ENGLISH AS A *VSO* LANGUAGE

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Evidence is presented that the superficial Subject-Verb-Object word order of English arises by a transformation from an underlying constituent order in which clauses begin with verbs—or more correctly, predicates: the representation in question here is a semantic one in which noun, verb, adjective, conjunction, etc. are undifferentiated.

1. A PREREQUISITE. To increase the likelihood of this paper's being intelligible, I will preface it with a brief summary (largely a restatement of results in unpublished papers by Ross and Lakoff) of an important notion that recurs in it, namely that of the CYCLE.

I will assume in what follows that the transformational component of a grammar divides up into three sub-systems of rules: pre-cyclic transformations, the cycle, and post-cyclic transformations. I will ignore pre-cyclic transformations, since the one known pre-cyclic transformation (namely the sentence pronominalization which gives rise to the *it* of such sentences as *Margaret is believed by many to be pregnant, but she denies it*) is irrelevant to my argument. The rules of the cycle are ordered, as are the post-cyclic transformations. All the rules of the cycle apply in sequence first to the innermost sentence, then all the rules of the cycle apply to the next higher sentence, etc. Thus, an application of a rule of the cycle to an embedded sentence precedes all applications of that or any other cyclic transformation to the sentence in which it is embedded.

The following illustrates the kind of grounds on which one can conclude that certain transformations have to be in the cycle. There is a transformation, called EQUI-NP-DELETION, which deletes the first noun phrase of an embedded clause if it matches a certain *NP* of the clause containing it, as in *Max wants to drink a daiquiri*, where the subject of *drink* has been deleted under identity with the subject of *want* (Fig. 1).[1] There is another transformation (/known under a variety of names) which I will refer to as SUBJECT-RAISING; it applies to certain sentences containing an embedded clause, moving both the subject and the remainder of the embedded clause into the higher clause, as in *Arthur seems to admire Spiro*, which arises from an underlying structure in which *seem* is an intransitive verb whose subject is the sentence *Arthur admires Spiro* (Fig. 2). The interaction of these two transformations is seen in the sentences

(1) Boris wants to seem to understand physics.
(2) Boris seems to want to understand physics.

In 1, Equi-NP-deletion must apply to S_0 (Fig. 3a); however, it cannot apply to S_0 unless S_1 has a subject which matches that of S_0. *Boris* does not become the subject of S_1 until Subject-raising applies to S_1. Therefore, Subject-raising must apply to S_1 before Equi-NP-deletion applies to S_0. In 2, Equi-NP-deletion must apply to S_1 so as to delete the subject of S_2 (Fig. 3b); but for Equi-NP-deletion

[1] In this and subsequent diagrams, I will ignore tense. See McCawley, MS b, for some details of what is omitted here.

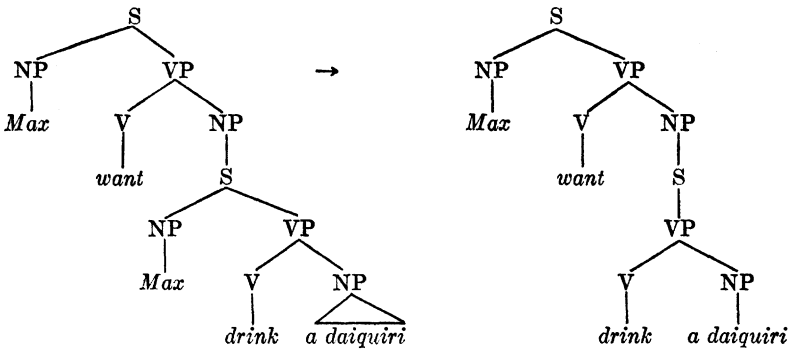

FIGURE 1.

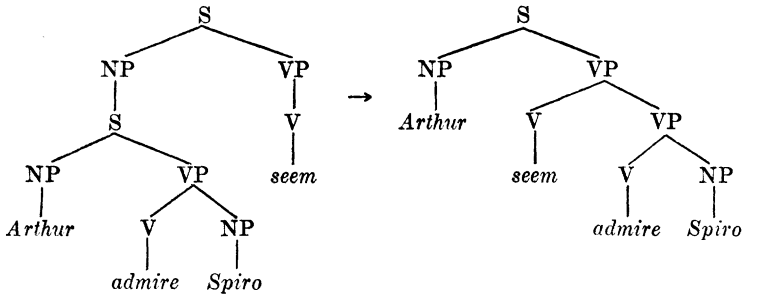

FIGURE 2.

