SOME EXPLANATIONS OF CAUSATIVES IN ENGLISH

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In traditional grammar there is a well-established distinction between transitive and intransitive verbs, the former occurring with an object, the latter occurring without one. Thus depart may exemplify the intransitive type and hit the transitive type. But there has also been a recognition of a third type of verb which may be used either transitively or intransitively (Jespersen, 1933:117), and which has the property that the subject of the intransitive is the same as the object of the transitive. Such verbs have more recently (Huddleston, 1971:65) been referred to as ergative. Open will serve to illustrate this type.

There are other types of verb which may also occur in either transitive or intransitive sentences yet would not be categorized as ergative. Consider, for example, the type exemplified by eat in the following sentences:

(1) a. John ate a hearty breakfast.
b. John eats everyday at twelve.

eat here is used transitively, (1)a, or intransitively, (1)b. However we observe that the subject is the same in both sentences. Unlike the ergative, eat does not have a relationship between the object of the transitive and the subject of the intransitive. Rather it has been recognized that eats in (1)b has an understood object and the sentence has accordingly been categorized as pseudo-intransitive (Lyons, 1968:363). The presupposition is that eat is a transitive verb which under certain conditions of unmarkedness may delete its object, generating the surface intransitive.

Moreover transitive verbs such as hit may also occur in the intransitive if we define object as a relationship on surface structure. Thus consider the sentences in (2):

(2) a. John hit Bill on the chin.

b. Bill was hit on the chin by John.

c. Bill was hit on the chin.

Here if we attend to surface relationships alone, then <u>hit</u> is used transitively in (2)a; and intransitively in (2)b and (2)c. Moreover we observe that the subject of the intransitive corresponds to the object of the transitive. In terms of this description <u>hits</u> would be an ergative verb. However, the relational terms subject and object are best defined in terms of deep structure configurations and not surface structure ones (Chomsky, 1965). Moreover passive sentences are generally regarded as being derived transformationally from a deep structure in which the underlying grammatical relationships are similar to those for the active. This passive transformation may take the form of either a one step complex operation or be completed by two simple transformations (Chomsky, 1970 a; Emonds, 1970). Thus granted the position that transitivity is to be defined on deep structure, <u>hit</u> is transitive in all the sentences of (2).

There are other verbs which are similar to ergatives but which form a distinct subclass, since the intransitive seems to be derived from the transitive. This type is examplified by <u>wash</u> in the sentences of (3):

(3) a. Someone washed this shirt well.

b. This shirt washes well.

The clause type exemplified in (3)b has been in the past referred to as activo-passive; more recently it has been described as process-oriented receptive by Halliday (1967:47). Lyons (1968) categorizes this structure among the pseudo-intransitives and Huddleston (1971:70) has outlined two arguments in support of a claim that "there are two participants present in deep structure, an objective (this shirt) and an indefinite agentive which is deleted prior to the pre-passive level of structure". The case that (3)b is a pseudo-intransitive seems to be strongly supported by the evidence and such sentences appear to be correctly characterized as deriving from the transitive by a passive transformation. <u>Wash</u> is thus inherently a transitive verb, from which a pseudo-intransitive may be derived as in (3)b.

As further evidence that an ergative verb such as <u>open</u> differs from a transitive verb such as <u>wash</u> we may observe the following sentences:

(4)   a. John opened the door.

      b. The door opened quietly.

      c. This door opens easily.

Now clearly (4)c is an activo-passive; like (3)b it implies an indefinite agent. Thus (4)c has the meaning 'it is possible for someone to open this door easily' but (4)b has the meaning 'The door came to be open quietly'. The latter does not necessarily imply that someone or something opened the door. Since agency is not implied, it needs to be distinguished from (4)c.

We may note one further difference between the transitive wash and the ergative open. The latter but not the former has a causative interpretation when it is used in the transitive; while the former but not the latter must have a passive interpretation (with subject as goal) when used in the intransitive. It is important to observe in this connection that the implicational relationships of (3)a to (3)b and of (4)a to (4)b are different. John opened the door implies that the door opened. But someone washes this shirt well does not imply this shirt washes well. The shirt may in fact have washed very badly; in this case all that (3)a would imply would be that someone was making the best of a bad job. Thus in normal circumstances (3)a would have the interpretation of an action transitive, meaning that someone (actor) did something to the shirt (goal); it would not have the meaning 'someone caused the shirt to do or become something'.

There has been little disagreement by linguists about the facts for ergatives as I have outlined them. But there have been broad differences in opinion about how these facts are to be captured in grammars. Should the transitive uses of ergative be derived from the intransitive uses? What role should cases play in the interpretation of sentences in which ergatives appear? How is the relationship of the causative ergative to the other verbs of causation (Jespersen, 1956:290) to be captured in a grammar? Should transitive and intransitive structures in which ergatives appear be derived independently by base rules? Depending on the type of answer given to these questions we can distinguish between transformationalist, case and lexicalist solutions.

The transformational approach hypothesizes that explicit causatives

(<u>John made the door open</u>) and implicit causatives (<u>John opened the door</u>)
have similar deep structures. Thus given the sentences of (5):

(5)   a. John made the door open.
      b. John opened the door.
      c. The door opened.

Lakoff (1970:42) has proposed that (5)a and (5)b would have (5)c embedded
as a sentential complement. The differences in deep structure of (5)a and
(5)b are slight. The deep structures would be identical except that (5)b
would have a causative pro-verb where (5)a has the verb <u>make</u>. Thus the
deep structure of (5)b would be:
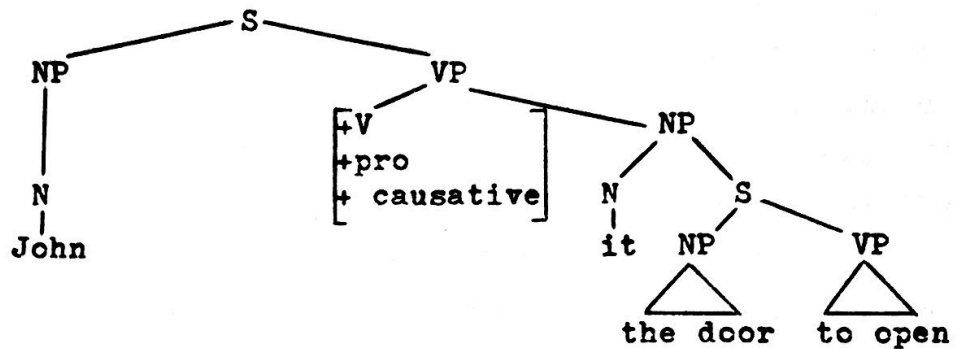
The surface structure of (5)b would be formed by <u>it</u>-deletion and a
transformation that Lakoff refers to as causative but which others have
described as predicate raising. This transformation takes <u>open</u> from under
the subordinate 'S' and substitutes it for the pro-verb in the
superordinate sentence. After tree-pruning has applied the derived
structure will be:
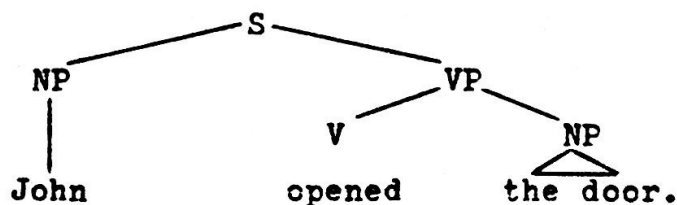
   This approach enables Lakoff to generalize grammatical relations and
hence to account for both selectional restrictions and semantic
relationships. Huddleston (1971:67) points out that this solution treats
the ergative verb as inherently intransitive, since the transitive use is
derived from a deep structure in which the ergative is intransitive. Now
such a treatment is clearly justified for at least a few verbs which

