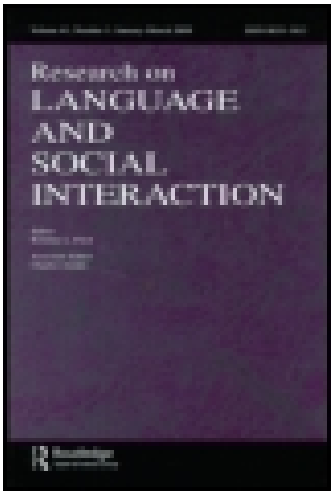

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Studies in the derivation of predicative structures: Part II

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Studies in the Derivation of Predicative Structures Part II*

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III. The Derivation of Surface Modifiers.

3.1. Introduction to a Theory of Complementation.

Complementation is a complicated but important subject intimately related to the question of lexical insertion of verbs. Let me present here in gross outline the various kinds of structures I would call, in the wider sense of the term, "complements."

Nominals
- Predicate nominals
  - With copular verb
    - Noun: he's a rascal.
    - Pronoun: that's it.
    - Mass noun: this shirt is cotton.
    - Numeral: they were five.
    - Possessive: that's mine.
- Predicate accusatives
  - Complement nominals
    - John weighed 100 pounds.
    - He was there five days.
  - Double accusatives
    - They thought *him* a benefactor.
    - They called him a fool.

Adjectivals
- Copular and complement
  - He's wise.
  - The children ran wild.
  - The door slammed shut.
  - Children nowadays have so much fun.
- Complement verb with adjectival complement
  - *He was thought wise.*
  - He was caught fleeing the palace.

Adverbials
- Adverbs
  - He did it yesterday.
- Nominal phrases
  - They are Greek by race.
- Adverbial phrases

Motive
They went to Rome.
Change of state
They went into debt.
Nominal
They turned into beggars.
Clauses
They did it while Sam slept.
Particles
They broke the meeting up.

Verb phrases
Clauses
I thought John was a fool.
Infinitive phrases
I saw Tom to be a schemer.
I saw Tom swim the canal.
I want to leave.
Gerund phrases
I saw Tom swimming.
Nominalizations
I saw Tom's swimming.

We might present a schematization of complements. Using these abbreviations, we can represent a certain type of VP as below:

mot	Motion
c/s	Change-of-state
sopc	Sense, observation, perception, and cognition
c	Causative
acc	Accusative case
dat	Dative case
adj	Adjectival
loc	Locative
temp	Temporal
man	Manner
s	Nominalizational

$$VP = \left[\begin{array}{l} V_{mot}\ {}_1\left[\begin{matrix}\emptyset\\ c\end{matrix}\right]_1 \\ V_{c/s}\ {}_1\left[\begin{matrix}\emptyset\\ c\end{matrix}\right]_1 \\ V_{sopc}\ {}_1\left[\begin{matrix}\emptyset\\ c\end{matrix}\right]_1 \end{array} \right]_2 \left[\begin{array}{l} \emptyset \\ \left\{ \begin{matrix} NP_{acc} \\ NP_{dat} \end{matrix} \right\} \end{array} \right]_1 \left[\begin{array}{l} AMOT \\ ACS \\ \left\{ \begin{matrix} ACS \\ ALTM \\ AS \end{matrix} \right\} \end{array} \right]_2$$

where: $AMOT = \{Adv_{mot}, PP_{mot}\}$

$ACS = \{NP, PP_{c/s}, Adj, PP_{adj}\}$

$ALTM = \{Adv_{loc}, PP_{loc}, Adv_{temp}, PP_{temp}, Adv_{man}, PP_{man}\}$

$AS = \{V, VP, S / NP_s\}$

The meaning of this is that

1. objects do not co-occur with a simple verb such as *go*.
2. objects do co-occur with causative verbs such as *send*.
3. only adverbials of motion co-occur with verbs of motion.
4. only NPs, adverbials of c/s (*into a coward*), adjectivals of manner or of c/s (*into trouble*) co-occur with verbs of change of state.
5. only c/s complements, adverbials of location, temporality, or manner, or desentential complements co-occur with verbs of SOPC.

From generalized schemata of this type, I have attempted to construct a very general theory of the derivation of complements, which is closely linked to a theory of the derivation of verbs. In these theories I make some very strong hypotheses and then attempt to consider their consequences. For example, if all most-underlying structures were generated by the conditions:

<S; $V/_n$ N^n> (where $/_n$ is the number of arguments taken by a predicate and $0<n\leq 2$)

<N; S>

<N; a referential index>

<V; a semantically prime predicate>

how would the various surface complement structures be generated?

There are two tentative answers to this. First, if there is no reason to believe that adverbs and adjectives are separate underlying categories, which I think correct, and if they are outside the surface phrases, again right, then adjectives and adverbs both come from underlying V's. I discuss this in terms of manner adverbials and temporal and locative modifiers in 3.2 . Essentially the same solution is available for adjectival and adverbial prepositional phrases if these are derived from clauses. That such phrases are derived from clauses is clear from the double use of such prepositions as German *während*. Becker and Arms (1969) have made essentially this claim. However, this is a very strong claim and much more research remains before it could be considered justified or valid.

In 3 I have discussed two aspects of the theory. One is that noted above. The second concerns desentential complementation, where I make various observations about two classes of verbs taking certain types of desentential complements.

3.2. Adjectivals and Adverbials: Time and Space.

Nelson Francis argues (1958:305) that adverbs can modify nouns and gives the examples

the people here
the temperature outside
heavens above
Europe now
the conversation afterwards
his speaking rapidly
our acting together

Francis of course fails to recognize the desentential derivation of his last few examples, but the first ones are good,

and must be accounted for. Jespersen also mentions "adverbs as secondaries" (1933:87), which he calls "rare." His examples are all of adverbs preceding the noun:

the above remark
the off side
in a far-off country
in after years
the then government
the hither shore

Curme (1947:123) follows Jespersen closely; he gives the examples (among others)

in after years
the above argument

Here I will be concerned specifically with examples involving temporal terms, such as

in after years
Europe now

and specifically the latter type.

P. T. Geach (1965) gives reasonable arguments against phrases like "Europe now" having any literal meaning; that is, a sentence like *Europe today is a thriving community*. is actually a transformation of *Europe is today a thriving community*. And if we consider sentences like *I like Europe today*. (where the *today* is a secondary in Jespersen's terms, not a tertiary), we see that really the sentence can only mean that the person likes Europe *as it is today*. There is no reason to suppose that temporal predicates may ever take as arguments real nominals as opposed to sentences. On the other hand, one can certainly predicate of nominals spatial relations. Thus *When are we?* is a much stranger sentence than *Where are we?* On a recent TV program I watched, two characters call up from Hell a woman who had been dead for a considerable period of time. Recognizing that some time had passed since she entered Hell, she asks "What time is this?", meaning "What year?" Her question is misunderstood of course, and they answer something like "daytime." But the important point is that she did not ask "When am I?", not even "In what time am I?" A review of science-fiction and fantasy literature about time travel might well reveal that sentences like "When am I?" remain odd even in that context. Thus there is a real incongruity here: temporal adverbs simply do not turn into temporal adjectives modifying real nominals. When they

seemingly do, as *former President* (paralleling *fast runner*), we see how some nouns are not real nominals, but function terms.

Since temporal adjectives do not occur, is there a balancing lack of spatial adverbs, so that time is predicated of events and space of objects? Here the evidence is not at all clear, though intuitively it does seem likely that events are not spatial in character. Consider for example whether a duel could be said to have taken place in Naples if none of the participants were in Naples at the time. Furthermore, whereas a candy-bar, for example, has a well-defined shape, but ill-defined temporal extent, events, such as a war, are better defined in time than in space.

So much for the differences. Essential similarities remain, however. The notions of point and line, extent and area, finitude and infinitude hold for both time and space. If we find essential differences between the semantics of time and space, we have then to explain the essential syntactic similarities. The reverse holds true as well.

At the outset let me deal with some non-obvious difficulties. The sentence

(1) John is here.

is precisely of the form

(2) John eats here.

but there is traditionally accorded to be a difference. In (1) *here* syntactically is an adjective modifying *John*, in (2) it is an adverb modifying *John eats*. Aside from this, however, there is no reason not to simply call *here* a locative predicate which could apply equally well to an NP or an S, as in (3, 4) representing (1, 2) respectively:

(3) $_{S}[_{V}[\text{here}]_{V}\ _{NP}[\text{John}]_{NP}]_{S}$

(4) $_{S}[_{V}[\text{here}]_{V}\ _{NP}[_{S}[_{V}[\text{eats}]_{V}\ _{NP}[\text{John}]_{NP}]_{S}]_{NP}]_{S}$

We shall see if this is correct.

Why could the structure of (4) not be rather (5)?

(5) $_{S}[_{V}[_{?}[\text{here}]_{?}\ _{?}[\text{eats}]_{?}]_{V}\ _{NP}[\text{John}]_{NP}]_{S}$

Lest this seem absurd, consider the difference between (6) and (7).

(6) John is famous in Japan. (Cf. Walt Whitman is famous in Japan.)

(7) John is safe in America.

The latter could easily be paraphrased "John is safe and he is in America," "John is safe because he is in America," or "John is safe whenever he is in America." The former could not be paraphrased by any of the three--"John is famous and he is in Japan," "John is famous because he is in Japan," and "John is famous whenever he is in Japan" do not paraphrase (6). The following facts argue for *in Japan* in (6) not being a locative at all. Notice that (8a) is very strange. (8b) presupposes that the moon is inhabited.

(8) a. ?*John is famous in an uninhabited country.

b. John is famous on the moon.

(9a) is equally strange as (8a), even though, if *in Japan* were a locative, we would predict it could easily be said if all the foreigners who happened to be in Japan while it was uttered had heard of John. This is not at all the case. For me, (6) and hence (9a) mean that all the people habitually in Japan have heard of John. This is borne out by the further facts below. Thus (6) says nothing about where John is, and does not even speak about where the people who know of him are--in (6) *in Japan* must mean "to the Japanese people."

(9) a. ?*John is famous in Japan but the Japanese have never heard of him.

The corroborating evidence is that (9b) is even odder than (9a), though not in the same way. (9a) implies a contradiction, but (9b) implies that Japan is not inhabited by the Japanese. (9b) would be perfectly good if Japan were invaded by the United States and all the Japanese put in concentration camps in Alaska, but (9a) would not be. This fact can only be explained if *in Japan* refers to the inhabitants of Japan; then the rules of co-reference would apply and these facts naturally fall out.

(9) b. *John is famous in Japan but the Japanese have never heard of him.

Cf. (9c) which is fine, and (9d) which is nonsense.

(9) c. John has lived in Japan for ten years and done amazing things, but the Japanese have never heard of him.

d. John has lived in Japan for ten years and done amazing things, but the Japanese have never heard of him.

In context one could use (9d) to express an irony: say if only the Nepalese had heard of John. But it must clearly be presupposed that some nation other than the Japanese had heard of him. This is entailed by the *but* which as (9d) stands can only contradict the presupposition: note the use

of the contrastive stress over *Japanese*. For comparison with (9) see too (10):

(10) a. ?*John is famous in Japan but the Italians have never heard of him.

b. (OK) John is famous in Japan but the Italians have never heard of him.

(10a) implies that Japan is inhabited by the Italians--despite the possible resultant contradiction. (I am not sure if (10a) could be interpreted as meaning that the Italians in Japan have never heard of John--*Italians in Japan* being a restrictive phrase--in lieu of meaning that Japan is inhabited by Italians alone--*Italians in Japan* being non-restrictive in that case.)

Therefore the format

NP is Adj_i Advb $_{loc_j}$

is derivable from at least four sources:

a. NP is Adj_i and NP is Adj_{loc_j}

b. NP is Adj_i because NP is Adj_{loc_j}

c. NP is Adj_i whenever NP is Adj_{loc_j}

d. The people usually Adj_{loc_j} find NP Adj_i

Incidentally, the above may explain why (11a) is peculiar in a way (11b) is not.

(11) a. ?*John is famous in that room.

b. John is famous in the Fern Room of the Creel Hotel.

That room in a neutral context is usually taken to imply a nondescript room, whereas the room in (11b) is one in which a habitual population might well be assumed.

So far we have analyzed *famous* and *safe*. We would hope that most if not all structures of the above format derived from one of the four underlying patterns (a-d), that is, that most if not all $adjectives_i$ worked like *famous* or

safe. (d) is sufficiently bizarre, however, that it is entirely possible some other patterns exist. But what of verbs$_i$? What are the sources of this pattern:

NP V_i $Advb_{loc_j}$

To begin with, this V_i is usually active. Stative verbs are mainly derived from *be* or by FLIP; for both cases $Advb_{loc_j}$ is clearly derived from an Adj_{loc} in a lower sentence and therefore are not interesting. *Have* is an exception. Consider the difference between (12a) and (12b).