to apply to S_1, the subject of S_1 must be the same as the subject of S_2, which implies that Equi-NP-deletion must apply to S_1 before Subject-raising applies to S_0 and causes *Boris* to cease to be the subject of S_1 and to become the subject of S_0. Thus, Subject-raising on a lower sentence must apply before Equi-NP-deletion on a higher sentence, and Equi-NP-deletion on a lower sentence must apply before Subject-raising on a higher sentence. Both Subject-raising and Equi-NP-deletion must be in the cycle: if either or both were pre-cyclic or post-cyclic, then all the applications of one would precede all the applications of the other, and at least one of the above derivations would be impossible. There are indeed cases where an application of Equi-NP-deletion must intervene between two applications of Subject-raising, as in

(3) Boris seems to want to appear to understand physics

where, using the same arguments as above and the same subscripting scheme, Subject-raising on S_2 must precede Equi-NP-deletion on S_1, which must in turn precede Subject-raising on S_0. I emphasize that I mean MUST precede and not just MAY precede: given the assumed formulations of the transformations, these are the only sequences of rule applications which would generate these sentences. It should also be noted that one can argue that a transformation is in the cycle only on the basis of its interaction with other transformations, not just on the basis of its specific effect.

In the case of post-cyclic rules, all applications of one transformation precede

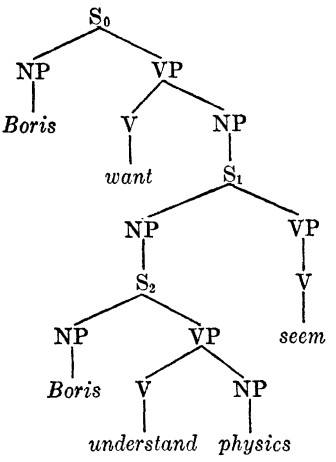

FIGURE 3a.

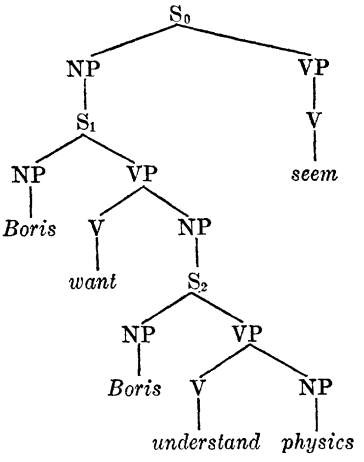

FIGURE 3b.

all applications of the next transformation. As an example of the kind of grounds on which one can conclude that a transformation must be post-cyclic, consider the transformation of EXTRAPOSITION, which moves (usually optionally) certain embedded clauses to the end of the clause in which they are embedded, thus giving as optional variants such pairs as

(4a) That Nixon will send the marines to Botswana is unlikely.

(4b) It is unlikely that Nixon will send the marines to Botswana.

If Extraposition were in the cycle, certain sentences would be assigned the wrong surface constituent structure; for example, in the sentence

(5) It appears to be unlikely that Nixon will send the marines to Botswana

the words *to be unlikely that Nixon will send the marines to Botswana* would be a constituent in surface structure (Fig. 4). That constituent structure would imply that 5 could be divided into the phonological phrases *it appears* and *to be unlikely that Nixon will send the marines to Botswana*,[2] as in cases which clearly have the surface constituent structure that appears in Figure 4, e.g. *He desires to be assured that Nixon will send the marines to Botswana.* However, it is actually highly unnatural to make an intonation break after *appears* in 5. The only place where it is natural to divide 5 into phonological phrases is after *unlikely.* But the hypothesis that Extraposition is post-cyclic yields a surface structure which implies that exactly that intonation break should be possible: the cycle would not affect S_1, and its application to S_3 would yield Figure 5a, which post-cyclic Extraposition would convert into Figure 5b, in which *appears to be unlikely* is a surface constituent and the highest constituent boundary not preceded or followed only by unstressed material is thus between *unlikely* and *that.*

2. ON THE FORMULATION OF THE CYCLIC TRANSFORMATIONS. The notions 'cycle' and 'post-cyclic transformation' were proposed at a time when everyone

[2] The highest constituent boundary (after *it*) is not a possible intonation break, since the constituent it follows is unstressed.