intuitively are basically intransitive and whose transitive use seems to be derived. Jespersen (1956:37) notes, "The following verbs are evidently from the first intransitive, and it is natural to look upon the transitive or causative use as derived." Among the verbs he lists as falling into this category are fly, march, run and sail:

(6) a. The kite flew.
     b. John flew a kite.
     c. The soldiers marched.
     d. The sergeant marched the soldiers.
     e. The horse ran (across the field).
     f. John ran a horse (in the race).
     g. The boat sailed across the pond.
     h. John sailed a boat across the pond.

But such verbs which are basically intransitive seem much less frequent as ergatives than the type which Jespersen has referred to as 'double-faced' (1956:332). With these verbs there seems little or nothing to determine which of the two structures should be selected as basic and which derived. Among verbs in this category are move, stir, roll, turn, change, begin, end, stop, break, boil, burst, spread, and toss. These examples are taken from Jespersen (1956:333). However Jespersen in the same list provides several examples which do not seem to belong in the double-faced category, or to do so only marginally. These include pass, beat, shoot, shiver, slip. Nevertheless there are enough clear cases (the ones listed above are not exhaustive) to suggest that any approach to ergatives that rests upon the assumption that ergative verbs are inherently intransitive must provide some explanation for the fact that in a large number of instances ergative verbs do not seem to assign priority to either transitive or intransitive.

Another problem with the transformational approach is that the type of transformation it requires may not be well founded. Chomsky (1970b:22) has recently claimed that predicate raising, of which causative raising would be an instance, is not syntactically motivated; "it is simply a device to convert phrases that are to be replaced by a lexical item into a single constituent." (Chomsky, 1970b:22). However while this observation clearly

applies to Postal's treatment of _remind_ which Chomsky was discussing, its relevance to Lakoff's causative transformation is less certain. Lakoff's transformation does not convert phrases into a constituent but replaces a pro-feature by a constituent of a subordinate sentence. Its effect seems similar to the structure-preserving transformation of Emonds (1970:28).

A more serious problem for the transformational approach is how to constrain the causative transformation so that it does not serve to derive the ungrammatical *John blew the wind. One possible way of doing this would be to allow only intransitive verbs with the feature [+ ergative] into the sentential complement and to allow predicate raising to take place if and only if the verb were marked with this feature. If this proposal is viable then Huddleston is justified in concluding that "it would certainly be premature at this stage to say that the ergative verb constructions are beyond the explanatory range of a configurational subject-object grammar" (1971:69).

There have been several recent proposals for handling ergatives by means of cases. What these proposals have in common is the introduction of labelled case categories in order to specify the underlying semantic relationships of noun phrases to verbs. However there are often considerable differences in the description and labels of the proposed cases and also in the mechanism that serves to introduce cases into the grammar. Whereas Fillmore (1970) and perhaps Huddleston (1971) would introduce cases by means of constituency rules, Anderson (1971) proposes to introduce them by means of dependency rules. These proposals have in common the assigning of cases to deep grammar, to a level of description prior to the transformational level. They thus contrast with standard theory which would introduce cases by means of semantic redundancy rules of the lexicon (Chomsky, 1970b). That is, the use of cases in grammar is neutral as to the issue of generative or interpretative semantics. They can be utilized in either though the term "case grammar" has been used primarily to refer to their use within generative semantics.

In Fillmore's proposal (1970:21) a sentence (more strictly a proposition (P)) is divided into a verb and one or more noun phrases, each of which is associated with the verb by means of a particular case

relationship. Thus in the examples (7) (taken from Fillmore whose numbering I follow for convenience of reference)

(7)   18. John broke the window.

     19. A hammer broke the window.

     20. John broke the window with a hammer.

John is said to be Agent; a hammer is Instrumental; and the window is Objective. Given rules that expand sentence (S) into proposition (P) — a tenseless set of relationships between verbs and nouns — and Modality (M) — which includes aspect, tense etc. then the sentences John opened the door and the door opened would be represented (in part) as follows:
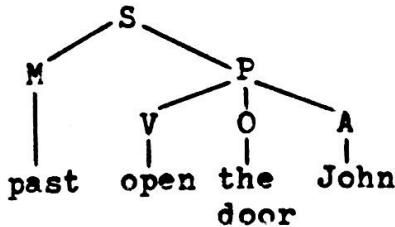
(8)a   (8)b
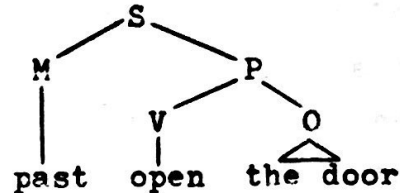
A rule of subject formation will then apply to (8)a and (8)b to derive the required surface structures. Where a sentence has only one case as in (8)b, that case is fronted, but where there are several cases as in (8)a rules of precedence are established. Fillmore proposes such rules: "If there is an A, it becomes the subject; otherwise if there is an I, it becomes the subject; otherwise, the subject is the O" (1970:33).

Fillmore's proposals have been discussed critically in Chomsky (1970b:38ff) and more extensively in Dougherty (1970). I see no need to outline their criticisms here. However I would like to add one point to the discussion which is relevant to the description of causative ergatives in English. Fillmore's proposals would not allow the semantic differences between causative and non-causative to be captured. His lexical entry for listen (non-causative) is (— 0 + A) indicating that listen must be inserted in a tree that contains both objective and agentive. But we have seen already in the examples of (8) that an ergative verb open which is causative in the transitive would be assigned the same cases. Both John opened the door and John listened to the concert would have case readings of (A — 0), thus blurring the distinction between causative and

non-causative. The fault lies chiefly in the characterization of listen as requiring Agentive and Objective. Listen is an intransitive verb which may take a directional adjunct with to. In the kind of Latinate case terminology used by Fillmore, this may be described as Dative or Objective. However the description of the subject case of listen as agentive is inappropriate. Agentive is defined by Fillmore as "the case of the typically animate perceived instigator of the action identified by the verb" (1970:30). But to assign instigation here to the subject John is misleading. This more appropriately belongs to the providers of the concert or even perhaps to those who persuaded John to listen. That is, while there can be no doubt that John is doing something and hence is an 'actor' in John listened to the concert it does not necessarily follow that he instigated his listening — he may have been told to listen. Thus Fillmore's case analysis fails to capture adequately the semantics of the non-causative, but more seriously fails to distinguish between the causative and non-causative interpretations of sentences.