(12) a. John has a ball in Japan. (= enjoys himself)

b. John has a ball in Japan. (= owns a sphere)

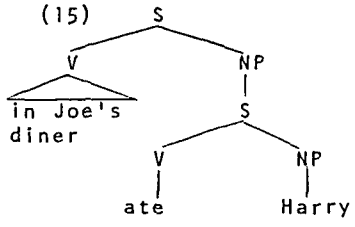
(12a) is aorist (i.e., not specified as to time--it does not imply John is in Japan right now), but (12b) is present tense. This difference is due to *a ball* in (12a) being an event, in (12b) an object. I will return to this below. In any case, (12a) may be paraphrased 'John enjoys himself whenever he's *in Japan*,' whereas (12b) means 'John has a ball, which is in Japan.'[1] The underlying structure of (12b) is that of "John has a $ball_b$, and the $ball_b$ is in Japan," not at all the same as the structure of "John enjoys himself whenever he's in Japan."

We must conclude that with $V_{stative_k}$, $Advb_{loc_j}$ always derives from an Adj_{loc_j}. With V_{active_k}, the $Advb_{loc_j}$ is again an underlying Adj_{loc}, but probably of an S. Thus

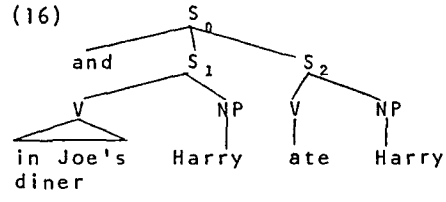
(14) Harry ate in Joe's diner.

is (15), not (16).

(15)



(16)



Of course, it is made difficult to argue on this point by the fact that Harry has to be in Joe's diner to eat there. Perhaps a crucial example is

(17) Adolf Hitler's ideas killed thousands of people in America last year.

Even this is not a good example, because although Hitler's ideas do not have to be in America, the thousands do. However, even if it turns out that the most underlying structure of (14) contains the S_1 of (16), the structure cannot be like (16), and (15) would still be needed as an intermediary step: (16) fails to properly relate Joe's eating and his being in the diner. Furthermore, two tenses would be needed for (16), whereas (14) only contains one. The correct structure therefore is (15).

What now of time predicates? The following sentences parallel those above, differing only in having time predicates in lieu of locatives:

(18) John was famous in 1942.

(19) John was safe in 1942.

(20) John had a ball in 1942 (= enjoyed himself)

(21) John had a ball in 1942 (= owned a sphere)

(22) John ate in Joe's diner.

These sentences reveal that time works radically differently from space because of co-occurrence between the time expression *in 1942* and the tense of the verb.[2] (19), for example, cannot mean "John was safe and in 1942." The closest one can approach is (23), which might occur in a science-fiction novel.

(23) John is safe in 1942.

Alternately, (19) or (23) could be interpreted as in (24).

(24) Q: What do you think John's chances of re-election {will be / were} like in 1942?

A: Why, John {is / was} safe in 1942.

In this case the sentence conveys a far more complex message than in a neutral context, e.g., none, as in (19).

Indeed, the underlying sources of the sentences I have been discussing, both with locatives and temporal elements,

is undoubtedly more complex than I have stated, for various reasons. One is that time expressions are so greatly ambiguous. (25) can never mean "Harry eats whenever he's in Joe's diner," whereas (26) can very well mean "Harry eats whenever its Friday."

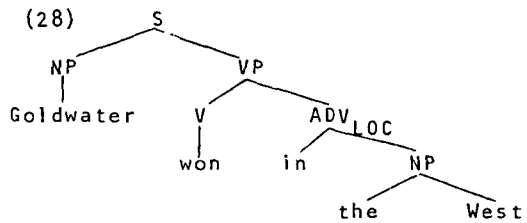
(25) Harry eats in Joe's diner.

(26) Harry eats on Friday.

It is apparent that, like other adverbials, time and space adverbials are predicates outside of the surface VP in which they occur. G. Lakoff (1967:11-16c) has presented an argument for this; he pointed out (1967:12) that the structure of (27) traditionally was considered to be like (28).

(27) Goldwater won in the West.

(28)

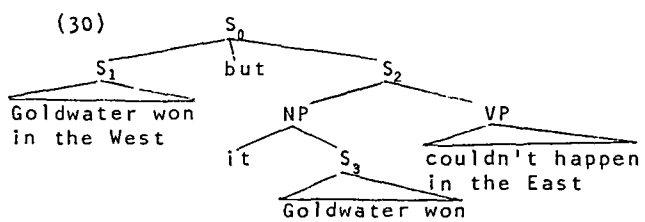


But he pointed out that this created problems for the analysis of sentences like (29).

(29) Goldwater won in the West, but *it* couldn't happen in the East.

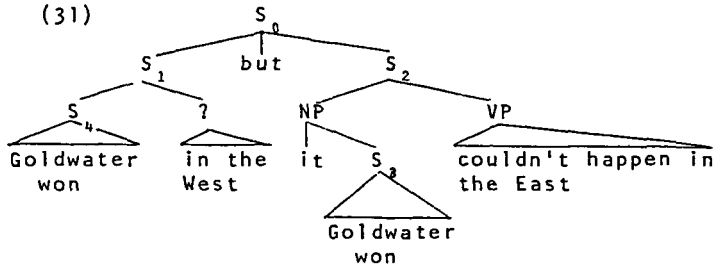
The italicized *it* must replace an S--but this S cannot be (27), since (29) does not mean ". . . but Goldwater's winning in the West didn't happen in the East" but rather ". . . but Goldwater's winning didn't happen in the East." The *it* must refer to *Goldwater won*. Lakoff draws the conclusion therefrom that the underlying structure of (29) is really that of (30):

(30)



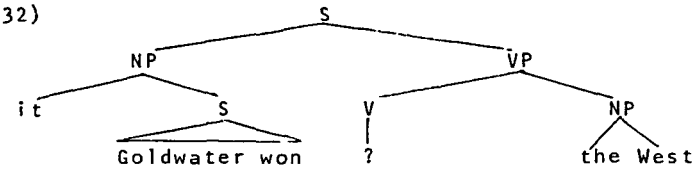
But S_3, which is deleted, must be identical to some other S. Therefore, it is concluded that the *Goldwater won* of S_1 must itself be an S. The revised structure (31) is accordingly:

(31)



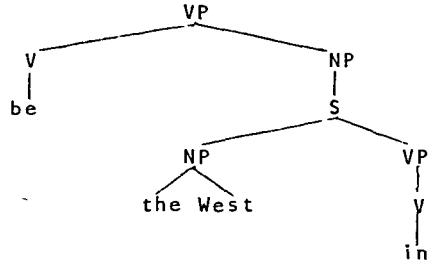
Lakoff observes (14) that similar results obtain not only for all locative adverbials but for temporals as well. Lakoff draws one conclusion that stems questionable. He argues (15) that the structure of (27) is (32):

(32)



He suggests that the "?" in (32) represents something like "took place in" or "was located in," "and would be deleted by some as yet unknown rule." For some other languages, he notes, "a deep structure analysis like [32] with 'be' replacing '?' seems to be well-motivated. . . ." I personally see no reason why in the above structure "?" should not be "in." Or, failing that, the VP might be like (33).

(33)



In any case, there is no reason why locative and temporal adverbials alike should not be treated as predicates. In this way the structure of sentences like *Harry is in Rome.* and *Harry slept in Rome.* can be treated as completely parallel, the only difference being that in the one case the highest NP is an N, and in the other an S.

3.3. Adjectivals and Adverbials: Manner.

It is obvious that adjectivals of time and space are essentially the same as adverbials of time and space. It is not so obvious that adjectivals of manner relate to any adverbials. However, I think it quite correct to speak of adjectivals of manner as we speak of adverbials of manner. Consider

(1) John is clever.

(2) John is clever to muck up to Lynn.

(3) John cleverly mucked up to Lynn.

(4) John mucked up to Lynn cleverly.

(2) and (3) are clearly related, but in (2) *clever* is an adjective, whereas in (3) it is an adverb. In (4) *cleverly* modifies not John so much as muck: that is, (3) and (4) are wildly different in meaning. Cases like (3) are very common and very easy. It is well known that adverbs like in (5) can be derived into adjectives as in (6):

(5) John sings beautifully.

(6) John is a beautiful singer.

Is the reverse also true? (4) like (5) has a (6)-form, but (4) itself must derive from a form in which *clever* is an adjective, because clearly it modifies John, not his action. The co-occurrence relations point to a mental state. And actions have no mental states. When you say an action is clever, you mean either that someone was clever to do it, or that it was done in a manner reflecting the cleverness of someone. Had the word in (1) and (2) been *swift*, a different set of facts would hold. That is, if John mucks up to Lynn, this might be taken as evidence of his cleverness, but his mucking up to her cannot be a sign of his swiftness. *Swift* and *clever* must be completely different types of predicates, the more so when we consider their co-occurrence relations. Punishment can be

swift to befall the wicked, but it cannot be clever to do so.

Relevant here are two papers of Vendler's: Vendler 1967a and part 2 of Vendler 1968. I will briefly summarize these with a view to establish my range of data and my terminology. In these papers Vendler defines nine classes of adjective with different derivational histories and different co-occurrence possibilities. At least in Vendler 1967a, his classes are defined exoverbally. He states (1967a:173)

> What are the ways in which adjectives can be tied to subjects? As we shall see, there are many such ways; moreover, it will turn out that for each adjective only some of these are open. This fact affords us a principle of classification for adjectives in general and a method of discriminating between the various kinds of use a single adjective may have.

Each of these "ties" consists of a set of frames. This is clearly an exoverbal approach (189),

> [This approach] does not exclude the possibility of dual, triple, or even quadruple membership: *good*, as we saw, is an A_{3457}.

In these papers Vendler defines nine classes of adjectives. The classes and some examples of adjectives typical of that class are:

A_1 beautiful, red

A_2 big, wide

A_3 weak, good

A_4 easy, comfortable

A_5 ready, eager

A_6 clever, stupid

A_7 possible

A_8 useful

A_9 certain

Vendler defined these in terms of frames, but a deeper

motivation was an attempt to establish transformations deriving phrases of the form A[djective] N[oun] from various types of phrases, usually relative clauses of some type. Similar work is known from C. Smith 1961, 1964, but Vendler is novel in attempting to separate out types of relative clause.

In general, Vendler's tack is to derive adjectives from adjectives in larger constructions. The *red* in *a red car* comes from the *red* in *a car which is red*; the *comfortable* in *a comfortable sofa* is from that in *a sofa which is comfortable to [V] on.* where V might be *sit* or *sleep*, but not *run* or *live*.

Vendler thus would treat *Harry is a good lover.* as derived from something like *Harry is good at loving.* But what of *Harry loves well?* It has been written by Vendler and others that a sentence like *Shirley is a beautiful singer.* derives from *Shirley sings beautifully.* The question is whether there is a general order of derivation for these three types of sentences. I will argue here that the proper order of derivation, which, I believe, has not been favored, is

Harry is careful baking/ a careful baker/ as a baker.

↖Harry bakes carefully. / with care.

↖Harry takes care in baking.

↖Harry takes care when baking.

That is, in general, we will try to reduce modifiers to conjoint elements containing predicates.

John Lyons (1968) has gotten essentially the same intuitions as Vendler, but has developed them less formally. Thus he correctly observe that (326)

> In traditional grammar, adverbs constitute a very heterogeneous class; and it is doubtful whether any general theory of syntax would bring together as members of the same syntactic class all the forms that are traditionally described as "adverbs."

He noticed that adverbs of manner relate morphologically to adjectives, and relates the two classes transformationally (326-27). Although he wants to call adverbs verbs in Lakoff's wider sense, but specifically adjectives, he realizes that not all adjectives can occur in adverbial position.

If I understand Lyons' rather unclear formulations correctly, he regards adjectives and adverbs as paradigmatic variants. That is, *beautiful*, *beautifully*, and presumably *beautify*, are the same verb, they just occur in different positions. He chooses to regard *beautiful* as more basic than its adverbial form on morphological grounds alone. On the other hand, Vendler correctly argues that at least some tokens of *beautiful* must arise from adverbs. Of course, this raises the interesting question as to why the adverb is morphologically more complex than the corresponding adjective even though it is simpler semantically in most occurrences. This problem has not been the subject of much analysis, even though it is part of a general problem of great import. For if lexical items of less content can be more complex morphologically, then some of the basic assumptions of lexical insertion are to be called into question. Indeed, morphology itself may be affected. This problem was touched on in the discussion of morphology, but ought to be considered again here.

