Just as with forms like believe/belief, we will want to derive the one usage from the other, eliminating either the feature [+S-subject] or the feature [+Det_S']. The choice is quite clear. Suppose we embed as a relative clause That I love you is a fact in a sentence like The fact is inescapable:

The fact that I love you is is inescapable.

To make this into a grammatical sentence it is necessary to do two things: delete one occurrence of that and delete one is. But we already have everything needed for this result. All we need do is add one more condition to a rule already posited. The sentence above will have the underlying form (in part): the fact RM fact that. A reference to the rule for deleting the relative pronoun, given in §3.1, will show that we merely need to add the condition:

obligatory where
$$5 = that \cap R$$

The deletion of Aux will follow automatically from the rule for nonverbal sentences, and once again no special provision is required for be, since it is not present to begin with. This analysis does several things: it allows us to drop whatever restrictions might have been necessary to prevent ungrammatical embeddings like the one given above; it eliminates the necessity to posit two independent subcategorization or selectional features for fact; and in addition it accounts for the fact that only that, but not which, can occur in such constructions (this that is clearly distinct from the one which comes from RM). There is good semantic support for this decision, since the property of 'speaker-belief' which must be assumed in the interpretation of such sentences as It is a fact that I love you is automatically carried over into sentences into which they are embedded. Notice the oddity of such sentences as I am not aware of the fact that she is here.

Consider, next, sentences with *idea*. It is necessary to account for sentences like the following:

He has the idea that he is a great linguist.

Embedding, we get:

The idea that he has that he is a great linguist is uproarious.

This seems perfectly acceptable. The condition that we have just added to the deletion rule does not apply; that is, the rule is not obligatory and our analysis predicts that the above is a possible sentence. The rule can, however, apply optionally to give the (partial) string: ... idea he Aux that ... Now the regular rules will apply to give of him which leads to:

His idea that he is a great linguist is uproarious.

Similarly, each of the other nouns mentioned above can be handled on the basis of underlying sentences with have (that is, structures that lead to the introduction of have). In each case it can be shown that the 'privilege of occurrence' symbolized by the feature [+__S] or the like can be accounted for by other selectional features and from independently motivated rules. Moreover, it seems likely that nouns like idea, habit etc. belong to a special category of verbal nouns that can occur in the verbal position but are not verbs. The introduc-

tion of have will then be automatic. When we compare pairs like

he feels that ... /he has the feeling that ...

it seems reasonable to assume that words like *idea* are introduced as verbs, but are marked so as to undergo obligatorily the nominalization rule for *feel/feeling* etc. Then the use of *have* follows quite naturally for both types.

I conclude that there are no nouns that must be assigned a subcategorization feature [+_S] or [+Det_S] within the noun phrase, and that the *NP* rule can be further simplified as follows:

$$\mathrm{NP} \to \left\{\begin{matrix} \mathbf{N} \\ \# \mathbf{S} \# \end{matrix}\right\}$$

The VP rule can in turn be simplified by eliminating #S#, and the complex-symbol rule for V can be repositioned to follow the NP rule above. We now have a more severe restriction on the occurrence of S in the base: it can occur only in the rule schema for conjunction of sentences and as a full representative of NP. All other embedded sentences come about by the operation of the relative clause rule. This means that there are only two types of composite sentences in the base: conjoined sentences and sentences in which an embedded sentence stands as a full representative of NP. This result is attractive from the point of view of semantic interpretations, since it simplifies considerably the types of projection rules that must be distinguished.

One other set of problems must be touched on before we can return to our main theme. Two *Prep-Phrases* are given in Chomsky's *VP* rule. *Direction*, *Duration*, *Place*, *Frequency*, etc. are listed as exponents of this item. There is no provision for the fact that these must differ in any one derivation:

- * He slept for three hours for two hours.
- * He plays tennis every three days every week.

Further, this analysis obscures the fact that some verbs are restricted as to certain sets of prepositional phrases and adverbs, while others are restricted to particular prepositions, a distinction which underlies the traditional concept of prepositional object. Compare:

He lives in Chicago.

He was talking about Vietnam.