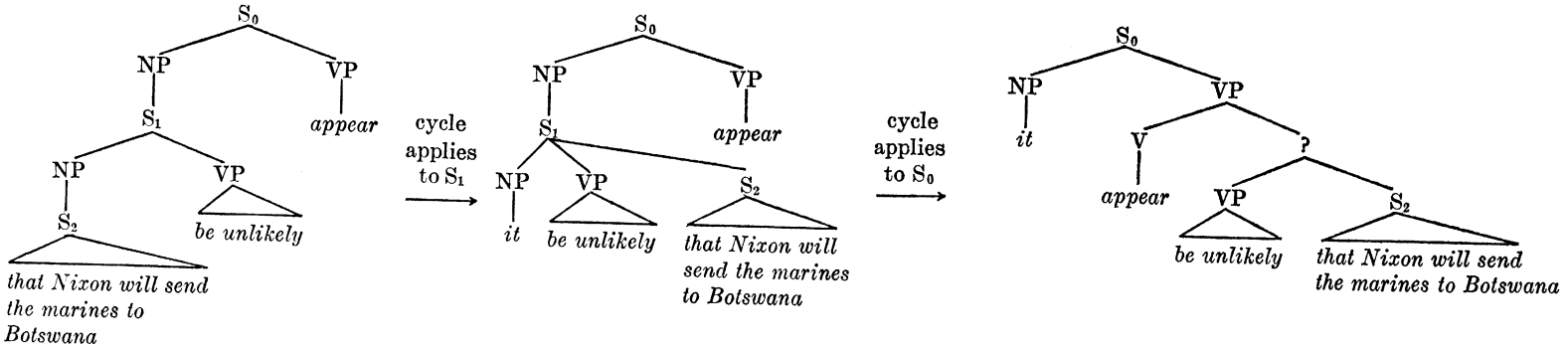

FIGURE 4.

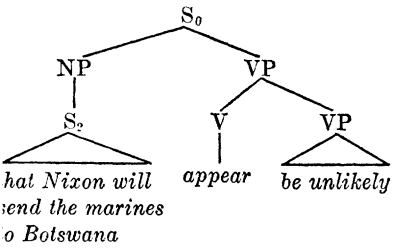

FIGURE 5a.

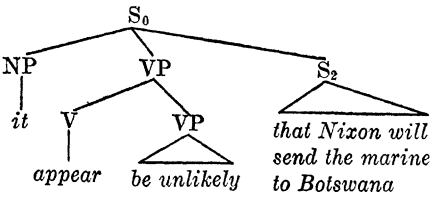

FIGURE 5b.

believed in a distinction between syntax and semantics. They were proposed as part of a theory of syntax; that is, they were supposed to relate deep structures to surface structures, where deep structures were by assumption syntactic, not semantic, objects. More recently, some linguists, including me, have rejected the distinction between syntax and semantics and have treated transformations as mechanisms for associating semantic representations with the corresponding surface structures, without recourse to any level of 'deep structure' as distinct from semantic representation. The rejection of a dividing line between syntax and semantics appears not to require any modification of earlier conclusions as regards what transformations are and how they interact. In particular, the notions of 'cycle' and 'post-cyclic transformation' carry over unchanged to the newer concept of grammar.

Semantic representation in my current concept of grammar is something not far removed from the representations that appear in most varieties of symbolic logic.[3] In particular, it is necessary that semantic representations contain VARIABLES if they are to express the difference in meaning between sentences such as

(6a) Only Lyndon pities himself. $\text{Only}_x(\text{Pity}(x, x), \text{Lyndon})$

(6b) Only Lyndon pities Lyndon. $\text{Only}_x(\text{Pity}(x, \text{Lyndon}), \text{Lyndon})$

(6c) Only Lyndon pities only himself. $\text{Only}_x(\text{Only}_y(\text{Pity}(x, y), x), \text{Lyndon})$

(6d) Only Lyndon pities only Lyndon. $\left\{\begin{array}{l}\text{Only}_x(\text{Only}_y(\text{Pity}(x, y), \text{Lyndon}), \text{Lyndon}) \\ \text{Only}_y(\text{Only}_x(\text{Pity}(x, y), \text{Lyndon}), \text{Lyndon})\end{array}\right\}$

Only expresses a relation between a thing and a property, namely the relation of that thing and no other thing having the property. Variables are needed to represent properties such as 'pitying only oneself', and when more than one variable is present, it is necessary to indicate which *Only* goes with which variable. In addition, ambiguous sentences such as 6d[4] show that it is necessary for semantic representation to indicate the immediate constituent structure of the semantic elements, since the only difference in meaning between the two readings of 6d

[3] See McCawley, MS b, for a fairly detailed account of semantic representation.

[4] For many speakers, 6d allows only the former of the two readings given above. See Lakoff (1969b, MS) for a presentation of the formal devices needed to exclude the second reading of 6d in the grammar of a dialect that does not admit that reading. There is much more to *only* than I have suggested here; see Horn 1969 for details.

lies in which of the two *Only*'s applies to a property containing the other one. One reading of 6d is paraphrasable as 'Lyndon is the only person who pities only Lyndon', the other as 'Lyndon is the only person whom only Lyndon pities'.