There are in fact two kinds of considerations that come into play here. First, what does it mean to do something quickly or beautifully? What constitutes beautiful singing? Singing which is beautiful or singing done beautifully? Is "beautiful song" ambiguous? How many ways? These are problems not readily solved by postulating simple transformations the way Vendler does or talking of paradigms, as does Lyons, especially since such paradigms would almost certainly differ from the objects which usually get that name in that no two would be parallel in any reasonable fashion. (Vendler's work alone shows that: cf. the discussion of *pained* below.)

Secondly, how many functional morphs are there in a word like *beautifully*? Two? Three? Four? Five? Formally there are undoubtedly at least four (*beau, ty, full, ly*); but semantically? That these problems can get far messier than the garden variety morphological *Boysenberry* type problem may be illustrated by the words *pained* and *painful*. As adjectives these are not only different but opposed. One means having or having gotten pain, the other means causing to have pain. But as adverb, there is only the one form *painfully*: but it derives a form *painful*. Consider

Harry lifted the huge rock on his back painfully.

Harry told his jokes painfully.

Harry found lifting the rock painful.

The audience found Harry's routine painful.

Clearly, the first sentence above referred to pain caused by lifting the rock, but pain which Harry has. This reflects the fact observed by Lyons that a stative is a reflex of the passive of a causative: that is, being wounded is the end result of someone giving you a wound. Someone gives you a wound, you get a wound, you have a wound, you are wounded. Similarly the rock gives Harry a pain, he gets a pain in his back, he has a pain in his back, he has a painful back, etc. Being pained is the end result of being the object of a subject that is painful. What we are concerned with here is how, specifically how language expresses such relationships. And the answer cannot be a simple matter. A beautiful girl *has* beauty; a painful girl *gives* pain.

We start by assuming that Lyons is right about the parts of speech involved, and that Vendler is right about the cause of the situation found: transformational variation. Rather than concern myself here with the details of derivation, I will rather discuss two questions alone:

(1) In what ways can an adverb and its cognate adjective be related?

(2) What is the underlying nature of manner predicates--that is, what do we mean by "manner"?

In discussing the first question I will restrict myself to manner predicates, as opposed to predicates of time and space, and I will further omit predicates with no correlate form: that is, it is nice to know that *red* cannot be predicated of sentences (by which I mean propositions or "S"'s), but it is not relevant to the two questions in point. Furthermore, it is interesting that *possible* cannot really be predicated of an ordinary nominal (Lyons' primary nominal), but again right now that is not in question. I merely want to elucidate what a manner adverb like *beautifully* really is, and how it related to *beautiful* and *beautify*. Along the way I will, however, as indicated above, have some rather chancey hypotheses to hypothesize about derivation as well.

The first point to be kept in mind is that morphology is not necessarily a good indication of the semantics. *Beautify* means "make beautiful," but the *ful* suffix does not appear in it. Furthermore, *-ful* has no constant meaning. In *beautiful* it means "having," in *wonderful* it means "causing." If we consider other languages we note some interesting relations. In French *beauté* is derived from *beau*; from the root

bell- is derived the causative *embellir* (hence English *embellish*). English has *beauty*, but instead of forming the causative from the adjective stem, it forms it from the noun: *beauty-fy>beautify*. Furthermore, the adjective is formed from the noun! Despite the occurrence of the nouns *beau* and *belle* in English, it is clear that English has *beauty* as a unit, like *joy*. The adjective is formed from the noun which is etymologically formed from it. This reverses the situation in French, Spanish (*bello:belleza; hermoso:hermosura*) and German (*schön:schönheit*). Are we to conclude that in English but not these other languages the adjective is derived from the noun? I think that we intuit no such situation. Clearly, however, if we are to avoid a complete mess, having beauty *and* being beautiful *must* be semantically equivalent. We could thereby understand how the semantics and the morphology could run counter to each other as they do. I think there is nothing counter-intuitive about such a solution, as such equivalences are commonplace; my dictionary defines *beautiful* as "having beauty" (Urdang 1968).

Thus the semantics work just like French in English, but we are obligated to take a more roundabout expression. Consider that *beautify* means to "cause to have beauty." Then *beautified* would be equivalent to *caused to have beauty*, hence *having beauty*, *being beautiful*, according to my analysis. We see here how many participles come to be adjectives, like *wounded*, and why words like *wounded* are ambiguous: *being wounded* is ambiguous for the same reason.

In a more sophisticated analysis seeming contradictions can be resolved.

Our analysis opens a further possibility. Adverbs may not necessarily be derivations of their cognate adjective. If *beautify* can relate to *beautiful* rather than *beauty*, then why cannot *beautifully* relate to *beautify*, say rather than *beautiful*? What, again, does *beautifully* mean?

Consider *delightful*. This means "causing to be delighted," that is, "causing delight," that is, "causing to have delight." But *delightfully* must mean "causing delight" as well; it cannot mean "having delight" or "with delight." A girl who sings delightfully causes delight; her singing does not necessarily arise from her own delight. We cannot escape the conclusion that *delightfully* means "causing delight": it is *delightful* in a different part of the paradigm. Here the *-ly* is totally redundant. But does this mean that there is a predicate *delightful* which can sometimes take as arguments nominals and other times sentences? No, it does not.

What, for example, is a delightful girl? She must be delightful for some reason. She might be a delightful girl to look at, or she might be delightful to meet, etc. The phrase *delightful girl*, like *good man* (see Vendler), must disguise a larger entity, such as *delightful girl to meet.* or *girl delightful to meet.* This in turn must come from something like *it is delightful to meet the girl.*, perhaps as an embedding. But if *to meet* introduces a hidden variable, there is still a hidden variable, namely, for whom is it delightful girl to meet? We could say, "She is a delightful girl to meet, unless you're her enemy." Clearly, the sentence *She is a delightful girl to meet.* hides a variable which we might actualize as "someone." We can fill in some value, and generate a string of sentences such as

She is a delightful girl for Harry to meet.

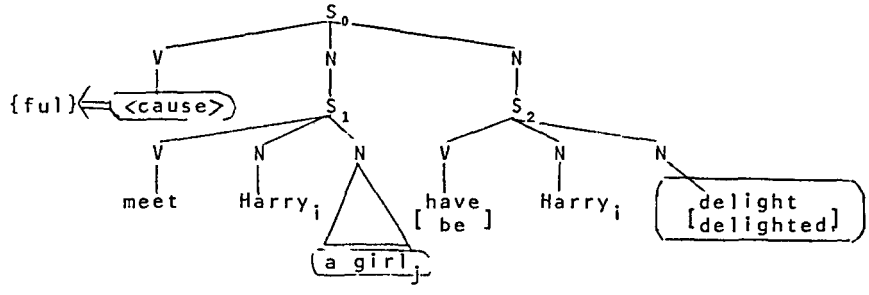
She is a girl delightful for Harry to meet.

It is delightful for Harry to meet her.

Harry is delighted to meet her.

The girl Harry is delighted to meet. . . . (etc.)

We might represent these as the tree below, in which S_2 and N_i represent the variables which may or may not be specified.



I have circled those elements that appear in *a delightful girl*. As suggested elsewhere in this paper, the V under S_0 might be *because*, and S_1 and S_2 reversed from the above order. But in general the above tree represents all the relationships to be found in the above sentences.

Now consider: *Delightfully, Harry met the girl.* and *Harry delightfully met the girl.* We cannot escape the conclusion that the tree for these sentences would look much like

the above. In the underlying structure, adjectives and adverbs not only are predicates, but they are predicates indistinguishable from verbs. It is only their surface placement that determines their form; and their surface placement is undoubtedly the result of externals such as topicalization which create novel subordination relations.

From the above we see not only that the relationship between adjective and adverb must be defined in terms of a deeper analysis, but that that relationship can take a great many different forms. Indeed, it may not be possible right now to give "manner" any coherent definition, though there surely must be some limitation on which predicates can appear as adjectives or manner adverbs.

One question which arises is how large these trees must be. Clearly sentences can be specified indefinitely: It is a pleasure for anyone who owns a Cadillac that he bought in Hawaii in 1948 to drive it slowly down a sidestreet in the smallest town he can think of at high noon or any other time not more than three minutes away from noon, so long as he takes care not to run anyone over. Must we then argue that every sentence contains an indefinite number of embedded predicates, each left blank? This is an absurd conclusion. But to argue that a sentence with minimal specification, such as *She is a delightful girl.* must be represented as

$$_S[_V[\text{is}]_V\ _N[\text{she}]_N\ _N[\text{a girl who is delightful}]_N]_S$$

is just as absurd. The unspecified elements of trees must be of two kinds: the one kind truly unspecified though present. But the second must be independent sentences which may or may not be brought in from the semantic structure. There must be some general method of building more complex trees. Each sentence in a tree is a kind of module that is cemented in by a predicate. But the surface form of such modules is determined by the transformations in arcane ways not yet understood well.

IV. The Derivation of Desentential Complements.

4.1. SOP Verbs.

One of the subclasses of transitive verbs is that of SOP (sense, observation, and perception) verbs.[1]

In this section the semantics and syntax of the verbs falling into Lakoff's category of sense verbs and verbs related to them are investigated to determine the relationship of the syntax and semantics and to determine the role of SOP verbs in a categorization such as Lakoff's. An investigation into SOP verbs in other languages proved comparative conclusions here.

When one senses something, the sensing is either accidental or the result of a search. The verbs connected with such a search will be the first set of verbs discussed here. Traditionally, five senses are recognized: vision, hearing, taste, smell, and touch (feeling).

The search for something is a particular kind of observation. For one thing, it demands perceptual ability; if you cannot see, you cannot watch out for something, etc. (Vendler 1967c). Secondly, the observation can be said to be successful or not, it can terminate in acquisition or end in a failure (Sibley 1955). As Sibley points out (457), "looking for something precedes finding [it] and . . . precedes examining it." It is also clear that the object of the search may even be non-existent or at best potential. While I can look for a specific person, I can also look for a non-specific one. In Spanish (or French) the sentence "I'm looking for a man who is honest" would be indicative if specific but subjunctive if non-specific. The object of the search may never be found (Sibley 1955). The search itself, like any observation, takes time: Diogenes looked all day for an honest man but never found one (or him). It is a continuous, homogenous process in the sense that looking for Harry Schwartz all morning implies looking for Harry Schwartz every moment in the morning. For these reasons, plus the fact that the quest takes effort (as the knights of the Round Table discovered), we can term a quest a *task* or *activity*.

The active, conscious character of the quest is shown by the fact that a quest is often instrumental in character. You can say:

(1) a. I felt for the gum *with* my fingers.

b. I *used* the radar *to* look for the missing plane.

We can summarize these facts as in Table 3 below. The verbs discussed are listed in Table 4.

TABLE 3

SEEKING (QUEST)

1. Presupposes sensation ability.
2. Under conscious control.
3. Durative: takes time; occurs through time.
4. Takes effort.
5. May terminate in success or failure; object may be indeterminate.
6. Instrumentality possible.

TABLE 4

VERBS OF SEEKING

Sight: *look for, watch for; look out for, watch out for.*
Hearing: *listen for.*
Touch: *feel for, grope for.*
Taste: *taste for .*
Smell: *smell for, sniff for.*
General: *search for.*

Suppose now that one has been searching for an honest man, and finds him. Or suppose I am standing on a street corner and I suddenly see a friend. I could then say, "I saw an honest man this morning" or "I saw what's-his-face this morning." One can also use *spot* in this sense. This kind of perception is not observation, as was seeking. I have called it "acquisition" because of the use of the verb "acquire" in such sentences as (4), a use made familiar recently in discussions of anti-ballistic missile radars and in newspaper accounts of space voyages.

(4) a. The air controller claims to have acquired a UFO on his radar console.

b. One day the DEW radars acquired the moon, but the computers thought it was Russian missiles.

Acquisition in seeing is what Vendler (1967:113) calls "seeing" or "spotting." It contrasts sharply with seeing as an on-going process, cf. *see a friend across the street* and *see a new movie.*

To begin with, it can be entirely involuntary. I could be sitting on a barrel when the honest man happens by, and at once I will spot him, whether I like it or not. Of course, my active search might end in visual acquisition as well. But while the search may have taken 2400 calories a day, and be very wearing on the spirit, no extra effort is needed to spot something (Sibley 1955:470). Furthermore, acquisition is instantaneous. You cannot say (5) (Vendler 1957c:114).

(5) *I spotted John for an hour yesterday.