Any locational phrase can stand in the first sentence, but in the second only phrases with particular prepositions. Moreover, there seems to be no particular reason to limit the adverbial type of Prep-Phrase to two. Perhaps it would be best to give two NP's in the VP and only one Prep-Phrase, with prepositional objects derived by rules based on governing features of verbs, much like the rules for case government in languages like German. It is possible also that Prep-Phrase should be considered as coming from a second sentence, to account for the fact that there is no reasonable limit on the number of such adverbials in one sentence—again in contrast to the true prepositional objects. What is relevant here is that there seem to be no reasonable results if we use our VP rule to choose Prep-Phrase but no V. I circumvent this difficulty temporarily, in an ad hoc fashion, by the following formulation (Manner might also ultimately be traced back to a second sentence, but cf. §7.3, end):

⁷Stockwell 1960 suggests the introduction of adverbs from pairs of sentences.

$$VP \rightarrow (V \text{ (Prep-Phrase) (Manner)}) \begin{Bmatrix} Predicate \\ (NP) (NP) \end{Bmatrix}$$

Further, I assume that *Predicate* is developed in somewhat the following way:

$$\begin{array}{l} \text{Predicate} \rightarrow \begin{cases} \text{(Degree) Adjective (NP)} \\ \text{Time} \\ \text{Place} \end{cases}$$

Again, the NP rule will precede the CS rule for adjectives, so that the latter will be strictly subcategorized according to whether N or #S# is chosen.

- **5.** The auxiliary. Now we can return to the question of *have* and *be* as auxiliaries. It will be noted that the base rules outlined above will lead to the following structures, among others:
 - (1) NP Aux #S#
 - (2) NP Aux Pred[#S#]
 - (3) NP Aux NP #S#

Even if we can find no grammatical results for these structures, our earlier decisions will remain unaffected, since the above will merely be blocked by the general condition on well-formedness based on the internal occurrence of # at the end of the transformational cycle (Chomsky 1965:138). However, there is a natural way of interpreting these structures which allows a further simplification of the grammar.

As it stands, the rule for nonverbal sentences given in §3.1 will insert be in the second structure and have in the other two. I suggest that we exploit this result to derive the auxiliary elements, and that the rules for Aux be simplified as follows:

$$Aux \to Tense \text{ (Modal)}$$

$$Tense \to \begin{cases} Pres \\ Past \end{cases}$$

(I omit any further mention of *Modal* because it seems to me that the modals need to be subjected to a thorough re-analysis.)

First, let us note that there are a number of constructions in English in which the subject of an embedded sentence is deleted when it is identical with the subject of the embedding sentence:

I want him to go to Washington.

I don't want to go to Washington.

We plan for him to teach phonetics.

We plan to teach phonetics.

A number of the rules suggested below presuppose an identity of nouns in embedded and embedding sentences. I assume that the required deletion of the repeated noun is carried out by the same rule that is used in the other types of complements.⁸

⁸ Peter S. Rosenbaum discussed the general form of such a rule in a paper presented to the 1965 Winter meeting of the LSA in Chicago: 'A principle governing deletion in English sentential complementation'.

Assuming identical subjects in types (1) and (2) above, the deletion rule will leave us with the following structures:

It seems reasonable to assume that, if the second *Tense* of the first type is *Past*, we have the underlying form for the so-called perfect tenses, which will then fall in with their traditional interpretation as 'present-past' and 'past-past'. A rule for this situation might be given as follows:

T_{perfect}
SD: X, have, #, Past, VP, #, Y
SC:
$$2 > 2 \cap en$$
; 3, 4, 6 > null

By our structure index we have disallowed the occurrence of any time adverbial from the inner sentence; hence the only ones occurring in such sentences will be those that are compatible with the tense of the outer sentence:

I had been in New York last year.

* I have been in New York last year.

The first sentence derives ultimately from the string:

I Past # I Past in New York # last year

Further support for this analysis comes from the ambiguity of a sentence like

He has been in New York for six months.

(Has he been in New York for six months now?)

(Has he ever been in New York for six months?)

The durational phrase can be interpreted as coming from the inner or outer sentence. Only in the latter instance can front-shifting occur, and then the ambiguity is destroyed:

For six months he has been in New York.