I should emphasize that the ultimate elements of semantic representations need not correspond to the words of surface structure (as they appear to in the highly oversimplified case just discussed), but will rather be the various semantic elements involved in the meanings of the words (plus, generally, semantic elements that are not given overt expression). Some of the transformations will be PRE-LEXICAL, i.e. they will apply before the point or points in the derivation at which lexical items are chosen (Gruber 1965, McCawley 1968). One of the effects of pre-lexical transformations is to group semantic elements together into word-sized units; an example of a pre-lexical transformation will be discussed later.

In the above examples, I have followed the usual practise of modern logicians and written the predicates *Pity* and *Only* before the items that they apply to. Thus, my semantic representations correspond to a word order in which verbs precede their subjects. It is, of course, natural that logicians should have used such a mode of representation: first and last are positions that are in some sense 'special', and the logicians in question have put the predicates in a special position because of their special role in the proposition. My main concern here is the question of whether such semantic representations are syntactically justified, i.e. the question of whether a dividing line can be found between 'early' transformations, which give evidence of operating on inputs that have predicates at the beginning of clauses, and 'later' transformations, which give evidence of applying to structures with predicates second in the clause.

Ignoring the one known pre-cyclic transformation, which turns out to be irrelevant to this question, the earliest transformations in the grammar are those of the cycle. It has been observed by John Kimball that the transformations that have thus far been shown to be in the cycle all give outputs of the same general shape as the structures generated by the base component. If this observation of Kimball's (which, it should be emphasized, has not been very widely tested as yet) turns out to be a universal property of cyclic transformations, then a language with underlying predicate-first order would retain predicate-first order throughout the cycle and could become a surface verb-second language only through a POST-CYCLIC transformation of *V-NP* inversion. An obvious question to ask, then, is what effect the assumption of underlying predicate-first order would have on the cycle in English. To answer that question, it is necessary first to determine whether the same transformations would be cyclic for predicate-first order as would be cyclic for predicate-second order. With one exception, all the cyclicity arguments I know of are valid regardless of whether the transformations apply to inputs with predicate-first or predicate-second order. The one exception has to do with the transformation of DATIVE-MOVEMENT, which yields *I gave $10 to Max* as an optional variant of *I gave Max $10*. The argument that Dative-movement must be in the cycle is based on an argument that Dative-movement must apply before Passive, which is known on other grounds to be in the cycle. However, the latter argument depends crucially on the assump-

tion of predicate-second order: in the version of Passive which would be required by predicate-second order, Passive and Dative-movement could apply in either order. Thus, except possibly for Dative-movement, the same transformations are in the cycle regardless of whether the basic constituent order is predicate first or predicate second.

Of the 15 transformations of English that I can argue must be in the cycle, there are ten for which it makes no significant difference whether they apply to structures with predicate first or predicate second. For example, the cyclic transformation of quantifier lowering, which attaches quantifiers to the noun phrases that they go with, would require only a trivial difference in formulation if it is to apply to a structure with predicate first instead of predicate second; specifically, the transformation would be formulated with the quantifier to the left rather than to the right of the clause into which it is inserted.[5] For the remaining five cyclic transformations, the underlying constituent order makes a significant difference in the complexity of the conditions under which the transformation applies, or in its effect. In each case, the version of the transformation that assumes predicate-first order is significantly simpler in the sense of either involving fewer elementary operations or applying under conditions which can be stated without the use of the more exotic notational devices that have figured in transformational rules.

The first of these transformations is the passive transformation. I should begin by pointing out that no existing formulation of a passive transformation even comes close to explaining the various mysteries connected with passives,[6] e.g. the question of why *Hubert loves God* is not funny in the same way that *God is loved by Hubert* is. While I have no concrete proposal for how passives work, I think that investigations of passives so far have at least established that passives arise from some structure containing an active clause and that the surface *by*-phrase arises from the subject of the underlying active through a movement transformation. Given that assumption, then if the passive transformation, what-

[5] Arguments that quantifiers originate as predicates of structures containing embedded clauses into which the quantifiers are eventually inserted are given in Carden 1967 and Lakoff 1969a.

[6] The most attractive proposal in print is that in Hasegawa 1968, namely that the passive *be* is an underlying transitive verb; e.g. *Boris was denounced by Vassily* would be derived from something like *Boris be* [*Vassily denounce Boris*]$_S$. Chomsky (MS) criticizes this analysis on the grounds that some passives have surface subjects which otherwise do not occur in subject position, e.g. *The man to do the job has not yet been found*; he argues that the appropriate surface subjects of passives can be generated only by having the surface subject of the passive originate within an underlying active, rather than outside the active, as in Hasegawa's proposal. The proposal of an intransitive passive *be* which figures in Fig. 6 is due to Lakoff and Ross. I suspect that, Chomsky's examples notwithstanding, some variant of Hasegawa's proposal will be needed to explain the difference in grammaticality of passives of various idioms, e.g. *My leg has been pulled* vs. **The bucket has been kicked*. A variant of Hasegawa's proposal in which an element of the complement of *be* could be substituted for a 'related' but not necessarily identical subject of *be* would incorporate the intuition that those fragments of idioms which can be derived subjects of passives 'go proxy for' what the sentence is really about. However, I have not yet succeeded in turning this highly speculative suggestion into an explicit analysis, and I am aware of such difficult cases as *The hatchet has been buried between them*.