Thus in sentences (6a) and (6b) the phrase *yesterday morning* has quite different meanings.

(6) a. I spotted the honest man yesterday morning.

b. I looked for the honest man yesterday morning.

And (7) necessarily implies that I spotted the honest man not once but several times, on different occasions.

(7) I spotted the honest man all day yesterday.

(Cf. Sibley 1955:469.)

Another way acquisition differs from seeking is that if one acquires something, one necessarily succeeds in perceiving it, whereas if one seeks something, one may or may not succeed in perceiving it (Sibley 1955:467). If you spot a flying saucer, the very instant you spot it you have already seen it.

All these facts make clear that acquisition is not an activity or task. The dialogue in (8) seems ludicrous or evasive. (Note that "see" here does not mean "visit.")

(8) "Where did you go?"
"Out."
"What did you do?"
"See an honest man."

Thus phrases of purpose (9), as well as instrumental phrases

(10), cannot readily occur in sentences dealing with acquisition.

(9) *Little Johnny spotted an honest man *in order to* scoop Diogenes.

(10) a. ?Little Johnny used his telescope to spot the honest man.[2]

b. ?Little Johnny spotted the honest man *with* his telescope.[3]

This section is summarized in Tables 5 and 6.

TABLE 5

ACQUISITION

1. Presupposes sensation ability.
2. Not under conscious control.
3. Non-durative: instantaneous. A change of state.
4. Takes no effort.
5. Presupposes success; determinate objects only.
6. Instrumentality at best marginal.

TABLE 6

VERBS OF ACQUISITION

Sight: *see*, *spot*.
Hearing: *hear*.
Touch: *feel*, *touch*, *reach*.
Taste: *taste*.
Smell: *smell*.
General: *sense* (?), *find* (?).

Acquisition is the kind of activity Vendler (1967c) calls *achievement*.

The metaphor implicit in term "acquisition" is carried forth in such phrases as *have in sight* and *have a pain in the leg*. What follows finding is of necessity either possession or loss, so that one of the possible follow-ups to perceptual acquisition is what I shall call observational possession. Vendler refers to "the generic state of seeing" following the "achievement of seeing" (1967c:118). The state of seeing is indeed a possible follow-up to visual acquisition. Suppose

a man runs across my path and disappears into a building across the way. I spot him (acquisition), then I see him--for a few minutes say--and finally I stop seeing him. That this seeing is a non-activity is shown by the fact that there is no success or failure implied. Seeing in this sense terminates neither in success nor in failure.[4]

Here I will not be concerned with this sense of *see* but rather in scrutiny. Watching or scrutiny can very well follow the achievement of acquisition. After Diogenes has at long last found the honest man, he may want to keep him in sight and examine him. Or he may want to merely gape at this rarity. I shall now discuss scrutiny and examination (cf. Barnes 1954:261-63).

Scrutiny presupposes success, whether or not it presupposes seeking (Sibley 1955:457 claims it does). Diogenes can neither look at the honest man nor gape at him unless he finds him. Furthermore, while one can look for an honest man, whoever that might be, or for the abominable snowman, be he real or not, you cannot look at a non-existent snowman or an honest man without an identity. Suppose Mary wants to marry a Swede, and does not care which one; once she finds a Swede to marry, we are dealing with (and referring to) a specific person, not a category.

Scrutiny also presupposes keeping in sight--"retention." As Sibley says (1955:472), "You cannot scrutinize an object unless you can see it or unless you keep it in sight. . . ."

Scrutiny is, however, not a single process. One may look at someone much as one aimlessly gapes at that person, or one can look at someone to achieve something. In either case, however, the scrutiny may be said to terminate in a success or a failure. Thus watching may have an accomplishment sense: Vendler (1967c:120) points out that it takes time to observe the solar transit of Venus, for example. One can, however, very well *spot* the transit of Venus. This accomplishment sense of watching is close to that of seeing discussed below.

One way in which looking at is like looking for is that it is durative (Sibley 1955:472). If one looks at a girl for an hour, every moment in that hour was spent in looking at her. Other similarities are that scrutiny is conscious and often instrumental. Indeed, seeking often involves scrutiny. Looking for and looking at are very closely related activities.[5] See Table 9.

TABLE 9

WATCHING (SCRUTINY)

1. Presupposes a. sensation ability.
   b. acquisition.
   c. retention
2. Conscious.
3. Durative.
4. Takes effort.
5. May meet with success; determinate objects only.
6. Instrumentality possible.

I have already mentioned the prerequisite of retention for scrutiny. In a way retention and scrutiny are a cyclic and self-alternating pair. Retention is something permitted by acquisition which in turn allows new achievements. ". . . keeping in sight is something you do *afterwards*," writes Sibley (1955:469). Unlike achievements, retention is durative--you can say (13)--and requires effort (Sibley 1955:469-70).

(13) He kept it in sight from 10 o'clock until five minutes past.

It is not clear however that retention is really a mode of perception or observation. It may be that it is only an aspect of scrutiny.

There are two modes of SOP not discussed above, namely perceptual ability and the generic state of sensing ("seeing" in the sense of "viewing"). This generic sense of *see*, as well as the accomplishment senses of *see* and *watch*, is discussed below. First, the ability to see.

Vendler notes that "being able to see can hardly be conceived of as a process," and that someone can see without actually seeing (1967c:115). That is, even with one's eyes closed, one can still see, at least in the sense of not being blind. Since one can close one's eyes to avoid seeing something one can, accordingly see without seeing. He suggests that the potential for seeing relates to actual viewing as being able to walk relates to walking (115-16). If the moon is behind a cloud, one cannot see the moon, although generally one can see the moon (116). Thus the expression *can see* shares all the ambiguity of *see* itself.

It is in fact peculiar to English and German that

see often means *see*. With an object, this is usual. *I can still see it over there.* is such an example (Sibley 1955: 474-75).

What was said of seeing above is equally true of feeling. And it is interesting here that we get a very real difference between the extra-personal sense of feeling, and kinaesthetics and other intra-personal sensations, for the generic sense of feeling. Barnes strongly distinguishes (14) *I can feel a hat on my head.* from (15) *I can feel my stomach heaving.* (Barnes 1954:262-63).

We have at the very least to distinguish the state of seeing or viewing from the ability to see, both expressed by the word *see*. Thus (14) above is ambiguous. If someone said I was wearing a hat and I knew I was not, I might complain by saying sentence (14), implying of course that if I was wearing a hat I'd feel it, but since I don't, I'm not wearing one. Then again, if someone said I wasn't wearing a hat when I knew I was, I might argue by (14). It is similar to the case of the moon behind a cloud.

Seeing is not just a property of animates. Photo-electric cells can "see." They can be in the generic state of viewing the world. But they cannot really accomplish anything by seeing. Sentence (16), rather than being a counter to this, merely means that someone else accomplishes something by using the abilities of the radar.

(16) The radar is designed to see and warn against all intruding aircraft.

Accomplishment is a conscious process. One must watch Venus to see it transit the sun, or look at a movie twice to see it twice. The accomplishment senses of *watch* and *see* differ from the generic state of viewing in that the act of seeing is defined temporally. To do something successfully implies a goal, and in these cases the goal is to do something until some defined time limit. Seeing a movie is therefore not the same thing as seeing a man crossing the street (Vendler 1967:119-20).

So far I have distinguished modes of perception by their temporal and causal relationships, and distinguished perception from observation mainly in terms of consciousness. But there is another way of distinguishing modes of perception, and of distinguishing perception from sensation.

Barnes (1954) makes a clear-cut distinction between the latter. The perception of a corn on the foot, for

example, is very different from the sensation of an itch in the foot. A sensation, it is claimed, is not necessarily a perception. A sensation may or may not pertain to the world of physical objects, but a perception is always a perception of something. Our language does not distinguish the two clearly, however, for as Barnes notes (264),

> "I feel myself going up and down" might be making a claim to perceive some movement or it might be merely saying what would less ambiguously be said by "I have the sensation of going up and down." This latter, like "I feel as if I were going up and down" conveys the suggestion "but of course I'm not."

Furthermore, although feeling or perception is linked closely with feeling or sensation (265), sensations are entirely private. "No one can see my twinge and no one except me can feel it," notes Barnes (266). To feel a tweak, on the other hand, is to perceive an external event someone else could as well detect.

The sentence 'I feel warm' is ambiguous in this regard, but note that 'I feel warm to Harry' is a perception alone; the sensation of feeling warm cannot be paraphrased "I feel warm to me,' which implies that I had a perception rather than a sensation; I may have put my hand to my forehead, for example. 'I feel weak' must be interpreted as a sensation, but 'I feel smooth' is a perception.

But Barnes finds that perception itself is not a single entity. He distinguishes verifiable and non-verifiable perception. In verifiable perception, not only is verification possible through use of another sense, but is verifiable by other persons. If I feel a gun against my forehead I might see it out of the corner of my eye; certainly others can see it. But if my heart is pounding, I cannot see it, and others can only verify my perception indirectly (262-63). Unverifiable perceptions are close to sensations in this regard; kinaesthetic *feel* is closely allied to this kind of perception.

Unlike sensation, unverifiable perception pertains almost exclusively to touch or feeling. Hallucinations might be termed visual sensations, but it is hard to think of what might constitute unverifiable visual perceptions, unless they consisted of seeing a ghost no one else could see. Even seeing flying saucers could be the subject of an external investigation, but seeing spots could not be in the same sense. To see spots and to see spots in the sky are therefore

two entirely different kinds of events, the former being a sensation, the latter a perception.

With that, we conclude our discussion of SOP, with one exception. Certain sense verbs in English are ambiguous in a peculiar manner.

(17) I feel warm.

(18) Henry feels warm.

(18) is ambiguous. In the sense of (19a) the subject can be inanimate, as in (19b), but in the sense of (20a), that is, sensation, it can not, as seen in (20b).

(19) a. Henry feels warm to me.

b. The table top feels warm to me.

(20) a. Henry feels (or senses) that he is warm.

b. *The table top feels (or senses) that it is warm.

The adjectives that can occur in environments such as (19) are more restricted than those that can occur with the sensation meaning. Among the "sensation" adjectives that cannot occur with (19) are *stupid*, *ill*, *patriotic*, *invincible*, and so on. While *smooth* in the physical sense can occur in (19), it cannot occur with the sensation meaning of *feel*. While the sensation meaning occurs only with *feel*, the (19) type of meaning occurs with all five senses. In the case of vision and hearing one obtains the suppletive verbs *look* and *sound* respectively.

Thus this "appearance" type of meaning, as we might call it, obtains with the verbs *feel*, *small*, *taste*, *look*, *sound*, and *seem*, as in (21).

(21) a. The tabletop feels warm to me.

b. The dead fish smelled bad to the cat.

c. This TV dinner tastes cruddy to me.

d. That blonde I met Thursday looks swell to me.

e. The church music sounds nice to passers-by.

f. The President seems aloof even to his close friends.

g. That table would seem low to a dwarf.

h. That table would seem low to a man.

The verbs *look*, *sound*, and *seem*, with certain subjects, can take as complements adjectivals identical to those co-occurring with the extended meaning of the basic sensation meaning of *feel*, as illustrated by (22).

(22) a. Your idea sounds pretty dumb.

b. Harry looks like a patriotic slob.

c. The President seems just as patriotic as Harry Schwartz.

The suppletion and this extended meaning are related. The extended sensation meaning is a "cognitional sensation" and the extended perception as in (22) a "cognitional perception." The latter might be termed also "cognitional appearance."

In the ordinary appearance sense there are severe limitations on what complements can co-occur with the verbs, and there are as well limitations on the subjects and indirect objects. (23), for example, is absurd.

(23) The invisible man $\{^{\text{appears}}_{\text{looks}}\}$ tall.

The indirect objects must have sensory ability. Most animates and a few machines are the only allowable indirect objects:

(24) The dead fish smells rotten to

a. me.

b. ?the Smell-o-meter.

c. *the other dead fish.

(25) The Russian ICBM looked like a flying saucer to

a. the head of SAC.

b. ? the DEW radars.

c. * any old doorknob you would care to name.

We could explain the restrictions on the indirect

objects if these were the underlying subjects. These restrictions are the same as on the subjects of SOP verbs. See sections 2.32 and 2.41 for a discussion.

To summarize, as far as the five traditional senses are concerned, there are anywhere from six to nine ways in which an SOP verb can be used. These uses pattern roughly into three groups. The first group consists of states--sensation and perception. We have discussed these as acquisition, viewing, ability to see, sensation, and the two perceptions. These use the verbs *see* and *hear* as opposed to *look* (or *watch*) and *listen*. The second group, the *look* and *listen* group, tends to consist of tasks or activities leading to achievements or accomplishments. Seeking and scrutiny are of this type. Finally, there is appearance, which uses a different verb *look* (the audition verb is *sound*, not **listen*).