Thus the perfect tenses can be paraphrased roughly as

where S contains Past and has the identical NP as its subject.

There is also a straightforward interpretation of the second type, where the inner sentence is derived from *Predicate* and where the second tense is *Pres*, namely as sources for the so-called progressive forms:

 $T_{progressive}$ SD: same as $T_{perfect}$ but 2 = be, 4 = PresSC: same as $T_{perfect}$ but $2 > 2 \cap ing$.

Thus, He is eating a sandwich would be derived from He Pres he Pres eat a sandwich.

Not quite so clear are the two remaining situations for (1) and (2) above with $have \cap Pres$ and $be \cap Past$. Tentatively, we may derive passive constructions from $be \cap Predicate$ where the predicate is represented by a sentence with the subject of the outer sentence repeated as an object, and with the second tense Past for one meaning of the passive—no agent and an essentially perfect meaning

—but *Pres* for the other:

The doors were closed at three.

The doors were closed by the manager at three.

That is, two variants of the rule must be given:

T_{passive}
SD: X, NP, Tense be, #, NP, Tense, V, (by, Agent,) NP, #, Y where
$$2 = 10 \neq 5$$
; 8, 9 = null if 6 is Past
SC: $6 > en$; $9 > 5$; 4, 5, 10, 11 > null

This must be considered an abbreviation for two rules to insure recoverability of the substitution of *en* for *Tense*, but this is implicit in the second condition. Thus the two sentences above would be derived ultimately from

The doors Past be someone Past close the doors

The doors Past be the manager Pres close the doors

(A further condition should probably be added to the effect that 5 must be someone or a similar dummy form where 6 is Past.)

Is there any reason to assume that the progressive and passive constructions involve the element *Predicate*? There is some evidence in the fact that, just like the more usual representatives of *Predicate*, these items can occur as attributes of nouns:

The man walking down the street was Walter.

The man seized by the police was Robert.

In all the cases considered so far, there seems to be support for the idea of underlying complex sentences, since *not* and some of the manner and sentence adverbials can occur in several places in such constructions, indeed in several places at once, and this would be accounted for by assigning these various positions to their occurrence in one or another of the underlying sentences:

John isn't not going.

John is being deliberately not considered for the job.

John isn't deliberately not being considered.

John is wisely not being carefully examined.

Further, certain sentences with time adverbials have double interpretations with *ing* phrases:

John was leaving yesterday (until he changed his mind).

John was leaving yesterday (when an old friend called).

This ambiguity can be explained in terms of the source of the time expression in outer or inner sentence, in quite the same way as in

John planned to go vesterday.

It must be admitted that there are many problems in the suggestions made here about the provenience of Auxiliary elements, in particular in the question of the possible orderings that can occur (possibly correlated with the ordering of the rules), and in the fact that there are absolute limits to the number of such embeddings. It should be noted, on the other hand, that the rules given may be simplified by factoring out certain parts such as the deletion of the repeated NP's and the shape of Past as en in both the perfect and the passive construction.

There are a number of further constructions in *have* and *be*, some of which have fairly obvious connections with those we have analyzed so far. I conclude this section with a list of some examples and some guesses about how to analyze them:

- (1) John has someone wash his car.
- (2) John has his car washed.
- (3) Walter had his car just about washed.
- (4) Walter had his car stolen (on him).
- (5) Peggy has three months to wait.
- (6) I still have term papers to read.
- (7) Charles has a nice picture on his wall.
- (8) Charles has friends visiting.
- (9) I still have to read term papers.
- (10) Bob is to go tomorrow.
- (1) might very well be derived from a structure of the form $NP \cap Aux \cap S$ where S does not have, as in the perfect, a repetition of NP as its subject. (2) might come from the same source but with an intermediate application of the passive rule. There are no English sentences of the form *John has himself wash the car. Yet this is the structure that we have assumed to underlie 'perfect' constructions. A special causative rule for have would have to exclude just this type. Such a restriction does not hold for other verbs used in a parallel way: John made himself fix the light switch.