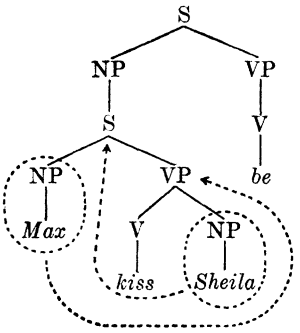

FIGURE 6a.

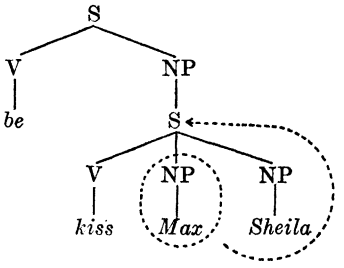

FIGURE 6b.

ever it is, applies to a structure with verb second, it has to move two noun phrases: it has to move the underlying subject to the end of the clause, and the underlying object into subject position (Fig. 6a). However, if Passive applies to structures with verb first, then only one noun phrase need be moved: if the subject is moved to the end of the clause, the object will then automatically be in 'subject position', i.e. it will directly follow the verb and thus will become surface subject by *V-NP* inversion[7] (Fig. 6b).

Similarly, the transformation of THERE-INSERTION which creates the *there* of existential sentences such as

(7) There is a unicorn in the garden

has to both create the *there* and move the underlying subject of *be* if it applies to an input with verb-second order. However, if it applies to an input with verb-first order, it is only necessary that it insert *there* after the *be*: the *NP* which would have become the surface subject had *there* not been inserted need not be moved, since it is no longer in the environment where *V-NP* inversion would affect it (Fig. 7). Here I must interject two remarks about *There*-insertion. First, the formulations occasionally given in which *there* is inserted when the subject is 'indefinite' are inadequate, since *There*-insertion only applies to a clause which is in the immediate scope of an existential quantifier. Note that

(8) John thinks that someone is in the garden

is ambiguous (one reading: 'John thinks that there is someone who is in the garden'; the other reading: 'There is someone such that John thinks that that person is in the garden'), whereas

(9) John thinks that there is someone in the garden

allows only the former reading. Hence, of the two semantic representations that

[7] One of the many gross oversimplifications in this account of passives is my failure to take prepositions into account. I subscribe to the proposal (Fillmore 1968:32–3) that at some stage of every derivation, every *NP* will have a preposition. The obvious supplementary proposal that the dictionary entry of each verb contain a specification of which preposition goes with which *NP* would imply that the prepositions must be inserted before Passive changes the orientations of the *NP*'s relative to the verb, and thus that lexical insertion of the verb must take place during the application of the cycle to the lower *S* in trees such as that of Fig. 6b, and that *V-NP* inversion actually interchanges the verb and the following prepositional phrase (whose preposition is later deleted).

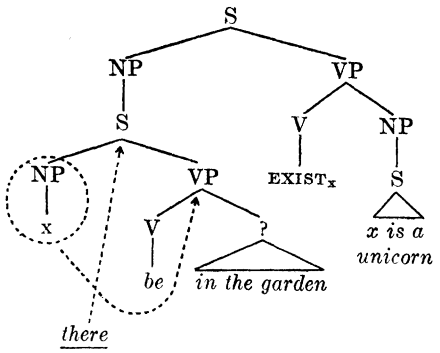

FIGURE 7a.

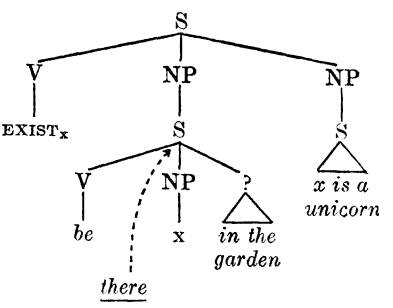

FIGURE 7b.

are realizable as 8, only one is subject to *There*-insertion; and since the crucial difference between those semantic representations is the location of the existential quantifier, the transformation creating *there* should mention that the next predicate up from the affected clause must be an existential quantifier. Second, this formulation of *There*-insertion implies that, for the argument I am giving for underlying predicate-first order to be valid, *V-NP* inversion will have to be post-cyclic (as, of course, would be predicted from Kimball's conjecture): if it were in the cycle, then when *There*-insertion applied, the clause in which *there* was to be inserted would have already undergone *V-NP* inversion. Thus *V-NP* inversion must be post-cyclic if underlying predicate-first order is to have the advantage over underlying predicate-second order that I propose it has.