I will be concerned with whether these facts have any bearing on the syntax of SOP verbs or vice-versa.

In the study of the syntactic properties of SOP verbs I have used the tests of Lakoff's above.[6]

In this section, I will first consider the subjects, then the objects and complements of the various types of sense verb. Then I will apply Lakoff's tests to the various types, showing that considering the various meanings separately achieves markedly better results with these tests.[7] Finally, following Ryle 1949 I will compare the properties of verbs of sensation, perception, and observation, especially in light of Vendler's work (1967c).

Two classes of subject alone occur with SOP verbs.[8] We might term the first class "sensate" nominals, the second "volitional" nominals, assuming that the latter are a special subclass of the former. Sensate nominals are all those referring to things having sense of one kind or another. The latter class designates only those entities having volition or cognition in addition to sensory abilities. For many people only animates can be sensate. These people would find sentences like (26) and (27) at best metaphoric if acceptable at all. They are likely also to reject (28) and (29).

(26) The radar saw spots.

(27) The flytrap felt an insect on its leaf.

(28) The computer perceived that 2 and 2 were 4.

(29) The radar watched out for enemy planes.

It is also a bit odd to attribute feelings to human conglomerates, although to such groups are regularly attributed cognitional capability, as in (31).

(30) The Boy Scouts of America has perceived that the Girl Scouts of America are more fun than camping.

(31) The Pentagon has decided to turn the country into one huge SAC base.

Sensation allows only volitional subjects:

(32) a. I feel hot today.

b. *The thermometer feels hot today.

This is particularly true of the extended sense of *feel*, as in (33).

(33) a. The Republicans sure felt stupid when they lost Maryland.

b. *The radarscope sure felt stupid when it *missed* the airplane.

The ability to sense, in contrast, allows any sensate nominals.

(34) *Modern microphones can hear everything said* within a radius of a mile.

In the cases of perception and observation the subjects must be volitional.

In the extended (semblance) meaning, more subjects and complements are allowed than with the basic appearance meaning. Cf. (36).

(36) a. That tree looked green to me.

b. *That idea looked green to me.

c. That tree looked silly to me.

d. That idea looked silly to me.

All this stems from the fact that whereas (36a) and (c) concern actual sense perceptions, the semblance meaning of

(36b) and (d) concerns cognitional perceptions.

A distinction should be made here between complement adjectivals typical of appearance and sensation as opposed to those typical of semblance and cognitional perception. Notice that you cannot say (37b), though you can say (37a).

(37) a. I feel stupid.

b. *I feel stupid to myself.

Some of the cognitional adjectives are listed in (38). Verbs and phrases taking these also allow the other kind of adjectival, but the reverse is not the case.

(38) angry
stupid
Communist
American
patriotic
confused

One must also distinguish internal from external states. Feeling ill or dizzy is internal, but feeling warm is not. This distinguishes unverifiable from verifiable perception. But cf. the differing uses of *I feel warm* in (39) and (40):

(39) Tom: "I feel warm, doc."
Doctor: "You don't feel warm to me."
Tom: "Then I guess I just feel warm, but I'm not."

(40) Tom: "I feel warm, doc."
Doctor: "You don't feel warm to me."
Tom: "I may not feel warm to *you*, doc, but I sure feel warm to me."

One can certainly not feel smooth or green, unless it is in the extended senses of "serene; mellow; or easy-going" and "young; immature; nauseated; or jealous" respectively (as in [41]).

(41) a. All day today I felt ill.

b. warm.

c. dizzy.

d. *smooth ("of even surface")

e. smooth ("easy-going").

f. *green (in color).

g. green (with envy).

Cf. (42).

(42) Today I felt just like an old smoothy.

The non-cognitional adjectivals are limited further as to which verbs they can co-occur with. Not all can occur with each verb, but must be appropriate to that sense. With adjectives taste and smell have the same complements (see [43]), but with adjectival phrases they diverge considerably. (See [44].)

(43)

The table top	Smooth	Sweet	Sour	Green	Hollo
feels		*	*	*	
smells	*			*	*
tastes	*			*	*
looks		*	*		
sounds	*	*	*	*	
seems					

(44) a. That odor smells like lilacs.

b. Those flowers smell like lilacs.

c. *That odor tastes like lilacs.

d. ?Those flowers taste like lilacs.

e. This steak tastes like dogfood.

f. This steak smells like dogfood.

When an adjective occurs more than once in the same vertical column in (43), it represents different aspects of perception. I can tell that a thing is hollow by seeing the hollow, by feeling the hollow, or by hearing a hollow sound upon tapping it. Hearing something to be hollow is therefore a more complicated process than seeing something to be hollow. Some adjectives however represent states detectable by one sense alone. Pinkness, for example, can only be seen. The column for pink might be expected therefore to look like (45).

(45)

	Pink
feel	*
smell	*
taste	*
look	
sound	*
seem	?[9]

Complements may not only be adjectives, but other adjectivals, noun phrases (46), noun phrases modified by adverbials (47), prepositional phrases (48), prepositional phrases modified by adverbials (49), and perhaps some clauses (50).

(46) I may sound a cynic, but I'm not one.

(47) ?*That politico sounds almost a politico. (Better with *like*.)

(48) That politico may sound like a patriot, but he acts like a traitor.

(49) Some Communists sound almost like patriots.

(50) a. I feel like I am a linguist.

b. I feel as if I were a linguist.

Like verbs of judgment (*adjudge*), declaration (*call*) and nomination (*appoint*), these verbs of SOP can take as complements embedded sentences or remnants thereof containing complement-type adjectivals and nominals (51).

(51) a. They all considered Robert to be a fool.

b. foolish.

The presence of adverbials in (49) shows that these nominals are not objects, at least in that they originate as another part of speech. Such pseudo-objects do not allow passives (52).

(52) a. *A fool is felt by me.

b. *Almost a fool is felt by me.

Perception and observation, on the other hand, can take true objects (53).

(53) a. As soon as he entered the room, Sherlock Holmes smelled a Havana cigar.

b. tasted pollen.

c. heard footsteps.

d. heard a man.

e. heard a sobbing woman.

f. felt a breeze.

g. sensed danger.

Such objects may be modified (54), but adverbial modifiers like *almost* (55) do not occur.

(54) a. On entering the room, Sherlock Holmes smelled cigar smoke in the air.

b. tasted the pollen of a certain flower on his tongue.

c. saw a corpse on the table.

d. saw a corpse hanging from the ceiling.

e. heard retreating footsteps nearby.

f. felt a sharp pain in his side.

(55) *He saw almost a corpse on the table.

These objects allow the passive (56).

(56) A corpse on the table was seen by Sherlock Holmes as he was entering the room.

(57) A corpse was seen on the table by Sherlock Holmes as he was entering the room.[10]

The relationship of objects to the verbs varies wildly from category to category. In (58) the object is not actually affected, may not even exist, and is undefined, in (59) it must both exist and be defined, in (60) interest is centered on the object, while in (61) and (62) it is not, in (63) it is implied that the object does not exist, in (64) that it does, and so on. Such facts have structural consequences.

(58) Diogenes looked for an honest man.

(59) Diogenes saw an honest man.

(60) Diogenes looked at the honest man talking.

(61) Diogenes saw the honest man talking.

(62) Diogenes saw Venus transit the sun and went blind.

(63) Diogenes had a migraine and saw spots.

(64) Diogenes was pursued by flying saucers and saw spots.

Lakoff set up a special category of sense verb on the basis of his tests. If we take the verbs by meanings, we see that those meanings we characterized as representing states test out as stative, whereas seeking and scrutiny are active. Indeterminacy remains only in the cases of accomplishment and appearance. There is no need for a special category of sense verbs.

The ability category is by Lakoff's tests stative: you can say (65) but not (66).

(65) He seems to (be able to) see.

(66) a. *What he did was (be able to) see.

b. *Instead of hearing, he decided to see.

Sensation is stative as well. See examples (67-72). These work just like stative verbs.

(67) a. *What the drunk did was see pink elephants dancing.

b. *The boxer saw stars in order to frighten his trainer.

(68) a. *The drunk used Sterno to feel insects on his skin.

b. *Sterno enabled the drunk to feel insects on his skin.

(69) The drunk seemed to feel insects on his skin.

(70) a. *What he did was feel warm.

b. *He felt warm carefully.

(71) a. *He felt stupid with a probe.

b. *He felt warm with a sweater.[11]

(72) "He seems to feel stupid," explained the psychiatrist.

"Acquisition" is entirely stative according to Lakoff's tests, perhaps with the exception of test (25), despite the fact that it represents not a state, but a change of state.

Viewing likewise seems to be stative.

Perception is stative:

(73) a. *What he did was feel a knife in his back.

b. *What he did was see a man climb over the fence.

(74) a. *Harry used a telescope in order to see a *man climb over the fence*.

b. *The thief enabled Harry to feel a knife in his back.

(75) a. *Bill felt a knife in his back with Johnny.

b. *?Bill kept on feeling a knife in his back.

(76) a. Bill seems to feel a knife in his back.

b. *?Bill seems to see a man climbing over a fence.

(77) *Bill is feeling a knife in his back.

Seeking, on the other hand, is active:

(78) a. What Lancelot did was look for the Holy Grail.

b. King Arthur persuaded the Green Knight to look out for Morgan le Fay.

(79) a. Lancelot used a telescope in order to look for Morgan le Fay.

b. *Morgan le Fay tasted her drink for love potion.*

(80) a. Lancelot and Guinevere looked together, but they did not look for the Holy Grail.

b. King Arthur's knights kept on looking for the Holy Grail.

(81) *Lancelot seems to grope for his sword in the darkness.

Scrutiny is also active:

(82) a. What Lancelot did was look at Merlin.

b. King Arthur persuaded the Green Knight to look at Morgan le Fay.

The same parallels can be found for (78-81).

4.2. Cognition and Emotion Verbs.

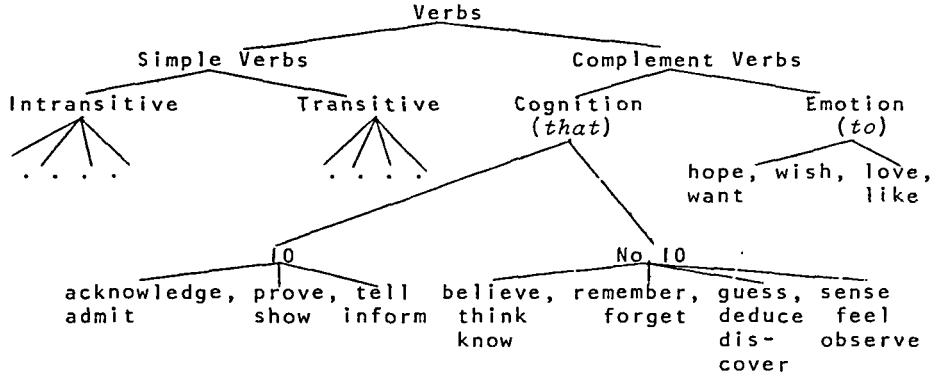
The assumption that the syntactic properties of verbs are for the most part regularly dependent on their semantics is supported by the remarkable cohesion of verbs with particular properties or sets of properties. In this section I will be concerned with relating the meaning of verbs to the types of sentential complements they take (in particular the desentential *that* and *to* complements). For myself I have categorized verbs into three main types: intransitive, transitive, and complement. This proposed classification is not a serious one, since it is hierarchical and based on surface facts, when the properties in question are in fact cross-cutting and underlying. But if we compare, for example, *sleep*, *eat* and *deduce*, we see that this classification is roughly correct, at least for the purposes of seeing which verbs properly should be included in a discussion of desentential complements.

I have further roughly classified complement verbs into two groups: *cognition and emotion verbs*. This is based on whether the verb typically occurs with a *that* complement or a *to* complement. The *to* verbs usually occur with many complement types, including *that* complements, but the facts

indicate that they primarily go with *to* complements. This distinction is based on sets of frames in such studies as Alexander and Kunz and Bridgman. Considering *hope*, *want*, *wish*, *love*, and *like*, for example, as against *know*, *believe*, *tell*, and *prove*, we see different behavior for the two groups in many frames. Thus the latter, but not the former, occur in test frame AK 12: NP + V + Wh + S (*He asked if they were coming.*), AK 16: NP + V + Wh + *to* + Inf-VP (*They explained how to clean a decanter.*). On the other hand, the former, but not the latter, occur in such test frames as AK 32: NP + V + *to* + Inf-phrase (*My father wanted to see the world.*). While there are a great many problems with such test frames, in general there seems to be a distinction between verbs fitting certain sets of frames, and I have arbitrarily selected the *that* and *to* complements to be typical of the two very rough categories of verb. It should also be kept in mind that many verbs take objects as well as complements.[12] There are a huge number of surface permutations of modifiers, objects, and complements, and the co-occurrences of each combination defines a class of verb (as noted below).