In examples (1) through (8), we have noun phrases occurring immediately after have; thus the rule for nonverbal sentences will automatically insert this form. Most of (3) through (8) can be derived from structures of the form $NP \cap Aux \cap NP \cap X$ where X may be another sentence (3, 4, 5, 6, 8), an adverbial phrase (7), or the like. (9) might be derived from $NP \cap Aux \cap S$ where S has Pres and is not a predicate; while (10) could be derived from the same situation but with S a Predicate (cf. $The\ man\ to\ go\ tomorrow\ is\ Bob$). It also seems likely that a large number of idiomatic uses of have could be handled in the way suggested above for idea, by introducing a feature specification for verbal nouns or the like and restating the have insertion rule slightly: $have + a\ baby$, $a\ ball$, fun, lunch, etc.

6. Semantic objections. I now turn to a consideration of the objections that might be raised to the analysis presented here from the point of view of the semantic component. Since there are no published examples of semantic theories for English, but only more or less programmatic statements with a few illustrative dictionary entries and projection rules (Katz and Fodor 1963, Katz and Postal 1964), it is difficult to discuss this point without leaving oneself open to the charge of jousting with straw windmills.

Let us consider first the uses of have and be as linking elements in nonverbal sentences. It has often been said that be has no meaning by itself but only in connection with *Predicate*, the passive construction, and so on. The same is true of have. The two forms are distinguished syntactically from most true verbs by the fact that they have no selectional restrictions in themselves, but occur in

constructions where the selections reach across from subject to 'object' or complement. Likewise, from a semantic point of view, their contribution to the meaning of the sentence is determined completely by the items that they link. Consider, for instance, the following sentences:

(1) McX is a cat. class-membership
(2) John is old. property-assignment
(3) Armadillos are mammals. class-inclusion
(4) John is the armadillo ... identity

(5) McX is in the flowerbed. location in space (6) The lecture is at four. location in time (7) Bachelors are unmarried adult males.

(8) I have a house. ownership (9) I have a cold. property-a

(9) I have a cold.
(10) The house has a roof.
(11) John has a brother.
property-assignment whole-part relationship kinship relationship

The foregoing can be multiplied almost indefinitely to illustrate this point. It is evident that any projection rules set up to account for these various meanings would have to take cognizance of the linked items and could be formulated quite simply in terms of pairs of items linked by Aux in the deep structures, with differing results according to whether the items are definite or indefinite, generic, locational, predicative, and so on.

In any event, projection rules for the semantic component must be formulated wherever possible in a language-independent way. Because of the wide variety of constructions found in various languages corresponding to English sentences with have and be, to preserve universal projection rules we will either have to describe these various systems in a way parallel to the analysis offered here, or else attribute the highly peculiar English system to all languages. The reformulation of the base rules given above makes English look much more like a number of other languages.

The semantics of tense, aspect, voice, and so on are sufficiently obscure at present so as to allow me to claim that my suggestions for the analysis of the auxiliary elements are not much worse from a semantic point of view than others currently available. In any event, this problem is one that deserves fuller treatment elsewhere. Most discussions, including non-generative treatments, suffer from the lack of a general theory of tense, aspect, and the like. I suspect that an improvement in the analysis suggested here will not come from a return to the treatment of Aux to be found in presently available transformational grammars of English, but from a much more abstract analysis which operates with universal features underlying such language-specific notions as Present and Past. The connection of perfect tenses to present + past and past + past seems intuitively well-motivated (and is not even very original), while the notion of the progressive as a kind of intensified present does not seem too farfetched.

At any rate, I would hope that the discussion here will help to unfreeze present thoughts on the verbal system of English before too many third-graders have had their intuitions about English structure corrupted by defective transformational 'linguistic blocks' (see *Newsweek*, Dec. 13, 1965).

7. Predicative and 'have' constructions in universal grammar. I shall now discuss in a more or less anecdotal fashion parallel constructions in some other language. I now interpret the base rules (as modified above) as universal rules that do not have to be stated separately for each language. The lexical component of the base, of course, as well as some of the feature development (or redundancy) rules will have to be given separately. I also assume that there will be a number of universal transformations which enter into the descriptions in several ways; some will not be mentioned at all in particular languages, some—even though universal—will have to be mentioned as occurring in the given language. Probably, the general relative clause rule is of the first sort, various further reductions of relative clauses of the second sort. Further, the structure index of certain transformations will be given by the general theory, although particular structural changes will need to be stated for individual languages. Among the last type will be the rules for nonverbal sentences, with the universal structure index as given provisionally above.