I thus maintain that the 'standard' formulations of Passive and *There*-insertion are really composed of two things: the essential transformation and whatever juggling of *NP*'s is necessary to yield verb-second order. The predicate-first proposal makes the latter unnecessary by having a single rule that produces verb-second order. Moreover, Postal (personal communication) points out that this rule comes at no cost: there must be a rule that gives rise to an alternation between verb-first and verb-second word orders so as to account for word order in questions. What are usually stated as conditions for the application of a rule of *NP-V* inversion can just as easily be stated as conditions for the non-application of a rule of *V-NP* inversion; i.e., having a rule of *V-NP* inversion makes it unnecessary to have in addition a separate rule of *NP-V* inversion such as has figured in most accounts of questions.

The remaining three cyclic transformations which are relevant have the following properties in common: (1) each of them moves material from an embedded clause up into the clause containing it, and (2) the embedded clause may be either the underlying subject or the underlying object of the clause containing it. One of these transformations is Subject-raising. I have already given cases where Subject-raising lifts material out of the underlying subject of intransitive verbs such as *seem* and *appear*. It also lifts material out of the objects of transitive verbs such as *believe* (in this case, optionally), thus giving as optional variants

(10a) Sam believes that his brother is a necrophiliac.

(10b) Sam believes his brother to be a necrophiliac.

The next of these transformations is that of NEGATIVE-RAISING, which optionally moves a negative from an embedded clause to the next higher clause. It applies both to the object complements of certain transitive verbs, giving optional variants such as

(11a) I think that Harry won't be here until Friday
(11b) I don't think that Harry will be here until Friday

and to the subject complements of certain intransitive verbs (or adjectives), giving optional variants such as

(12a) It's likely that Nixon won't send the marines to Botswana until 1972.
(12b) It's not likely that Nixon will send the marines to Botswana until 1972.

The third transformation is the pre-lexical transformation of PREDICATE-RAISING, which optionally adjoins the predicate of an embedded sentence to the predicate of the next higher sentence. For example, the word *kill* is insertable only in a structure derived through three pre-lexical applications of Predicate-raising to a structure of roughly the form '*x* causes *y* to become not alive' (Fig. 8). Note that in the first two applications the clause whose predicate is raised is the subject of the next higher clause, but in the third application it is the object. If these three transformations apply to inputs that have predicate-first word order, it is extremely simple to state what they do: each applies to a sentence of the form *Predicate* + optional *NP* + *Sentence*; Subject-raising takes the subject of the embedded sentence and puts it outside and to the left of that sentence; Negative-raising takes a negative marker, if that is the predicate of the embedded sentence, and puts it in front of the upper sentence; Predicate-raising adjoins the predicate of the lower sentence to the right of the predicate of the upper sentence. To formulate any of these three transformations if they applied to structures that had predicate-second order would require great ingenuity in the ma-

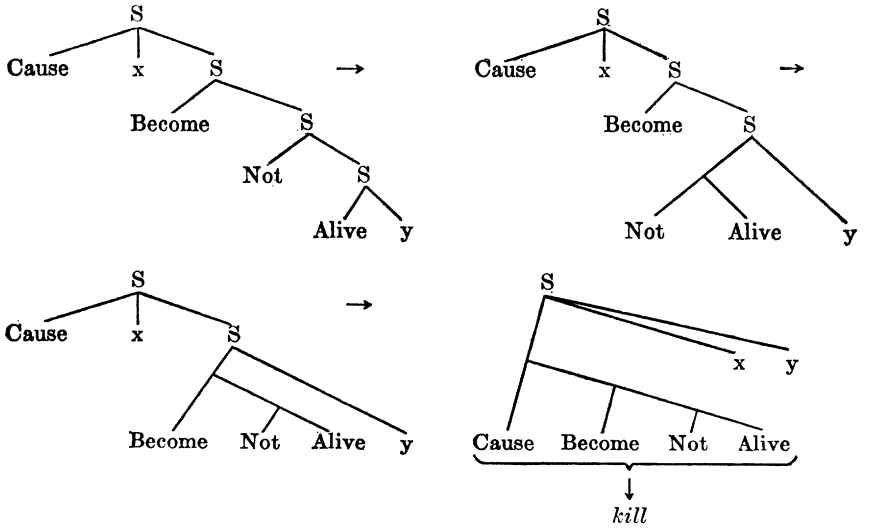

FIGURE 8.

nipulation of symbols, since either the thing being extracted from the embedded sentence would have to move to the right when extracted from a subject complement and to the left when extracted from an object complement (this is the case with Negative-raising and Predicate-raising), or it would be moved over different things depending on whether it is extracted from a subject complement or an object complement.