In this section I will be concerned mainly with cognition verbs, those taking *that* complements. This category covers a great number of verbs. Communication verbs, both vocal (*say*, *tell*, *whisper*) and instrumental (*radio*, *cable*, *telephone*), SOP verbs (*see*, *observe*, *perceive*), verbs of belief (*believe*, *think*), knowledge (*know*, *learn*), judgment (*adjudge*, *deduce*), memory (*remember*, *forget*), and several groups of information verbs (*convince*, *inform*, *demonstrate*, *prove*, *show*), all belong in this category. We can further divide this category into roughly two groups, based on whether an indirect object is allowed (*I proved to John that the world is flat.*; *I believed to John that the world is flat.*).

To make this clearer, see the diagram.



I will first consider the IO verbs, asking why they take indirect objects, and why they take *that* complements. I will attempt to show that they are causative versions of the non-IO *that* verbs.

I will then discuss *of* and *about* complements--and the general question of communication verbs.

Returning to the non-IO verbs, I will consider the question of which verbs are cognition verbs, and finally, relate *to* and *that* complementation.

I will then consider emotion verbs and *to*-complements.

Examining cognition verbs we notice at once that many of the non-IO verbs have *from* complements paralleling the *to* complements of the IO verbs. Thus:

(1) (IO) Shirley told the story *to Bill*.

(2) (non-IO) Bill heard the story *from Shirley*.

Probably all non-IO cognition verbs have such a *from*-complement:

(3) I believe from what I've read that LBJ was a good president.

(4) I deduced from the evidence the true cause.

(5) I felt from what I saw that they were unhappy.

Such complements may take on various forms: a kind of personal ablative: *from Shirley*; a relation of the form of the source: *from Shirley's cable*, *from what Shirley cabled*; or a relation of the source itself: *from the evidence*, *from what I saw*, *from the fact that she hates men*. This contrasts with the IO verbs, which demand a human, or at least sensate, if not cognitional, dative:

(6) a. I said to Sam that I hate eggs.

b. ? the computer.

c. ? the microphone.

d. ? the tabletop.[13]

Despite this disparity we can still see that there are pairings here. Just as Mary selling the secret plans to

Igor is much the same as Igor buying the secret plans from Mary, so is Mary telling the secret plans to Igor like Igor hearing the secret plans from Mary. Gruber makes the same observation, listing (1967:31-32) among verbs that require the prepositional phrase be a *from*-phrase, *acquire*, *hear*, *understand*, *learn*, *perceive*, *sense*, etc.; among those requiring a *to*-phrase, *tell*, *communicate*, *teach*, *say*, *speak*, *talk*, *whisper*, *swear*, *testify*, *admit*, *suggest*, etc.

Gruber (1967:31) has an engaging analysis of these words which, however, I cannot agree with; he makes the simple observation that

> there is a set of verbs that take verb-phrase prepositional-phrase complements with human objects of the preposition. One subclass of this set requires that the prepositional phrase be a *from*-phrase, not a *to*-phrase; conversely, another subclass must have a *to*-phrase, not a *from*-phrase. *Buy* belongs to the first class and *sell* to the second class; we can say:
>
> He bought it from her.
>
> She sold it to him.
>
> But we cannot say:
>
> *He bought it to her.
>
> *She sold it from him.
>
> *He bought it from her to him.
>
> *She sold it from him to her.
>
> Words of these classes, at least in the grammatical system having the semantic lexicon . . . , require content-sensitive phrase-structure rules to generate them. . . .

He goes on (33) to claim that all of these verbs

> have an underlying verb phrase which contains both a *from*-phrase and a *to*-phrase. But the class of verbs that manifests only a *to*-phrase can be said to be characterized by a lexical attachment rule by which the underlying *from*-phrase is mapped into the verb itself; conversely, the class that manifests only a *from*-phrase is

> characterized by a lexical attachment rule that results in the masking of the underlying *to*-phrase.
>
> The underlying pattern generated by the base component is to have both a *from*-phrase and a *to*-phrase. There are numerous transitive and intransitive verbs which permit both these phrases on the surface. We surmise that the structure of these verbs is a direct reflection of the underlying structure. *Transfer* and *move* are verbs of this sort.

He further notes that "any causative of the intransitive verbs will fall into the class of transitive FROM-TO verbs as well."

However, whereas Gruber correctly observes the essential similarity between verbs like *buy* and *sell* or *hear* and *tell*, he fails to also observe that there is a disparity. A book can tell you something, and you can learn from a book, but the book cannot learn from you, nor can you tell the book anything. Gruber apparently does not consider this essential, but it is.[14] If we could explain this disparity it might fit in with Gruber's observation on the causative verbs, and we could explain the similarity not in terms of a symmetry but an essential core.[15] This is impossible with *buy* and *sell*, but it is not with *learn* and *tell*.

Since *learn* means "come to know," it looks like *tell* means "cause to come to know." What, for example, does whispering have to do with causing to know? Just as "John boated Harriet across the river" means "John conveyed (caused to go) Harriet across the river by boat," so "John whispered to Harriet that Bill is a fool" means "John caused Harriet to know that Bill is a fool by whispering to her." The verb *whisper*, like the verb *boat*, is a more general or simple verb, which has incorporated an expression of means.[16] This explains why so many verbs of speech or noise can be used as communication verbs. Similarly, the other 10 verbs might be regarded as complexes built upon the causative of some non-10 cognate verb.

Each such verb contains at least three predicates. *John whispered to Joan that Bill is a fool.* contains at least the prepositions that

(7) John whispered (to Joan).

(8) John said something (to Joan).

(9) John told (Joan) that Bill is a fool.

If (7) is left unspecified, we might say *John said to Joan . . . ,* if (8) were unspecified, *Joan was told by John's whispering . . . ,* and if (9) were unspecified, *John Whispered something to Joan.*

One subset of 10 verbs is of special interest.

Among 10 verbs[17] the following (with their nominalizations) have underlying *of* and *about*. (See Rosenbaum 1967.)

(1)	assure	assurance
	inform	information
	reassure	reassurance
	satisfy	satisfaction
(2)	convince	conviction
	foreward	forewarning
	notify	notification
	remind	reminder, remembrance, souvenir
(3)	advise	advice, advisement
	caution	caution
	warn	warning
	tell	telling, tale
	cable	cable[18]

Each of these verbs may have a "volitional" subject (as in the [a] sentences below) or an non-volitional one (as in the [b] sentences). The verbs may be simple transitives (10), have a *that* complement ([11], with optionally omitted *that*), or a prepositional phrase complement ([12], actually a desentential derivation).

(10) a. John {reassured / notified / cabled / . . . .} Harry.

b. The news from Aix {reassured / . . . .} Harry.
(but cabled)

(11) a. John {reassured / . . . .} Harry (that) the earth was round.

b. The photos from outer space failed to reassure Harry (that) the earth was round.
. . . .

(12) a. John reassured Harry of the $\left\{\begin{matrix}\text{fact}\\\text{story}\\\text{. . .}\end{matrix}\right\}$ that the earth was round (But $\left\{\begin{matrix}\text{*cabled}\\\text{*forewarned}\end{matrix}\right\}$.)

Essentially the same (surface syntactic) facts pertain with *about* as with *of*.

Certain facts should be noted. Nominalizations and other transformations show (cf. [13]) that the *of* which shows up is underlying.

(13) John's reassurance of the roundness of the earth.

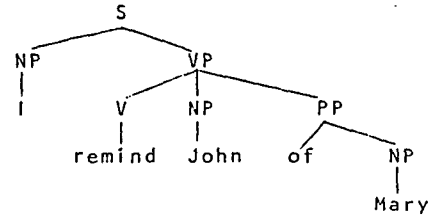
We would like to derive *remind* from *cause to remember*, but whereas *remind* has the *of* (14a), *remember* does not (14b).

(14) a. I reminded John of $\left\{\begin{matrix}\text{the flatness of the earth.}\\\text{Harry.}\end{matrix}\right.$

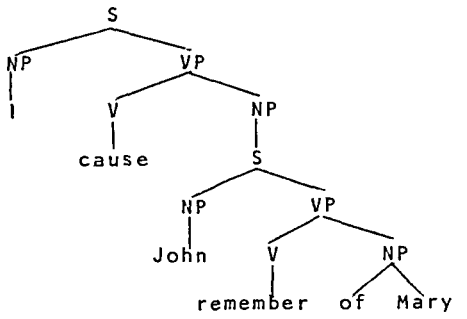
b. John remembered (*of) $\left\{\begin{matrix}\text{the flatness of the earth.}\\\text{Harry.}^{19}\end{matrix}\right.$

This could be handled by making *remember* an exception for a minor rule deleting *of* under certain conditions (or, alternatively, incorporating the *of* into the verb under those conditions). Under such a proposal we might derive (16) from an underlying structure like (17), and (18) from (19) in a similar manner:

(16)



(17)



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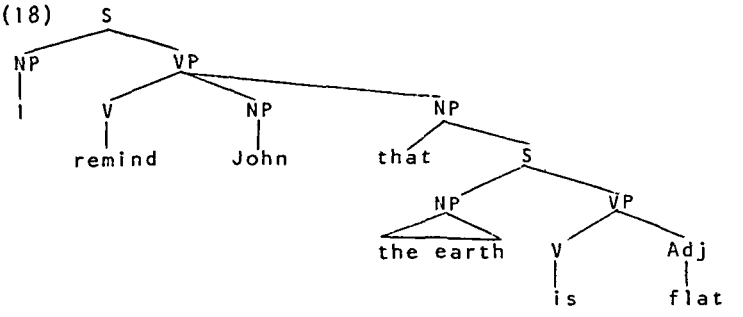
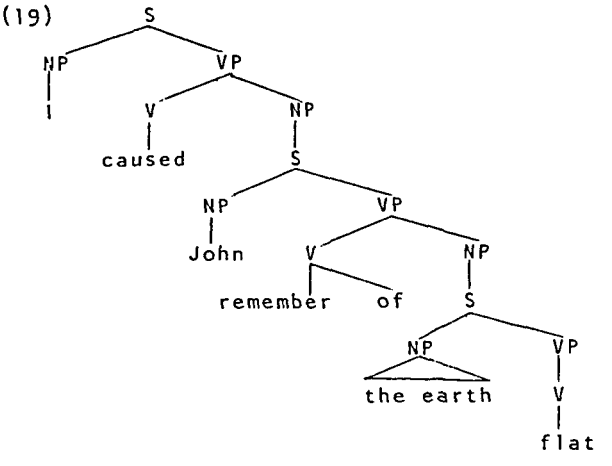


(19)



In case the surface verb is *remember*, however, the *of* does not appear (20).

(20) $_S[_{NP}[I]_{NP}\ _{VP}[_V[\text{remember}]_V\ _{NP}[\text{of Mary}]_{NP}]_{VP}]_S$

$_S[_{NP}[I]_{NP}\ _{VP}[_V[\text{remember}]_V\ _{NP}[\text{Mary}]_{NP}]_{VP}]_S$

What is fishy about this is the deletion of an element which is, if a constituent at all, one very minor and low on the tree.

There is some evidence, in fact, that the *of* is not attached to the verb in the underlying structure, but is derived from an underlying S. Consider sentence (21a).

(21) a. I convinced John of the urgency of his task.

b. I convinced John that his task was urgent.

(21a) is obviously derived from (21b). But how? Bendix (1966) has shown close relationship between *have* and *be*, as in (22), and (23), and Juret (1960:78-79) has declared that

> *Nous avons* est la forme subjective de *est à nous*, avec une nuance de stabilité. Lat. *habēre* signifie parfois *être en tel état*; en bas-latin *habet* = fr. *il y a*; *ob + tinet* se maintenir dans l'usage; *habitāre* habiter; *habitus* état; ces mots montrent la parenté de ce groupe avec ((être)). Beaucoup de mots appartient autant au groupe de *l'être* qu'à celui d'*avoir*. En anglais *get* signifie devenir et acquérir; *be + get* engendrer; il signifie aussi oublier dans *for + get = ver + gessen*; all. *geben* donner, *es gibt* il y a.

(22) a. There is a bug crawling on your shoulder.

b. You have a bug crawling on your shoulder.

(23) a. This ice cream tastes bad.

b. This ice cream has a bad taste.