Since the order of elements in the surface structure varies widely from language to language (but within definite limits), I also propose that the order of elements in the deep structures will be the same for every language (by definition). Of course, it may turn out that the SVO order set up for English will not be the best order for the universal base (although I suspect it will be, because of the necessity of distinguishing subject from object for selectional rules in the most efficient way). In order to account for the order of elements for individual languages, I assume that there will be in every grammar one or more rules or statements which operate before the transformations to rearrange elements of the deep structures, and at the same time automatically rearrange the structure indices of any applicable universal transformations to conform to this language-specific order. It will be the aim of the general theory to reduce such special stipulations to a minimum, with further differences introduced by implications such as these (cf. Greenberg 1963):

- (1) If V is shifted to the right (left) end of the sentence, then Aux is shifted beyond V to the right (left) end of the sentence.
- (2) If the V is shifted to the right, then *Preposition* is shifted to the right of its NP.

In the present context, such rules are assumed to operate on the structure index of the transformation for nonverbal sentences (referred to hereafter as *T-nv*) to make it conform to the order of the various languages discussed.

7.1. Languages with no overt copula. If no copula ever appears, then there will simply be no reference to T-nv, or the structural change will cover only non-predicative situations. If—as seems more common—the copula appears in certain tenses (Russian) or certain constructions (e.g. relative clauses as in Swahili), then these facts can be accommodated in additional conditions on the structural changes. For instance, the insertion of a form in relative clauses will be covered by the condition on domination by one NP.

Suppose the tense in which no copula appears is the present tense (as is commonly the case), and suppose further that the present tense for such languages

is the unmarked tense; that is, *Tense* is optional and the result of choosing no tense is the present. Then *T-nv* will not apply since there will be no *Aux*. (Or equivalently, if *Pres* has a null phonetic representation, the rule for deleting nodes dominating no terminal element will apply to erase *Aux*.) In Russian, no person marker (subject marker for person/number) appears in such sentences. In Swahili (one possibility) there is a person marker. Either Russian has a rule deleting the person marker when it has no carrying base (*Aux* or verb); or the person marker is not a constituent of *Aux* at all in the deep structure; or—probably best—the agreement is carried out by feature rules, and there does not have to be any special rule deleting the element.

7.2. 'Have'-constructions. Constructions corresponding to the English sentences in *have* are notoriously varied, so that the situation in English where we have a special verb-like form is almost pathological. Moreover, we have not considered at all a number of problems in such constructions in English (cf. the discussion of Tagalog in §7.26). The following is an attempt to survey some common types of constructions.

7.21. Japanese. The type used in Japanese is fairly common: watakusi wa ani ga aru 'I-topic, elder brother-subject, exists'

That is, we have a possessor marked in some way (here as topic, but in some sentences there is also a locative particle ni), then the thing possessed and a verb of existence. These constructions (along with a few other types) differ from the usual pattern in having two NP's, the second of which is marked by ga. Moreover, the use of aru is special in that this verb is normally restricted to non-animate subjects. Assuming the automatic reordering of the structure index of T-nv, the base ar- can be simply inserted between the second NP and Aux (and in other types the copula da etc.). A more generally applicable rule will take care of wa and ga (Ueda 1966). It is interesting to note that the same particle no is used in adnominal modifiers from both such possessive constructions and from equational sentences.

7.22. FINNISH. The construction in Finnish is rather similar to that of Japanese (given the differences between the two languages):

isällä on talo 'father-adessive, is, house'

(compare talo on pieni 'the house is small'). Such constructions differ from the ordinary affirmative sentences in that there is no agreement between the 'logical subject' and the verb (there are also other types which have no agreement). They cannot be conveniently derived by transposition from underlying sentences with the thing possessed as subject, since there is no agreement here either: isällä on talot 'father has houses' (on is the third singular form, cf. talot ovat mäellä 'the houses are on the hill'). In languages that have verbal concord with the subject, the third singular always seems to be the form that appears last ('elsewhere') in an ordered series of subrules. It is probably best to consider talo to be in a general abstract 'objective' case, which is realized in various ways (genitive, nominative, partitive, a special accusative form for pronouns); compare the discussion of German in §7.23. The structural change that we may posit for Finnish is very simple:

SC: $3 > 3 \cap ol$ ('be')

in addition: 2 > 2 adessive where $4 \neq Predicate$

(or the corresponding feature rule if Finnish cases are treated as features).9

So also in various other languages with a case form or particle marking the possessor and a verb or particle of existence. In Russian the presence or absence of a copular form is governed by the same conditions as in other copular sentences: u menja koška 'at me, cat'. Where the copula does appear (non-present tenses), it agrees with the thing possessed, in contrast to Finnish. It should be noted that such constructions often pose special problems for analysis if interpreted along the lines of the 'normal' subject-verb-object constructions.

7.23. German. Why should German merit a special discussion, when it seems to follow the English situation so closely? The answer is that we need to ask why the accusative case is used with *haben* if we presume it to be introduced transformationally. And the answer to this question is of some interest, since it gives additional support to another decision that is not immediately obvious.

In general, case affixes on 'objects' might be introduced by government rules based on case-governing features of verbs. If there is no verb haben in the base, how can we account for the accusative case on its objects? However, to derive all case specifications on objects by special features set up for each verb (and preposition etc.) would be to miss an important fact: in all combinations of two nominal complements to verbs (that is, NP's or Prep + NP derived from VP) with very few exceptions, one of the complements is in the accusative. That is, there are verbs governing pairs of verbal complements in accusative and dative (geben), accusative and genitive (erinnern), accusative and accusative (kosten), accusative with prepositional object (erinnern with an), and so on; but none with dative and dative, dative and genitive, etc. In addition, the number of singleobject verbs taking the accusative is much greater than that of verbs taking dative etc.; while various types of bare NP's used adverbially are in the accusative, with only a few in the genitive and none in the dative. We can account for these facts in various ways that avoid setting up special case-governing features for the majority of instances where accusative must be used. For instance, the case of all NP's (except subject and predicate nominal) can be specified as accusative in a rule that precedes the special case-government rules based on features of verbs, etc. Any such solution which maximizes the generality of the choice of accusative case will automatically cover the objects of haben as well. Something like this may be assumed to operate in Finnish as well, so that there is no need to make special adjustment in the ol rule.

In general, cases will appear in the deep structures of languages with case systems only as features of verbs and 'prepositions'. If the base rules are universal, this will be true by definition, since case is a grammatical and not a 'notional' concept (in Jespersen's terms). But there seem to be certain categories that are intermediate between the abstract and universal grammatical relations expressed in the deep structure and the details of surface structure denoted by such lan-

⁹ I am indebted to Robert T. Harms for information on Finnish and for many valuable comments on several versions of this paper.

guage-particular categories as 'translative', 'dative-in-German', etc. Such intermediate categories would probably be introduced in the way suggested here for the German accusative, and they would be introduced into a particular grammar merely by the statement that the given language has a certain category. Such intermediate concepts probably include 'accusative', 'dative', 'genitive', 'nominative', and 'ergative' (as general concepts not to be confused with particular categories of this or that language, though clearly related to them in much the same way as 'velar' is related to 'velar-in-German', etc.).

7.24. Turkish. In this connection, Turkish offers a particularly interesting situation, since the underlying sentences contain the genitive already, and it might seem that it is impossible (or unnecessary) to derive the construction from some more basic underlying structure:

adamin kitabi var 'man-genitive, book-3p.-possessed, existent' Lees has stated (1965:119) that 'the English genitive is derived from sentences in have through relative-clause reduction, but the Turkish genitive construction may well be a kernel-expression'. But to say that the construction is a kernelexpression—in the model of Chomsky 1965, this can only mean that it is based on a deep structure containing only one sentence and derived without applying any optional (stylistic) transformations—is not to say that the genitive as such necessarily appears in the deep structure. Since genitive phrases occur not only in this kind of kernel sentence, but also at every place where a simple noun can occur as a noun phrase, and since the latter constructions are surely derived from embedded sentences modifying nouns, it can be shown by an argument parallel to our argument for English have-constructions that the simple have-construction is produced by a variant of the rule for genitive constructions from embedded sentential modifiers. In fact, this rule operates even more simply in Turkish than in English, since the only difference between the two types is the presence of var where the whole sequence is not dominated by NP. The possessive suffix on the possessed noun could be attached by this rule immediately. But as a matter of fact, the suggested analysis allows a uniform treatment of the possessive suffixes and the personal suffixes on the verb. If we assume that there is a rule which puts the personal suffixes at the end of every minimal sentence (in agreement with the subject), then these suffixes will be automatically placed after the possessed noun in the verbless sentences. The minor differences between the two sets can then be accounted for by low-level morphological rules.

7.25. Swahili. The basic *have*-construction is as follows (Ashton 1947): *mtoto ana kisu* 'child, subject prefix-with, knife'

The form -na (which has very wide uses) is perhaps to be analyzed into ni + a, where ni is a linker used in (some kinds of) copular sentences and a is the so-called 'a of association'. The latter appears in the regular derived possessive construction— $kisi\ \check{c}a\ [< ki + a]\ \check{m}toto$ 'the child's knife'—and there is also a regular morphological rule giving na from ni + a in other situations. Just as in copular sentences, the forms $li \sim kuwa$ 'be' appear in relative constructions and in marked tenses. The conditions governing different structural changes in T-nv are more complicated in Swahili than in English, since it is necessary (as in a number of other languages) to take into account differences between Predicates

involving locational phrases, adjectives, NP's, etc. ¹⁰ In all of them, however, we get the same addition of $li \sim kuwa$ in related constructions:

mtoto alikuwa na kisu 'the child had a knife'

mtu ni mpiši 'the man is a cook'

mtu alikuwa mpiši 'the man was a cook'

mtu yupo 'the man is here' (yu is an alternate of the relevant subject marker) mtu alikuwapo 'the man was here'

mtu aliyepo mpiši 'the man who is here is a cook'

7.26. Tagalog. Two constructions are used, depending on whether the possessed noun is the topic of the sentence (in 'focus') or not (Bowen 1965):

may mapa si Ernesto 'has [not a verb], map, focus-Ernesto', i.e. 'Ernesto has a map'

kay Ernesto ang mapa 'possessive Ernesto, focus-map', i.e. 'Ernesto has the map'

(si and ang are alternants of the focus marker, the first occurring with personal names, the second with all other nouns.) There is no special problem of analysis here. Focus marking is a process that must be allowed to operate in as general a way as possible. It presents interesting problems, but any solution can be easily adapted to cover the have-constructions. The existence of the two types is of some general interest, however, since it points to features of the English construction not discussed as yet. Moreover, these special problems are not confined to English.

Focus plays in part the same role as does the opposition between definite and indefinite noun phrases in English. We notice differences in interpretation and naturalness in *have*-constructions depending on the definiteness of the possessed nouns. Thus we can have (1) but hardly (2):

- (1) The house has a roof.
- (2) *The house has the roof.

Again, the next pairs of sentences differ markedly:

- (3) I have four brothers.
- (4) I have the four brothers.
- (5) I have a book.
- (6) I have the book.

In English, as well as in other languages, the closest counterpart to the ordinary have-construction with focus on the possessed item is a quite different sentence:

(7) The book is mine.

Compare other languages:

Japanese: hon wa boku no da 'book-topic, I-possessive, copula'

Russian: kniga moja 'book, mine'

German: Das Buch gehört mir 'the book belongs to me'

In general, embedded relative clauses are based on sentences in which the shared noun is definite in the embedded sentence. The definiteness of the resultant *NP* depends on the definiteness of the noun in the embedding sentence.

¹⁰ It is possible that a quite different analysis of the English verb phrase should be worked out, in which the primary distinction would be between adjectival constructions (including true adjectives, passives, *ing*-constructions, and predicate nominals) and all other types.

But in *have*-sentences (the sources of our genitive constructions) we must assume underlying sentences that seem strange:

I see the house and you have the house.

I see the house that you have.

I see a house and you have the house.

I see a house that you have.