Huddleston departs from Fillmore in allowing case syncretism (one NP can express at one and the same time more than one case) and allowing a particular case to be represented more than once in a sentence. In addition to Fillmore's Agentive and Objective he recognises External Causer (EC). Thus the sentences of (9) are given the following case interpretations:

(9) (ix) a. John (A/EC) moved the stone (O).

b. The wind (EC) moved the stone (O).

c. The stone (O) moved.

d. John (A/O) moved.

Through his case description he relates the stone in (ix)a, (ix)b, and (ix)c to John in (ix)d on the grounds that "it is the stone/John whose spatial position changes." John and the wind in (ix)a and (ix)b are external cause, while in (ix)a and (ix)d John is agentive since the action in these clauses is said to be 'agentive or intentional'.

These proposals are more successful than Fillmore's in distinguishing between causatives and non-causatives, the former being distinguished from the latter by the presence of external causer. But clearly there are

problems with his case description. First of all we may note that according to Huddleston both (ix)a and (ix)d imply that <u>John</u> intended to move the stone since they are characterized by Agentive which he glosses as 'intentional'. But clearly these sentences are neutral with respect to John's intention as is evident from the following:

> (10) a. John moved the stone involuntarily.
> b. John moved the stone deliberately.
> c. John moved involuntarily.
> d. John moved deliberately.

If (ix)a and (ix)d do imply intention on John's part we would expect both (10)a and (10)c to be contradictory and (10)b and (10)d to be pleonastic. But such is not the case. It would seem therefore that while (ix)a and (ix)d are compatible with intention, they are in fact unmarked as to intention and thus fall together with (ix)b which is incompatible with intention, as demonstrated by the sentences of (11):

> (11) a. *The wind moved the stone intentionally.
> b. *The wind moved the stone involuntarily.

We note also that non-causatives show the same patterning for intentional adverbs:

> (12) a. John hit Bill deliberately/involuntarily.
> b. *The stone hit Bill deliberately/involuntarily.

It would seem therefore that compatibility with intention depends upon the animateness of the subject and not upon causation or agency. Intention in English is not carried by NP cases but by adverbials. Whether or not it requires case syncretism to establish differences between (ix)a/b and (ix)c/d is at present not clear though I am doubtful whether it can be established on the basis of Huddleston. We may note that a basis for distinction already exists without resorting to additional cases in the fact that there is a distinction in animateness in each pair.

Halliday (1970) also employs case syncretism. He claims there are two ways of representing processes, the transitive and the ergative, and in English both exist side by side. Thus given the sentences of (13):

(13) 23i. the sergeant led the recruits
      23ii. the sergeant marched the recruits

transitivity analysis would assign the roles of actor and goal in 23i to
the underline sergeant and the underline recruits respectively, and in 23ii assign the roles
initiator and actor to them. Complementary to the transitivity analysis is
the ergativity analysis which assigns the roles of 'causer' and 'affected'
to participants. The difference between the two types of explanation is
described by Halliday as follows: "The transitive system asks 'does the
action extend beyond the active participant or not?'; the ergative, 'is the
action caused by the affected participant or not?'" (1970:58).

The combined analysis of (13) would be

   23i. the sergeant (actor, causer) led the recruits (goal, affected)
   23ii. the sergeant (initiator, causer) marched the recruits (actor,
         affected)

However, I find this analysis unsatisfactory. Firstly, as Halliday has
noted, only 23ii is causative, but the assignment of 'causer' 'affected'
roles to 23i seems to imply that this sentence has a causative
interpretation as well. Secondly Halliday's use of ergativity for a type
of role description seems to blur the necessary syntactic distinction
between ergative and non-ergative verbs. Only 23ii has an ergative verb
yet ergativity applies to a sentence with a non-ergative verb as well.

Both Huddleston's and Halliday's proposals seem to me to be only
partially successful. However a more adequate proposal might be based upon
them. Thus to return to (9), it would appear that Halliday's 'actor'
rather than Objective provides a more appropriate label. It expresses the
dynamic role that stone has in (ix)a/b/c and which is shared by John in
(ix)d. The role of John and the wind in (ix)a/b can then be described as
'cause'.

It remains open whether further differentiation in subject cases is
required for (ix)c and d. Huddleston's failure to adequately motivate such
a distinction has already been shown. And in general the basis for such a
distinction is not clear.

Yet another approach to causatives through cases has been developed by

Anderson (1970). However before I take up his suggestion I should like first of all to consider some remarks of his that seem to tell against the approach I have been outlining — that ergative verbs must be distinguished from non-ergative ones. Anderson claims that "it is not sufficient to differentiate between read on the one hand and open or kill on the other by pointing out that there is no appropriately related 'intransitive' corresponding to the former whereas there are such in the case of open or kill (die). There exist verbs like dismantle, which are semantically causative — such that, as in the case of open and kill, the objective in the sentence is necessarily affected, its 'state' is changed (in contrast to the object of read, whose 'state' is not necessarily changed as a result of the action) — but which are like read in having no obvious intransitive equivalents" (1969:101).

There seems to be some confusion here. The distinction in question is certainly adequate to distinguish between transitive and ergative verbs, as may be seen by comparing the following paradigms:

(15)   a. John read the book.
       b. *The book read.
       c. John read.

(16)   a. John opened the door.
       b. The door opened.
       c. *John opened.

(17)   a. John killed Bill.
       b. Bill died.
       c. John killed (in anger).

(18)   a. John dismantled the sign.
       b. ?The sign dismantled.
       c. *John dismantled.

We may observe by comparing the sets that open and kill are alike in respect to the a and b sentences that determine ergativity. Notice however that this assumes the hypothesis that kill and die are mutually suppletive. Dismantle on the other hand is marginally ergative since the status of its intransitive b is uncertain. Read is clearly transitive, though it may

form a pseudo-intransitive by object deletion.

It is also true that ergative verbs are causative when used transitively. However, no claim is made that the only causative verbs are the ergatives when used transitively. Verbs such as dismantle (if it is a genuine non-ergative) and destroy, cause (John caused a fire) would qualify as semantic causatives. But this point has no direct bearing on the distinction between ergative and non-ergative verbs. The fact that there are causative verbs which are not ergatives should cause no surprise since syntax and semantics are rarely isomorphic, nor should we be surprised at the fact that some verbs like wash, which superficially pattern similarly to ergatives (indeed might be confused with ergatives), do not have a causative interpretation in the transitive.