The simplifications which underlying predicate-first order brings about are important in connection with placing limits on the class of possible transformations. In particular, it may be possible to impose the constraint (first proposed, I believe, by Hasegawa, p. 242) that each transformation may perform only one elementary operation: Passive and *There*-insertion were the two best examples of transformations that had to perform two or more elementary operations, and under my analysis they are no longer examples of that. It may also be possible to banish from linguistics the ubiquitous curly brackets: the number of supposed rules in both phonology and syntax that have been formulated using curly brackets and which have turned out to be wrong is rather large—large enough to lead me to conjecture that in fact all formulations involving curly brackets are wrong. Three examples that a defender of curly brackets might have cited in their defense have just bitten the dust.

I can give two additional pieces of evidence for underlying predicate-first order. First, when items such as *only* and *even* apply semantically to an entire clause, as in

(13) The judge only sent you to prison; your wife didn't leave you too

they precede the verb. If the underlying order is predicate-first, then no extra rule is needed to put these *only*'s and *even*'s in the right place: they would originate directly before the clause containing the verb in question, and *V-NP* inversion would move the *NP* not only across the verb but also across the *only* or *even*. Second, having underlying predicate-first order in English provides a partial explanation of why English conjunctions precede the conjuncts that they go with, while in verb-final languages such as Japanese, conjunctions follow the conjuncts that they go with. Here I accept Ross's conclusion that the surface structure of an English expression such as *John and Harry and Bill* has an immediate-constituent structure with pre-posed conjunctions and its Japanese counterpart *Taroo to Ziroo to Saburoo to* post-posed conjunctions, and that these structures arise from an underlying structure containing a single conjunction through a rule of CONJUNCTION DISTRIBUTION (Fig. 9). Ross conjectures that there is a universal relation between verb position and conjunction position in languages with fixed word order: that languages with verb first or verb second have preposed conjunctions, but languages with verb last have post-posed conjunctions.[8] The assumption that all verb-second languages are underlying verb-

[8] Most modern Indic and Iranian languages have all the typological characteristics of verb-first and verb-second languages except for the characteristic of having the verb first or second: they normally have the verb at the end of the clause. Like English, they have pre-posed conjunctions and transformations that move material to the end of the clause, and allow 'gapping to the right', i.e. deletion of later copies of a repeated verb, as in *John ordered spinach, Harry potatoes, and Sam turnips*. A true verb-final language such as Japa-

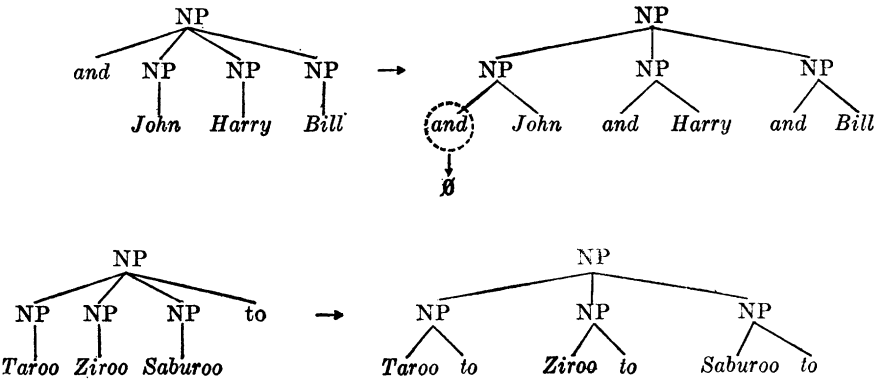

FIGURE 9.

first languages would explain the portion of this conjecture which relates to conjoined structures that are derived by conjunction reduction from conjoined sentences. My analyses so far have implicitly rejected the traditional distinction between 'predicate' and 'logical operator': I have written such 'logical operators' as negation and quantifiers as if they were simply predicates predicated of sentences. A natural extension of this policy (which is defended in McCawley, MS a) would be to treat sentential conjunctions such as *and* and *or* as predicates that are predicated of sets of sentences.[9] But under that analysis, in a language with predicate-first order, *and* and *or* would precede the descriptions of the sets of sentences of which they are predicated.