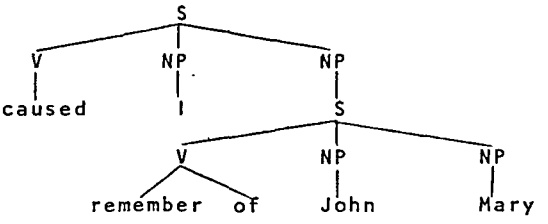
c. This ice cream is bad-tasting.

The second *of* in (21a) therefore should come from an underlying *have* or *être à* (*be to*). The intermediate stage in (21) is probably like (24):

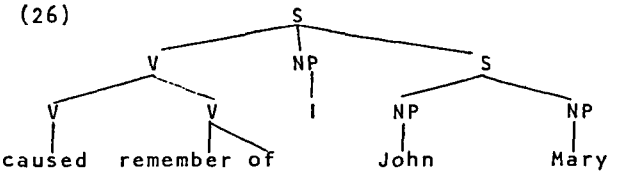
(24) I convinced John of that {his task has urgency. / there is urgency to his task.

'hus some if not all of the NPs entering into the PP with the :omplement *of* are desentential in character. This has some ›earing on the question of where the *of* comes from. Suppose :hat we have an underlying structure like (25), and that by 'erb-raising of the kind necessary to obtain *cause to remem-›er*, we get (26), which underlies (27). (I am assuming here :hat the underlying order is VSO. This will not affect the liscussion, however.)

(25)



(26)



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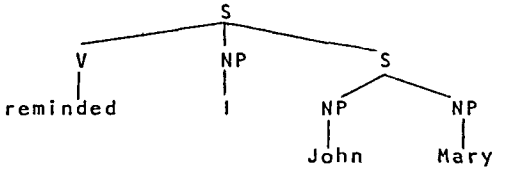
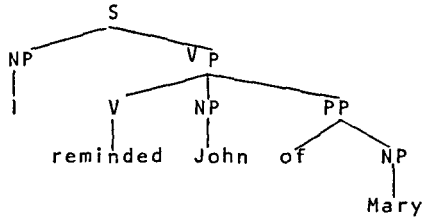


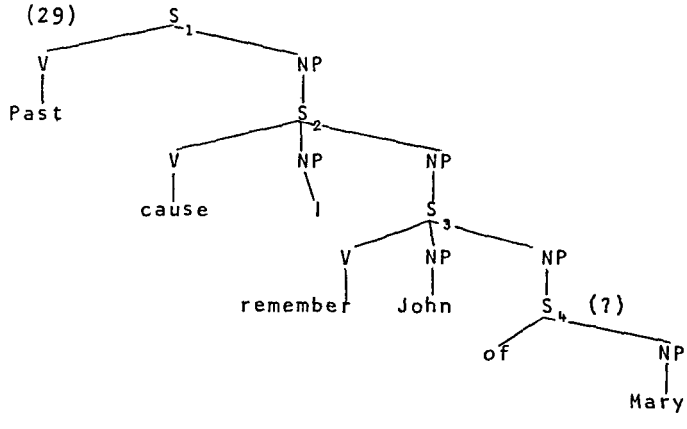
The *of* is not in its proper place. But to leave it in place during verb-raising would mean raising the *of* as well by declaring it to be if not a V, a Prep attached to the S above that of *John* and *Mary*, in effect turning that S into an NP within a PP.

However, if the *of* starts out attached to the lower S, then all of these facts occur automatically. It is very likely that the actual underlying shape of (28) at some point is (29).[20]

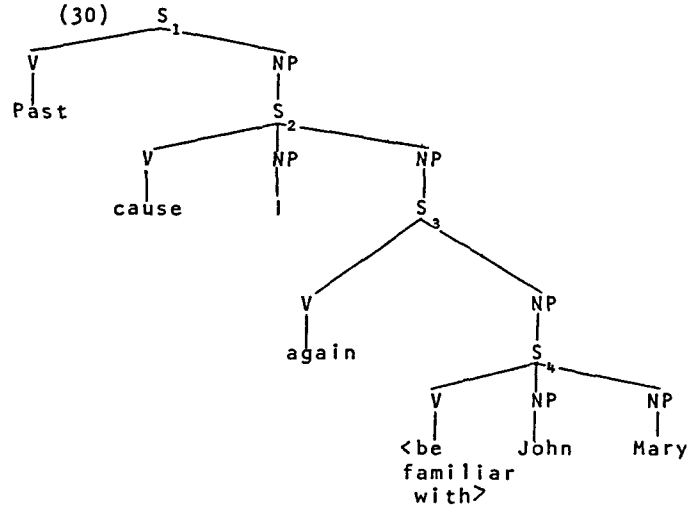
(28)



(29)



It is questionable what the most-underlying shape of S_4 is, but probably the main verb of S_3 either is *have* or *be*, with some verb of knowledge or visualization in S_4. The most-underlying structure of (29), if we interpret *remember* here as meaning "be familiar with again," is, under this suggestion, more like (30) than (29), although problems with this analysis remain.



This solution, however, simplifies the problem of *of*.

Now what about *about*? There are two questions here. First, how does *about* differ from *of* in meaning, and second, how does it differ from it in syntax?

To begin with, *of* and *about* are very different, (31a) is not synonymous with (31b).

(31) a. John informed Henry of the flatness of the earth.

b. about

(31a) means that John gave Henry the information that the earth was flat (to such and such a degree), whereas (31b) means that Henry already possibly knew that the earth was flat and that John was giving him some additional information concerning that fact. Because of this difference, some sentences with *about* sound better than their counterparts with *of*, and vice-versa. Thus (32a) is better than (32b), which sounds a bit odd; similarly, (33a) is better than (33b).

(32) a. John convinced Harry about Rome.

b. of

(33) a. John informed Harry of the date of the Revolution.

b. about

With *of*, a name like *Rome* is treated as a noun, whereas with *about*, it can be desentential, that is, it can stand, for example, for "the intentions of the Italian government" or "where to take his vacation." Considering the meaning of *convince*, therefore, it is easy to see why (32a) should sound so much more normal than (32b). It should be noted, however, that with the verbs *say*, *speak*, and *tell*, *of* and *about* are virtually synonymous.

The second question might be where the *about* comes from. For example, is the structure of (34) like (35) or (36)?

(34) I know about Mary.

(35) $_S[_{NP}[I]_{NP}\ _{VP}[_V[\text{know about}]_V\ _{NP}[\text{Mary}]_{NP}]_{VP}]_S$

(36) $_S[_{NP}[I]_{NP}\ _{VP}[_V[\text{know}]_V\ _{PP}[\text{about}]_{NP}[\text{Mary}]_{NP}]_{PP}]_{VP}]_S$

(37a) and (37b) are about equally bad (for me), but (38a) is much better than (38b), if the latter is possible at all. The structure should be (36).

(37) a. Mary is known about by me.

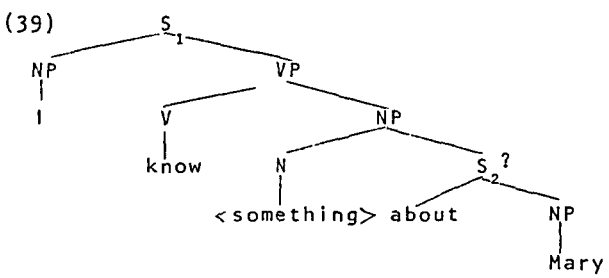
b. About Mary is known by me.

(38) a. Nothing about Mary is known by me.

b. Nothing of Mary is known by me.

Underlying (36) is something like (39).

(39)



S_2 in (39) is undoubtedly like (40). *About* probably is the aorist participle of the verb *concern*, since it glosses *concerning* in this sense, and acts like an adjective rather than a present participle in that, in Spanish, for example, old participles in *-ante* have become prepositions or conjunctions (cf. English *considering*, *during*, *pending*, etc.), whereas the newer participles in *-ando*, etc., have not--and it is the cognates of these older participles that have come into English from Latin through French as adjectives alongside participles--thus *president* besides *presiding*, *resident* besides *residing*, etc., as well as *resilient*, *absent*, etc., which have no cognate participial form.

The stative *concerns* is derived into *concerning* and thence into *about*. (40a) is a true paraphrase of (40b) (although the reverse is not necessarily true).

(40) a. What is the book about?

b. What does this book concern?

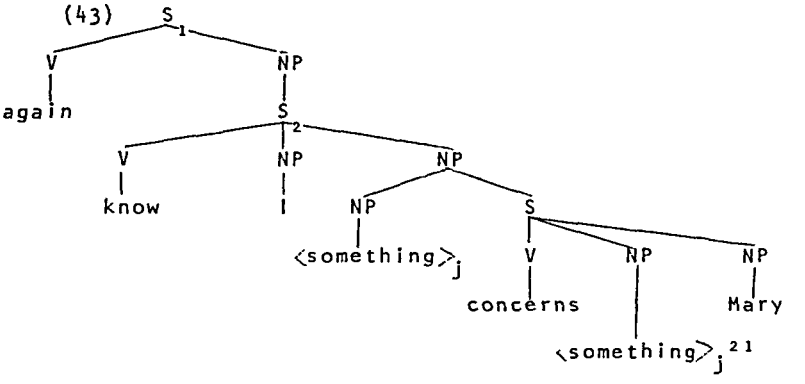
This fact makes it even more likely that the *about* in sentences like (34) comes from an underlying sentence modifying an optionally deletable<something>. This solution seems to explain the *what* in sentences like (41), and maintains *know* as basically a transitive verb (it would be hard to label *about Mary* a NP in the surface level).

(41) What do you know about Mary?

The sentence (42), in accord with (30), has an underlying structure like (43).

(42) I remembered about Mary.

(43)



It should further be noted that sentences like (9) and (42) are ambiguous. I reminded John of the flatness of the earth. can mean either that I told John the earth was flat, or that upon seeing me or hearing what I was sying ("Pizza is good for you," said Alphonse) that it was flat.[22] Similarly I reminded John of Harry. can mean either that I said something about Harry or that I looked like Harry.

There is undoubtedly a structural difference between the two meanings in each case. In the case of my reminding John of Harry because I resemble Harry, what John is reminded of is actually Harry, or some aspect of Harry, such as his appearance, mannerisms, etc. But in the case in which I remind John of Harry by saying something, what I am actually reminding John of is not Harry, but some fact about Harry. This is clearer with *about* than with *of*; you cannot even remind someone about someone by looking like that person at all. It is probably the very existence of Harry that John is reminded of in (14a), and the underlying structure of this sentence probably underlies (44) as well.

(44) I reminded John that Harry exists.

(45a) and (45b) provide a clearer example.

(45) a. Khruschev reminded Kennedy of the danger of nuclear war.

b. Khruschev reminded Kennedy that there was danger of nuclear war.

There was is, of course, a true paraphrase of *(there) existed*. Under certain conditions, therefore, an ordinary nominal like *Harry* may represent a desentential element derived from an underlying sentence whose main verb is *exist*.

It is still true that *remind* is ambiguous in a way *remember* is not. One meaning of *remind* incorporates the notion of resemblance. Therefore even a sentence like (46) must be ambiguous although one of the meanings is absurd and never occurs. (Cf. Binnick 1968a.)

(46) The facts about Gibraltar reminded Harry of Elizabeth I of England.

In addition to the problems of *remind*, there are many problems with *remember*, which is at least three ways ambiguous ("know again," "be familiar with again," "visualize or think about again"). These problems will not be discussed here.

In order to discover a general principle behind which verbs take *of* and *about* (which will be discussed below), which is evidentally a semantic matter, certain semantic difficulties should first be clarified. One of these has to do with the verb *convince*.

The nouns *conviction* and *belief* are synonymous. This suggests at once that *convince* and *believe* are at least closely related. One native speaker said that *conviction* meant "being convinced," and this is not a bad gloss for *having* a conviction. Actually, since *convince* patterns rather like *notify* and *remind*, we can call it the causative of belief, specifically of the verb *believe*. From this we could predict many of the properties of the verb *convince* and moreover explain the similarity of *conviction* and *belief*, since a conviction would be, au fond, something someone has come to believe, and hence believes: a belief.

However, there is a major difference between *convince* and the verbs of notice, advice, and communication, all of which likewise take *of*, *about*, *to*, and *that* complements. That is that while you can notify, advise, or tell someone of a fact (47) or tell of a thing or person (48), you can *convince* someone of only a fact (49), and not of a thing or person (50a), unless that thing or person is in fact an event (50b), fact (50c), or clearly representative of the existence of something or someone--that is, (50d) glosses (51). This is apparently a real difference, especially since the positted underlying verb, *believe*, can have an object (albeit an indirect one, as in [52]).