It is clear that Anderson is on questionable ground when he uses the semantic criterion of change of state as a basis for distinguishing between the semantic causative dismantle and the non-causative transitive read. While it might seem to work well enough in the case of read, a non-causative whose object (say book) is not changed in state, can we be sure that this would be true of the object Bill in John hit Bill? Hit is presumably non-causative transitive yet can we be positive that Bill's state remains unchanged as a result of the action of the verb?

In support of his contention that there is a difference between read and dismantle, which could suggest that the latter is causative, Anderson notes the following fact;

(19) What happened to the sign?   a. It was dismantled.
                                               b. *It was read.

However this evidence is not conclusive. We may note the following additional examples:

What happened to the sign?   c. It was hit.
                                              d. *It was seen.

What (19)c shows is that the unacceptability of the response does not extend to all non-causative transitives; and what (19)b and (19)d show is that the unacceptability of the verb may have something to do with the fact that these verbs are psych predicates (Postal, 1971:41). The examples of (19) therefore might provide support for a distinction between physical and

psych predicates; they do not appear to provide support for a distinction between two different kinds of objective, such that one expresses a change of state and is to be associated with a causative. It seems to me that his contention that causatives and non-causatives can be distinguished in terms of the semantics of the object is dubious.

In the same paper Anderson raises the question of whether verbs in sentences such as

(20) a. John painted a picture.
     b. John built a hut.
     c. John made a box.

ought not to be considered as causatives. In support of this he observes that "naturally there is a similarity to open and kill (as opposed to read) in that the 'state' of the object is in some sense necessarily changed. Thus one might want to subsume both types of verbs (affective and effective — a verb like read being neither) as 'causative', of which these are merely sub-types distinguished according to the type of causative effect involved" (1969:102).

As distributional evidence for the claim that the verbs with objects of result may also be regarded as a sub-type of causative, he offers the following paradigm:

(21) (iv) a. John is responsible for having made the book.
          b. John is responsible for having destroyed the book.
   c. ?John is responsible for having read the book.

"in which the putative 'causatives' (effective and affective, (a) and (b)) show a similar pattern" (1969:102). But the pattern extends to other non-causative transitives:

          d. John is responsible for having hit Peter.
          e. John is responsible for having dug the garden.

Though there seems to be a shortage of syntactic evidence for his claim, it could well be the case that paint, build and make, as used above, ought to be considered as semantic causatives. In fact their semantic description might be even more complicated since they might be considered

as inchoative-causatives (Lakoff, 1970:42). Thus the semantic interpretation of <u>John painted the picture</u> would be something like (John caused it come about that the picture be). However whether this is true or not I do not see any need to complicate the syntax in order to handle this, nor do I see that the creation of additional labels adds significant clarification.

In his formal explanation of causatives, Anderson uses cases, as does Fillmore, though with a different nomenclature. More importantly in his structural diagrams "the categories (which are all lexical) are hierarchized in terms of dependency rather than constituency" (1971:33). The governing category is V and the governed categories are cases erg (ergative) nom (nominative) loc (locative) etc. He handles causatives by means of a quasi-predication, that is, "a predication with at least one empty argument" (1970:1). Thus the deep grammar of <u>John made Fred sneeze</u> would be represented as follows:
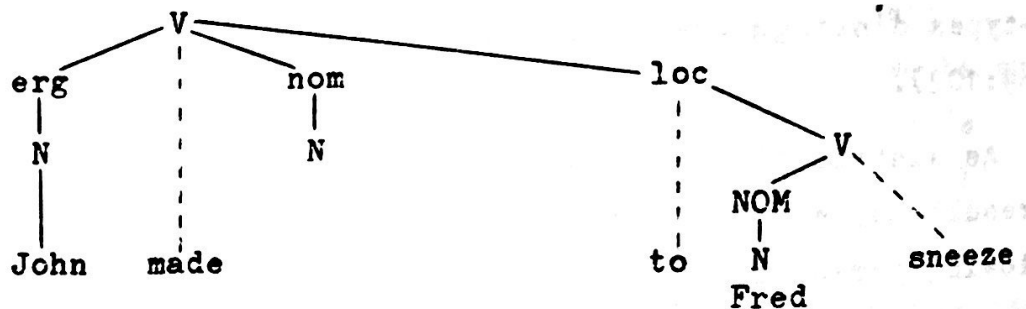

The top-most predication is a quasi-predication since one of its governed cases, nominative, is empty. "Causatives thus involve subordination of a sentence to a locative in a sentence which contains an empty nominative" (1970:35). The subject phrase in the lowest sentence (<u>Fred</u>) is copied on to the empty nom. Subsequent pruning of the immediately pre- and post-verbal nodes results in
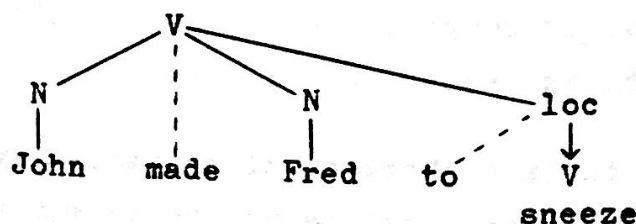

The difficulties with Anderson's proposal however become apparent as soon as we look at the way he would handle the derivation of <u>John killed</u>