Further, the possessive construction I see your house seems to be related to the first but not the second source. It seems likely that the ordinary possessive phrase should be derived from sentences in which the modified noun is definite, while sentences with indefinite possessed nouns would give the type $N \cap of \cap N$'s:

- ... the book that I have ... > ... my book ...
- ... a book that I have ... > ... a book of mine ...

In addition, it seems likely that relative clause formation should be restricted to cases where the noun in the relative clause is definite.¹¹ The complex of problems suggested by the Tagalog sentences must be left unsettled here, but it is clear that they can be treated only in connection with a general consideration of the problems of focus, topicalization, definite-indefinite, and the like, about which a great deal remains to be said.

- 7.3. AUXILIARY VERBS. It was noted above that the two forms used in English nonverbal sentences also occurred in a large number of constructions as auxiliary elements, and it was suggested that these various usages might be related. This situation is quite typical. The following facts and conjectures are relevant:
- (a) In German, haben, sein, and werden occur in predicative and have-constructions. All three are used as auxiliaries.
- (b) In English, get/got is used in a number of places parallel to or directly related to have and be constructions. It is also used as an auxiliary.
- (c) In Finnish, the form ol is used both in predicative and have-constructions, and also in the periphrastic verbal constructions.
- (d) In Swahili, li, kuwa, and na appear in the constructions noted above. Kuwa also occurs in compound tense/aspect constructions. Li and na (as well as a) are phonologically identical with morphemes used as affixes for several tense/aspect forms of the verb. Further, the passive affix is wa, while kuwa is analyzable into ku (infinitive marker which appears obligatorily with single consonant verb roots) plus wa (actually w + a).
- (e) In Japanese ar and i occur both in some predicative and have constructions and in periphrastic verbal constructions. Further, the causative morpheme is clearly related to a verb suru ('do') which is supplied automatically to verbalize non-native verbal nouns.
- (f) In Mandarin, one form is used for have-constructions and for perfect tense forms (Wang 1965:460, fn. 7).

These facts must surely be explained by any attempt to deal with questions of universal grammar. The suggested analysis for English nonverbal constructions can be generalized in the following way, which points toward a possible historical mechanism.

¹¹ S.-Y. Kuroda discusses the connection between relativization, pronouns, and the category of definite in the paper cited in fn. 5.

Many of the various combinations arising out of the verb phrase rule have associated with them a minimally meaningful form such as have or be. Thus directional phrases are associated with go, transitive directional phrases of various sorts with such verbs as take, bring, put, and so on. None of them contribute any meaning to the sentence that is not available already in the items with which they collocate. Each could be removed from the lexicon and predictably added to nonverbal sentences in the same way that we have treated have and be, but as long as this has to be done by a separate rule, it will clearly be more economical simply to list them in the lexicon. Suppose, however, that some transformation becomes available that has the effect of deleting just these verbs. Then the speaker of the language can construct a more economical grammar by omitting the entries from the lexicon and using an extension of the new rule to put these minimally meaningful forms into sentences. The moment this happens, the new rule with its structural description for adding such forms becomes available for extensions to other uses, such as in the auxiliary constructions. An example of this is the English form go. One may speculate that the rule for deleting this verb that we find generally in Germanic languages led the way to a possible extension to auxiliary uses (I'm going to see him etc.). Probably every language has reduced relative clauses corresponding to the attributive adjective and possessive constructions in English; hence the widespread use of such forms as have and be in auxiliary constructions.

It would follow from the above remarks that similarities in the use of such verbs as auxiliaries in various languages have absolutely no value as evidence for genetic relationship. Further, the many similarities in these areas among unrelated languages would seem to constitute not only support for the idea of a universal base, but also evidence for the correctness of the simplicity criterion as an essential part of linguistic theory.

Finally, we noted above that there are no sentences in which have is construed with adverbial phrases like Duration, Frequency, Location etc. What I have suggested above points the way to a possible solution of this problem by extending the nonverbal sentence rule to supply such verbs as last, happen, behave (for Manner) for each of the types of adverbial phrases when they are not serving as modifiers of a verb within the VP. This would make possible a further simplification of the grammar, since these items could be returned to their proper places in the verb phrase, and there would be no need for special rules effecting a rearrangement.

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