It should also be pointed out[10] that if a grammar contains a rule of *V-NP* inversion such as I have proposed, it will be unnecessary for there to be a separate rule of *NP-V* inversion such as has figured in all transformational treatments of questions that I have seen: if the conditions for the application of *NP-V* inversion can simply be made conditions for the non-application of *V-NP* inversion, the same word-order differences between questions, etc. and 'ordinary' declarative clauses will arise as under the earlier treatment. Thus, if one believes in evaluation measures (which I do not), one would presumably have to rate *V-NP* inversion as equal in 'cost' to the *NP-V* inversion rule which it makes unnecessary.

One aspect of the analysis being presented which the reader will have un-

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nese has only post-posed conjunctions, does not have Extraposition, and allows only gapping to the left, i.e. deletions giving surface structures of the form *John spinach, Harry potatoes, and Sam turnips ordered.* These facts lead Ross (MS) to conclude that Hindi is an underlying verb-second language whose surface verb-final order arises by a transformation.

Some cases which do not fit neatly into this typology have been called to my attention by Charles A. Ferguson and Robert Underhill. Bengali has developed some post-posed conjunctions alongside of the original pre-posed conjunctions, and Turkish has both post-posed (native) and pre-posed (Arabic loan) conjunctions.

[9] Indeed, I would maintain that *and* and *or* are really positional variants of quantifiers. The difference between *and* and *all* is simply whether the set of sentences to which it applies is defined by enumeration or by a definite description.

[10] I am grateful to Paul M. Postal for the observations contained in this paragraph.

doubtedly noticed is the absence of any constituents labeled *VP*. The absence of such a label is, of course, implicit in the proposal of predicate-first word order: if the subject of a verb originates between that verb and its object, there could hardly be an underlying constituent consisting of verb and object. The absence of the label *VP*, I maintain, is no great loss. The few existing arguments that purport to provide evidence for a syntactic category of *VP* in English actually only provide evidence that surface structure has a constituent consisting of the verb and its objects but not the subject. Lakoff and Ross have observed that this constituent structure arises automatically, given the transformations referred to above; they have argued that the supposed *VP*'s are merely remnants of embedded sentences, and that what little evidence can be found bearing on their category membership indicates that they retain the label *S* rather than requiring a new label *VP*. For example, pronominalization with *so* gives evidence for a surface constituent consisting of a verb and its objects, since the antecedent of *so* in

(14) Zorn's lemma implies the axiom of choice, and so does the hypo-turtle axiom

is clearly *imply the axiom of choice*. However, *imply the axiom of choice* will be a surface constituent regardless of whether there is an underlying *VP* constituent, provided one assumes the transformations given so far and treats tenses as underlying predicates (Fig. 10).

I will close with a remark on typology. The familiar classification of languages with fixed word order into *VSO* languages, *SVO* languages, etc. has the defect of ignoring what happens when a clause contains more than a verb, its subject, and one object. For example, one can easily imagine several radically different word-order types which would all give subject-verb-object word order when only those three constituents were present: one language might have the verb second in all clauses, another might have the verb next-to-last in all clauses, and a third might require that the verb always be followed by the same number of constituents that it is preceded by. It is of importance to ask whether all these different kinds of *SVO* language actually exist. As far as I know, they do not: the '*SVO* languages' that I have heard of all have the verb second, regardless of how many constituents the clause contains. I conjecture that the absence of other types can be explained as follows: there are basically only two word-order types, verb-initial and verb-final; other surface word-order types arise from one or the other of these through transformations; however, different transformations are possible in verb-initial languages than in verb-final languages. Ross (MS) has observed that underlying verb-final languages do not have transformations which would cause anything to follow the verb. If Ross is correct in his conjecture that no

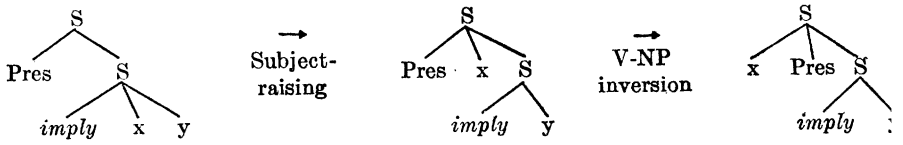

FIGURE 10.

transformation may change verb-final order,[11] then there would be no possibility of an underlying verb-final language having an obligatory *NP-V* inversion which would turn it into a verb-penultimate language; however, there is nothing to prevent a verb-initial language from having a *V-NP* inversion that turns it into a surface verb-second language.

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[11] The one possible counter-example to this claim that I know is the variety of Japanese-influenced Hawaiian English which has been studied by Susumu Nagara. This dialect has verbs second in the clause but otherwise agrees with Japanese in word order; it may well turn out that it must be analysed as having underlying *SOV* word order which is converted by a transformation to *SVO*.