<u>Bill</u>, a sentence which has become more or less a test for the plausibility of a particular proposal. What is interesting about <u>kill</u> in this sentence is that it involves a complex meaning which can be expressed as (John cause (Bill become (Bill not alive))). Anderson's deep grammar for this is
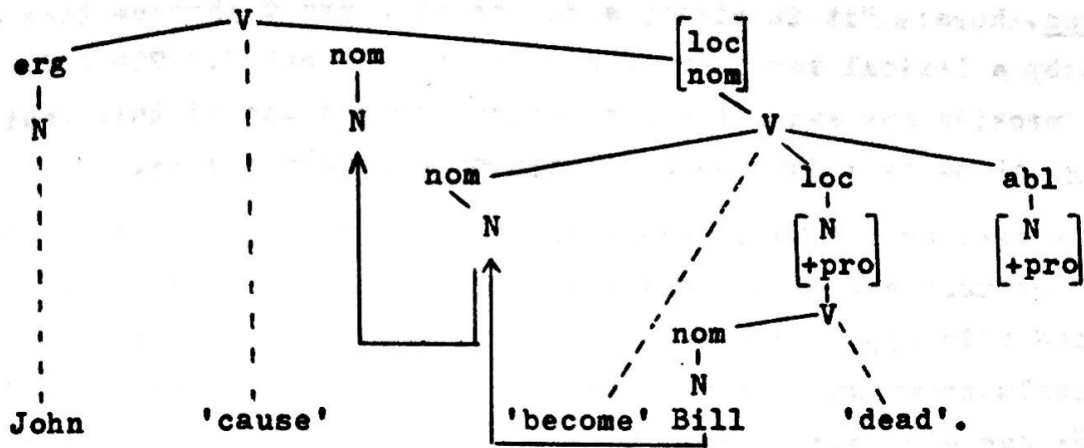
At a certain intermediate stage after copying and deletion, this will become:
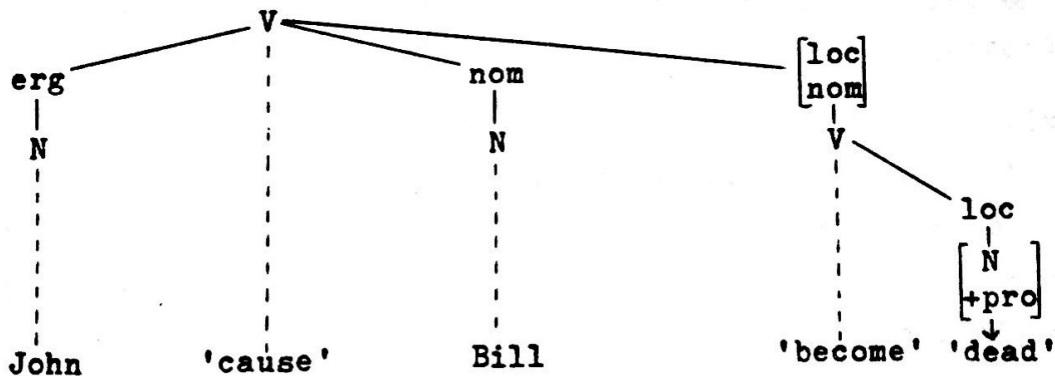
At this point will operate Complex Segment Formation which moves the V immediately governed by $\begin{bmatrix} loc \\ nom \end{bmatrix}$ directly under the causative auxiliary, at the same time deleting $\begin{bmatrix} loc \\ nom \end{bmatrix}$. This leads to:
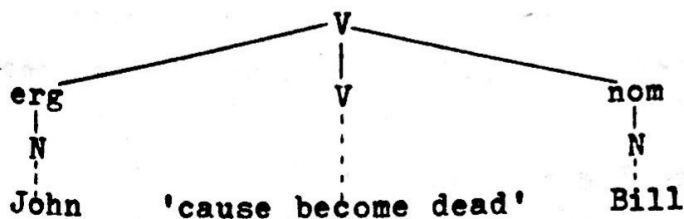
And at this point apparently <u>kill</u> can be substituted for "a semantic complex which appears in non-deconcatenated form as <u>cause to die</u>".

I think this is a fair outline of Anderson's proposals though the

crucial step of Complex Segment Formation and its accompanying lexical substitution are by no means explicit. However, Complex Segment Formation is clearly the equivalent in a dependency grammar of predicate raising in a constituency grammar. Chomsky's description of predicate raising applies, _pari passu_, here: "it is simply a device to convert phrases that are to be replaced by a lexical term into a single constituent."(1970b:22). Anderson does not provide any syntactic motivation for the use of this device; at this stage it seems a dubious extension of standard theory.

Of current proposals it seems to me that the lexicalist hypothesis provides the most satisfying means of accounting for ergatives. Chomsky has applied this hypothesis in considerable detail in order to show that many nominals previously handled by transformations may be handled by base rules. He has also shown that it provides a possible basis for handling the syntax and semantics of ergatives (1970a:214ff; 1970b:36ff). I will outline his proposal and suggest some modifications, indicating in greater detail how semantic interpretation can be handled using proposals of Bierwisch (1970).

Following a proposal of Mathews, Chomsky introduces yet another set of case labels for semantic relationships: nominative (= animate agent); dative (= thing or person acted upon or toward); instrumental (= thing used); absolutive (= thing acted upon but not modified by the action); locative (= place where). Consider now the following sentences:

(22) 54 (i) the window broke

(ii) the hammer broke the window

(iii) the workman broke the window with a hammer

(iv) the window broke with a hammer

(v) the child's toy broke against the tree trunk

(vi) the bully broke the child's toy against the tree trunk

(vii) the news broke (to the public)

(viii) the doctor broke the news (to the public) (with a telegram)

(ix) a telegram broke the news.

In these examples, the window is dative; a hammer is instrumental;

the workman is nominative; the child's toy is dative; tree trunk is locative; the bully is nominative; the news is absolutive; to the public is dative; with a telegram is instrumental. The fluidity of case terminology in current work can be demonstrated by recalling that Fillmore, Anderson and Chomsky label the window as objective, nominative and dative respectively; and label the workman as agentive, ergative and nominative respectively. However these variations are largely terminological since all three apparently accept that despite differences in surface grammar a constituent may have a constant semantic relationship to a verb and that this constant relationship can be captured by the motion of case.

There is however one clear difference between Chomsky's approach to case and that of Anderson and Fillmore. As we have already seen, the latter introduce case labels directly into deep structure either by means of constituency rules (Fillmore) or by dependency rules (Anderson). Later rules may filter out these case labels; this is one of the functions of Anderson's subject-object formation rule. However Chomsky does not follow them in introducing case labels in the base; rather he restricts their introduction to rules of semantic interpretation, thus preserving a clear distinction between base rules (syntactic) and interpretative rules (semantic or phonological). Whereas for Fillmore and Anderson the deep grammar of the sentences in (22) would be different from their surface grammar — and indeed this also applies to the transformationalist proposals of Lakoff — for Chomsky the deep and surface grammar of the sentences is more or less the same. This means that the grammatical relationships ('pure' relationships in Fillmore's terms) defined configurationally in deep structure do not reflect semantic relationships isomorphically. Thus Chomsky claims that the deep subject in (i) is dative; in (ii) it is instrumental and in (iii) it is nominative, etc.

The important contribution in his proposals is to outline in fairly general terms a mechanism whereby a case interpretation can be assigned to the structures generated by base rules, satisfying the requirements of extended standard theory. This mechanism is explained most explicitly in the following way:

"Suppose that break is entered in the lexicon with this

specification:

(55) break is intransitive or causative; it optionally takes locative and instrumental; the subject of the intransitive is dative or absolutive.

The terms "subject" and "intransitive" are defined in the obvious way in terms of deep structure; the term "causative" is so defined that a verb with the feature [+ causative] appears in the context subject-object, where the object is the subject of the corresponding intransitive (see Chomsky, 1965, 1967). Thus the lexical entry (55) specifies that break can occur in the contexts of (56), in deep structure, where NP_1 can be either dative or absolutive:

(56) (i) NP_1 — (loc) (instr)

(ii) $NP_2 \begin{bmatrix} - \\ + \text{caus} \end{bmatrix}$ NP_1 (loc) (instr)

A general rule specifies that the subject of a transitive verb of action (i.e., a verb such as give but not receive) can be an agent (nominative) if it is animate; otherwise it is instrumental. Choice of dative or absolutive is contingent on concreteness v. abstractness of the noun phrase" (1970b:36).

We may notice first of all that this proposal of Chomsky's differs from an earlier one (1970a). In his previous proposal Chomsky suggested that an ergative such as grow be entered in the lexicon with a feature [+ cause]. A redundancy rule would "specify that an intransitive with the feature [+ cause] becomes transitive and that its selectional features are systematically revised so that the former subject becomes the object". We may make this suggestion more explicit by framing the following lexical entry and redundancy rule:

(23)   break
   + [NP ___]
   + [cause]

Redundancy rule:

(24) $NP_1 \begin{bmatrix} \overline{} \\ \text{cause} \end{bmatrix} \Longrightarrow NP_2 \begin{bmatrix} \overline{} \\ \text{cause} \end{bmatrix} NP_1$

put explicitly, however, we can see that this earlier proposal has certain disadvantages: it makes the intransitive use basic whereas there is no natural reason for assuming this; and it fails to capture the fact that it is only in the transitive that break is causative in meaning.

Chomsky's second and later proposal is clearly preferable since it does not claim priority for either the transitive or intransitive uses. Further [+ causative] is assigned only to the transitive use, thus meeting the second objection to his earlier proposal. Yet while this later proposal is clearly better than the earlier one, it is not entirely satisfactory. It is not as economical as it might be. To say that break is intransitive or causative is equivalent to saying that it is ergative (in the sense I gave to that term). Secondly it seems to me that there is a certain equivocation in Chomsky's use of the term 'causative'. Does this refer to a syntactic feature or a semantic one? As an alternative to intransitive it would seem to define a type of transitive structure (one with a specified relationship to the intransitive). If that is so, its appearance in (56) (ii) would be at best redundant. If however we interpret + causative as a semantic feature, then its occurrence is not redundant since it then captures the insight that only the transitive of an ergative verb is causative in meaning.

We must then distinguish between causative as a semantic property of verbs and the syntactic property of ergativity. The former is found among the transitives of ergative verbs and also among other non-ergative transitive verbs such as cause, destroy, make etc. which all in some sense imply causation. But ergativity is a syntactic property assigned to particular verbs that have a specified pattern of relationships between their transitive and intransitive possibilities. It seems to me that Chomsky's use of [+ causative] provides an ambiguous approach to the ergative property of certain verbs, an approach that either leads to redundancy in the lexical entry or to a blurring of syntactic and semantic distinctions.

Instead I would like to suggest, within the general lines of Chomsky's proposal, an alternative. Suppose that ergative verbs be entered in the lexicon with the syntactic features suggested by Chomsky, but without any

syntactic feature [+ causative]. Now the lexical entry of any item is a triple of semantic, syntactic and phonological features (Chomsky 1965). The semantic features of an ergative verb can be represented in the form suggested by Bierwish (1970).

Thus the _break_ would be entered in the lexicon with the following specification:

(25)
$$+ [NP_1 \underline{\quad\quad}]$$
$$+ [NP_2 \underline{\quad\quad} NP_1]$$
$$+ \lceil V \rceil$$

$$[X_s \text{ cause } [Y_o \text{ become } [Y_o \text{ be broken}]]]$$

What this entry says is that _break_ may be inserted under V if and only if V is intransitive or transitive and if and only if the subject of the intransitive corresponds to the object of the transitive (shown informally by indexing). The syntactic information is of course incomplete since I have not indicated that _break_ also occurs in nominalizations such as _the breaking of glass_; _the breakage of glass_. However this specification is irrelevant to my purpose.

The semantic specification in terms of a proposition analysed into predicates and arguments (X_s, Y_o) is related to the syntactic specification by means of subscripts $_s$ and $_o$ which stand for subject and object respectively. This semantic specification applies directly to _break_ when it is used in a transitive clause since the subscripts relate to the left and right NP respectively. However they do not apply when _break_ is to be inserted in the intransitive and in fact would imply, unless modified, that _break_ was causative in the intransitive. What is required therefore is a redundancy rule which alters the subscript of Y and deletes [X cause...] just in case _break_ is to be inserted in NP_1 —. This might be expressed as:

(26) $[X_s \text{ cause } [Y_o \text{ —}]] \implies [Y_s \text{ —}] \ / \ [NP \text{ —}]$

The proposal I have outlined here follows that of Chomsky. It is

"lexicalist" since it assumes that the description is to be handled by the base and not by a transformation. It agrees with Chomsky in that it supposes that what is required is a redundancy rule of the lexicon. Where it differs is in interpreting [+ causative] as a semantic and not as a syntactic feature.

A similar proposal has been made by Ruth Kempson (1971). She does not deal with the ergative verbs, though she does deal with the suppletive pair die and kill. The main difference in the lexicon between suppletive ergatives and non-suppletive ergatives is that the latter but not the former require the redundancy rule (26). Thus her entries for die and kill are:

(27)

$$ die $$

+ [NP —]

[X become [X not alive]]

[X animate]

+ [V]   + [N]

$$ kill $$

+ [NP — [(Det) N]$_{NP}$ (S)]

[X cause [Y become [Y not alive]]]

[Y animate]

+ [V]   + [N]

It is interesting also to observe how the approach I have outlined can be extended to incorporate the case interpretation which I suggested earlier as modifications of Huddleston's and Halliday's proposals. In terms of those proposals the case description of Chomsky's sentences in (54) could be:

(28) 54 (i) the window (actor) broke

(ii) a hammer (cause) broke the window (actor)

(iii) a workman (cause) broke the window (actor) with a hammer (instrument)

(iv) the window (actor) broke with a hammer (instrument)

(v) the child's toy (actor) broke against the tree trunk (location)

(vi) the bully (cause) broke the child's toy (actor) against the tree (location)

(vii) the news (actor) broke

(viii) the doctor (cause) broke the news (actor) to the public (location) with a telegram (instrument)

(ix) a telegram (cause) broke the news (actor).

Chomsky has proposed that such case specifications can be derived in the semantic component by means of redundancy rules. This is clearly plausible and the manner in which it can be done in terms of my proposal is easy to determine. The task is to show that redundancy rules can add to the specification for __break__ given above the information that the NP that is subject of the transitive is to be interpreted as cause; otherwise the NP that is object of the transitive and subject of the intransitive to be interpreted as 'actor'. This can be done by redundancy rules such as the following:

$$(29) \quad [X_s \text{ cause } Z] \implies [X_s \text{ cause } Z] \text{ and } [X_s \text{ cause}]$$

$$\left[Y_{s/o} \left\{\begin{matrix} \text{become} \\ \text{do} \end{matrix}\right\} Z\right] \implies \left[Y_{s/o} \left\{\begin{matrix} \text{become} \\ \text{do} \end{matrix}\right\} Z\right] \text{ and } [Y_{s/o} \text{ actor}]$$

What these rules clearly show is that the particular case interpretation of a deep subject depends upon the interpretation of its accompanying predicate. If and only if the subject is related to a causative predicate it is to be interpreted as 'cause'; and just in case it is related to a non-causative 'inchoative' predicate it is to be interpreted as 'actor'. This observation confirms the view of Fillmore and Anderson that cases are governed by the verb. The underlying facts can be accommodated in extended standard theory just as they can be in the generative semantic position.

Semantic redundancy rules of the lexicon can also be utilized, if necessary, to provide further more detailed case specification. Thus the case agent(ive) in 54(iii) can be derived from

$$[X \text{ cause}] \underline{\text{and}} [X \text{ animate}] \implies [X \text{ agent}]$$

Chomsky and others would claim that 'a hammer' in 54(ii) is instrumental, relating 'a hammer' in 54(ii) to its occurrence in 54(iii). However this relationship is by no means assured. It seems likely to me that __a hammer__ in 54(ii) is to be related to __the wind__ in

The wind broke the window.

where there is no question of __the wind__ being related to

*Someone broke the window with the wind.

We may note in support of this that a hammer broke the window does not necessarily imply (someone broke the window with a hammer). Moreover we may note the following conjunction:

The hammer fell and broke the window.

Fell being an action verb must assign the 'actor' case to the hammer; if break assigns instrumental to its subject this would mean that its deleted subject would not be identical in meaning with the non-deleted subject. It would be more plausible to assume that this deletion does not operate to take out an element of meaning not otherwise recoverable in the sentence, but rather that it deletes a constituent whose meaning is redundant.

On this argument therefore we do not require a redundancy rule of case assignment that would read:

$$[X \text{ cause}] \text{ and } [X \text{ inanimate}] \implies [X \text{ instrumental}]$$
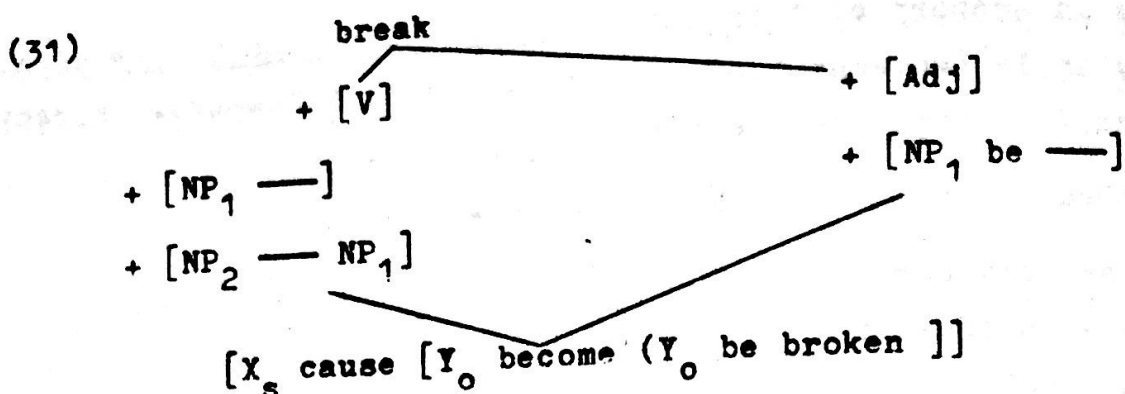
At best what we need is a rule to read the case 'force' as suggested by Halliday (1970:148). Though I have adopted a modification of Halliday's case terminology here in demonstrating how case specifications might be derived by semantic redundancy rules, other terminologies would have served as well.

My proposal for handling the semantics of ergative verbs by means of an interpretative theory can easily be extended to account for the fact that corresponding to many ergative verbs there are attributive senses in which the lexical item occurs as an adjective:

(30)   (i) John broke the door.
       (ii) The door broke.
      (iii) The door is broken.

The semantic relationship of these sentences is implicational; (i) implies (ii) and (ii) implies (iii). In general, case grammars do not handle this tripartite relationship, yet clearly it should be handled. I have already shown how a semantic redundancy rule can be used to derive (ii) from (i). A further semantic redundancy rule will serve to derive (iii) from (ii). The lexical entry (25) must now be expanded to allow for the generation of

30(i), (ii) and (iii) by base rules. Thus:

(31)

$$\begin{array}{c} \text{break} \\ + [V] \qquad\qquad\qquad\qquad + [Adj] \\ + [NP_1 \; ---] \qquad\qquad + [NP_1 \; be \; ---] \\ + [NP_2 \; --- \; NP_1] \\ [X_s \; cause \; [Y_o \; become \; (Y_o \; be \; broken\;]] \end{array}$$

We may now observe that the semantic marker of __break__ provides a previously unutilized proportion $[Y_o \; be \; broken]$. The redundancy rule (26), described earlier, will serve to alter the structural index of Y from $_o$ to $_s$. A further redundancy rule is now required, ordered to apply after (26). This rule will provide the appropriate semantic interpretation of the attributive;

(32) $[Y_s \; become \; [Y_s \; be \; open]] \implies [Y_s \; be \; open] \; / \; + [Adj].$

Likewise a redundancy rule of case interpretation, supplementary to (29), is now required to provide the appropriate interpretation of Y_s when its predicate is __be__:

(33) $[Y_s \; be \; Z] \implies [Y_s \; be \; Z]$ and $[Y \; attribuant]$

Here I have used Halliday's term to specify the subject case; again the actual term chosen may vary according to taste though it should in general provide a transparent indication of the semantic role.

The approach I have suggested applies equally well to non-ergative causatives. It is interesting in this connection to re-examine a pair of sentences briefly discussed by Chomsky (1970a:192). He observes that we have sentences like (34):

(34) a. He was amused at the stories.

   b. The stories amused him.

He suggests that (34)b is derived from a structure in which (34)a is embedded, though he admits that independent motivation for this assumption is weak. He suggests for (34)b a deep structure like (35):

(35) The stories [+ cause] [$_s$ he was amused at the stories]$_s$

Later in the same paper (1970:215) he discusses the ergative <u>grow</u>, for the causative of which he suggests John [+ cause, grow] tomatoes. Clearly therefore (35) must be modified to (36):

(36) The stories [+ cause, amused] him.

However, I have already adopted an approach in which the causative is not captured by a syntactic feature but by a semantic representation.

Further the facts for <u>amuse</u> as given by Chomsky are incomplete. Postal has noted that alongside sentences like (34)a there are sentences like (34)c:

(34) c. The stories were amusing to him.

Postal would relate (34)a and (34)c by means of a psych movement transformation which presupposes that (34)c is derived from (34)a (Postal, 1971:41). Moreover alongside (34)b we can place (34)d:

(34) d. Someone amused him with the stories.

Chomsky (1970b:22) asserts without argument that Postals' psych-movement rule is dubious. However I will assume Postal's rule in what follows. The lexical entry for <u>amuse</u> if we specify syntactic information alone will be in part:

(37)

$$+ [V] \overset{\underline{amuse}}{\overbrace{}} + [Adj]$$

$$+ [NP_1 \text{ --- } NP_2 \text{ (with } NP_3)] \qquad + [NP_2 \text{ be --- (at } NP_3)]$$

$$+ [NP_3 \text{ --- } NP_2]$$

The semantic marker can be derived in the following fashion. First we may note that (34)b and (34)d would have the interpretation $[X_s$ cause $[X_o$ be $[X_o$ amused$]]]$. Further the adjectival construction would have an interpretation $[X_s$ be $[X_s$ amused$]]$. Neither the fact that (with NP_3) is interpreted instrumentally nor the fact that (at NP_3) is interpreted directionally need be specified in these semantic markers since the interpretation of the prepositional phrases can be assigned by semantic redundancy rules. Thus <u>with NP</u> would be assigned the interpretation

instrumental provided that there was a cause in the semantic marker, i.e.,

$$[\text{X cause}] \implies [\text{X cause}] \text{ and } [\text{Z instrumental}] \quad / \quad \text{with NP}$$

The semantic markers for <u>amuse</u> as an adjective or verb could both be specified in the lexicon. But insofar as the phenomenon is a fairly general one, the semantic marker for the adjective might be introduced by a redundancy rule. Likewise the attribuant interpretation of the subject of the adjective (Halliday, 1970) can be assigned by a redundancy rule which is restricted contextually to + [Adj].

As a final consequence of the lexicalist approach to causatives, I would like to show how it could incorporate Anderson's insight that transitives with objects of result are a subtype of causative. Anderson (1969) distinguishes between the causative and non-causative uses of <u>paint</u> in sentences such as (38):

(38) a. John painted the wall.   non-causative
      b. John painted the picture. causative

in terms of the type of object. When <u>paint</u> is used causatively it has an object of result; when it is used non-causatively it has a different sort of object. He has more recently (1970) apparently changed his position since <u>the nurse read the book</u> (non-causative) and <u>John built the house</u> (causative) receive the same case representation:
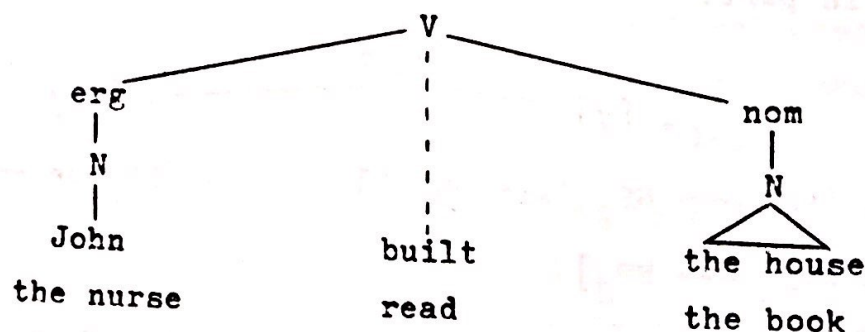
He also apparently has abandoned the attempt to relate sentences such as <u>John built the house</u> to other types of causative since <u>John built the house</u> is not given the type of tree reserved for causatives. There is no superordinate V which governs an empty nom and a loc to which the structure above would be subordinated.

Yet it seems to me that Anderson's earlier insight is the correct one and that the causative nature of (38)b needs to be reflected in its

semantic interpretation. I want to suggest how this can be captured in a lexicalist approach.

First we may observe that alongside (38)a and (38)b we have (38)c and (38)d.

(38) c. John painted the wall red.
     d. John painted the picture red.

It might appear that (38)c and (38)d are related in the same way to (38)a and (38)b. But the relationship is assymmetrical. The semantic implicational relationships are different. Thus <u>John painted the wall red</u> implies <u>John painted the wall</u>; but <u>John painted the picture red</u> does not necessarily imply that <u>John painted the picture</u>; it may have been painted by someone else and John is simply adding red paint to it. It would seem therefore that <u>the picture</u> in (38)b but not in (38)d is necessarily interpreted as being an object of result.

It would seem therefore that in the lexicon <u>paint</u> will have as its syntactic marker $[NP \longrightarrow NP \ (Adj)]$. The semantic marker will have to derive the following interpretations (39):

(39) a. John painted the wall. $(X_s \ paint \ Y_o)$

b. John painted the picture. $(X_s \ paint \ Y_o) \ (X_s \ cause \ (Y_o \ be)$ and $(Y_o \ artifact)$

c. John painted the wall red. $(X_s \ paint \ Y_o)$ and $(X_s \ cause \ (Y_o \ change \ to \ (Y_o \ be \ Z_{oc})))$ and $(X_{oc} \ colour)$

d. John painted the picture red. $(X_s \ paint \ Y_o)$ and $(X_s \ cause \ (Y_o \ change \ to \ (Y_o \ be \ Z_{oc})$ and $(Z_{oc} \ colour)$

What these interpretations mean is that the meaning of <u>paint</u> is basically transitive since (X paint Y) appears in all of them. The causative-inchoative interpretation applies just when adjective appears in the syntactic structure. Likewise the existential causative meaning applies just when the object is an artifact. These facts suggest that the semantic marker of verbs such as <u>build</u> will be simplified if semantic redundancy rules like the following apply:

(40) (X paint Y) $\implies$ (X paint Y) and (X cause (Y change to (Y be Z) and (Z colour) / — Adj

(X paint Y) $\implies$ (X paint Y) and (X cause (Y be)) / (Y artifact)

The first redundancy rule (inchoative-causative expansion) applies if the syntactic representation had an adjective as object complement. The second redundancy rule (existential-causative expansion) applies if the object has the interpretation (X artifact). These rules must be related in such a way that if inchoative-causative interpretation applies, the existential causative may not. This restriction is necessary if we are to block the existential-causative interpretation of <u>John painted the picture red</u>.

It thus turns out that Anderson was correct in regarding transitives with objects of result as causatives. It seems however that the semantic interpretation that I have outlined above offers a more revealing way of capturing the relationship of these causatives to other types of causatives. Like other causatives their interpretation requires complex propositions in which <u>cause</u> appears as a superordinate predicate. But whereas the embedded propositions of other types of causative are two-place propositions, the existential causative has an embedded one-place proposition with <u>be</u> as predicate.

It is evident from this critical survey that the problems of explaining causatives are by no means solved and in part depend upon the resolution of broader grammatical issues. It would seem that a purely syntactic approach has little chance of success and that a syntactic-semantic approach promises the most satisfactory results. But even for this approach there are difficulties. Cases play an important part in this combined approach but their relationship to syntactic categories remains to be clarified. Are the latter to be derived from cases or vice versa? Moreover what cases are most relevant to the descriptions of causatives? And what is the most appropriate semantic characterizations of these cases? It is clear that the answers given above to questions such as these are by no means conclusive. It is likely to be a long time before general agreement is reached (if it ever can be).

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