(47) a. They notified Franklin Pierce that he had been elected.

b. They advised Franklin Pierce that he should not talk to reporters.

c. They told Franklin Pierce that he had been elected and that he should not talk to reporters.

(48) a. They notified Franklin Pierce of the new railroad.

b. They advised Franklin Pierce of the giddiness of the Congress.

c. They told Franklin Pierce of George Washington, as if he hadn't heard!

(49) They convinced Franklin Pierce that he was competent.

(50) a. (?) *They convinced* Franklin Pierce of George Washington.

b. . . . of the war in Vietnam.

c. . . . of the new railroad going through.

d. . . . of George Washington's false teeth.

(51) They convinced Franklin Pierce that George Washington had had false teeth.

(Note that in (51), the word *have* clearly expresses existence.)

At this point let me detour through the phrase *believe in*. The relevance, materialness, and competence of this discussion will become evident in a few paragraphs. *Believe in* is at least three-ways ambiguous. It can mean (roughly) "have faith in" (52a), "believe to exist or happen" (52b), or "believe to be proper) (52c).

(52) a. The North Vietnamese believe in the *National Liberation Front because they* know their record.

b. The South Vietnamese believe in the National Liberation Front because somebody must be shooting at them. . . .

c. The United States does not believe in attacks on political adversaries, with the exceptions of Guatamala, Cuba, etc.

Even *with ordinary nominals, not nominalizations*, this last usage is possible with an actual or implied complement (52d).

(52) d. The United States does not believe in caviar (in C-rations, say).

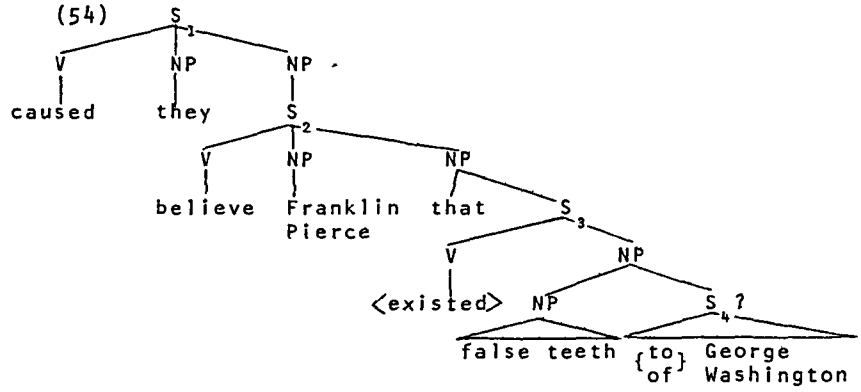
The usage of (52b) is clearly related to (50). (50a) glosses (53a), (50b) glosses (53b), etc.

(53) a. They caused Franklin Pierce to believe in George Washington. (In the sense of [52b].)

b. They caused Franklin Pierce to believe in the war in Vietnam.

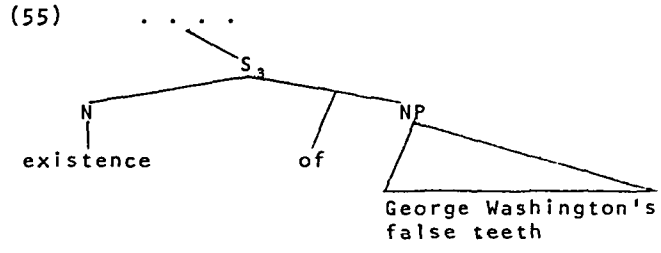
It is very likely therefore that the phrase *believe in* is derived from *believe in the existence of* either by deletion or incorporation. In terms of deletion, the underlying structure of (50d) is like (54).

(54)



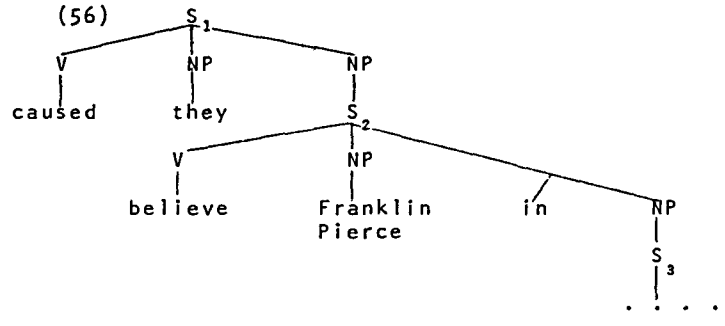
The next derivational stage involves the nominalization of S_3 (55).

(55)

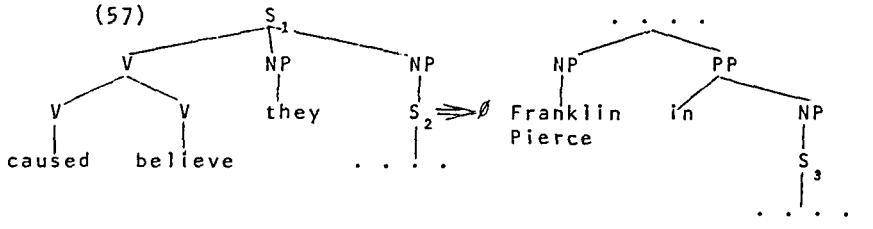


Then the shape is altered to that of (56).

(56)



After verb-raising, this becomes (57), which underlies (50d).

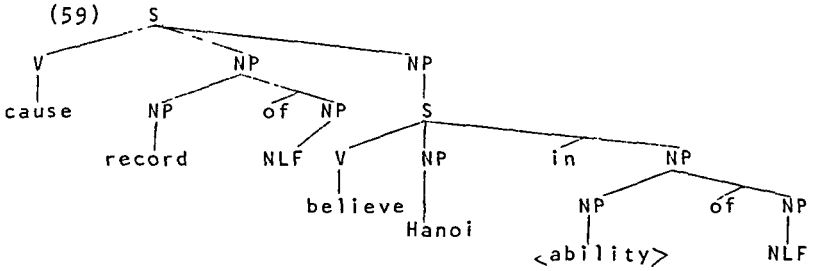


(Note that *cause . . . believe* obligatorily goes to *convince*.)

This handles (52b), but what of (52a)? And what has *believe in* to do with *have faith in*, etc.? Clearly, what the Vietnamese believe is not that the NLF exists, but that it is in some way worthy or dependable. The reasons one has faith in someone or something or believe in someone or something all depend on a good judgment of some quality of that thing or person. The *because of* in sentences like (52a) or (58)

(58) Hanoi believes in the NLF because of their record.

shows that there is some belief instituted by some facts or experience. This belief is not a belief in, but a belief *that*. Again, *believe in* in this sense probably hides an underlying phrase such as "merit of," "ability of," "worth of," etc., although it is not clear just what is involved. If we designate this underlying phrase ability , then at some underlying stage, (58) should have the structure



Notice that this solution is a radical departure in that, if the ability in (59) cloaks differing possibilities, then we have a clearcut case of unrecoverable deletion and infinite ambiguity, something ruled out of competence long ago. This solution therefore raises great difficulties.

Turning now to (52c), we can see that this *believe in* is likewise to be derived from a *believe that* (noting that "the ability of the NLF" comes from "[that] the NLF is able"). Cf (60a and b).

(60) a. The U.S. believes in waging war.

b. The U.S. believes that {it / one} should wage war.

All three *believe in*'s come from *believe that*'s. How, then, is the mapping determined? It seems that <ability> and <existence> can be deleted or incorporated.

Confirmation for this is forthcoming when we consider *believe* itself. *Convince of* undoubtedly derives from *cause to believe in*, and both come ultimately from *cause to believe that*. We should then predict that *believe*, like *cause to believe*, ultimately takes only sentential objects or complements--namely *that* + S. What then of (61)?

(61) Harriet believed John.

Cf. (62) and (63).

(62) Harriet believed {the story. / John's story.}

(63) Harriet believed the newspaper.

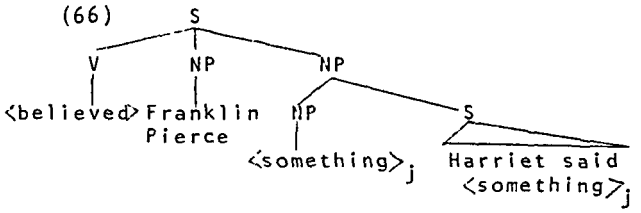
(63) is as ambiguous as (64).

(64) Harriet believed what the newspapers said.

Far from being a critical difference, however, the ambiguity is so unimportant as to be crucial. Whether Harriet reads the paper or someone else quoted it to her is of no consequence; what is of consequence is that actual verbiage may have behind it some idea. When we believe what someone is saying we are actually believing what the said words convey. Similarly, when we believe a newspaper or a story, we are believing what they say to be true. Similarly, when we believe a person, we are believing what he is saying to be true. If the underlying structure of (65) is (66), then we can predict that the structure of (67) would be (68).

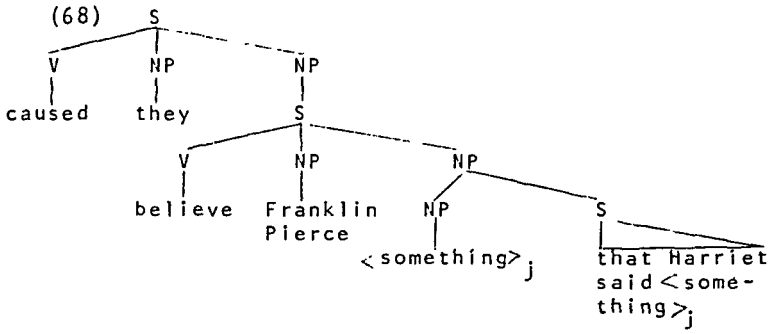
(65) Franklin Pierce believed Harriet.

(66)



(67) They convinced Franklin Pierce of what Harriet said.

(68)



In conclusion, the overt object in (65) really arises from a sentence complementary to a NP.

Returning to the question of which verbs take *about* and which take *of*, it can be said that those verbs take *about* which take *something about* as underlying objects. That is, (69) derives from (70).

(69) We reminded Franklin Pierce about George Washington.

(70) We caused Franklin Pierce to remember something about George Washington.

(Do not confuse the usual use of *about* with that where it equals *of*, as in [71], which glosses [72].)

(71) We reminded Franklin Pierce {about / of} his appointment.

(72) We caused Franklin Pierce to remember that he had an appointment.

Even so, what verbs take these constructions? Complement verbs in *that* can only be of two types, verbs of thought or belief, and verbs of communication in the wider sense. Ideas can only be thought or communicated. In case there is a causative of such a verb, it must involve either causing to think or causing to say. But there are no verbs of causing to say in English. Therefore, all verbs taking *that* complements are verbs of communication, in the widest sense, or verbs of thought, or causatives of these latter.

All communication verbs belong to the *of-about-to* class. All verbs of thought and causatives thereof are as well, but not all are IO verbs in this category. The question arises, are all causative verbs of thought IO verbs?

Here again the answer is yes.

At this point one ought to look at communication verbs. *say*, *speak*, and *tell* are the archtypical communication verbs in the sense that something like the basic meaning of at least one of these verbs can be found to underly any communication verb. *Say* is basically a complement verb (73), although it can be transitive (74), in which case the objects represent complements, but it is never intransitive (75). *Speak* is basically intransitive (76), although it can be transitive with a few objects (77); it can never be a complement verb (78). *Tell* is basically a causative, hence transitive, verb. This does not mean it readily takes objects (79), or that it does not take complements (80), though it does mean it cannot be intransitive (81). These verbs do not directly represent the semantic primes underlying the expression of communication, but they do parallel our division of verbs into three basic types, and, moreover, with the possible exception of *utter* are the most neutral of communication verbs. Furthermore (82), they are nearly in complementary distribution.

(73) Harry said to us that Franklin Pierce was an *idiot*.

(74) a. Say something, Harry!

b. Harry said a few words and no more.

c. *Say a {story / joke}, Harry!

(75) *Harry said (to us) for an hour, whereupon we fell asleep.

(76) Harry spoke (to us) for an hour, whereupon we booed him.

(77) a. *Speak something, Harry!
(Cf. Speak Italian, Harry!)

b. Harry spoke a few words and no more.

c. *Speak a {story / joke}, Harry!

(78) *Harry spoke to us that Franklin Pierce was a Commie symp.

(79) a. ?*Tell something, Harry![2 3]

b. *Tell a few words, Harry!

c. Tell a {story / joke}, Harry!

(80) Harry told us that Franklin Pierce was a transvestite bull dyke.

(81) *Harry told for an hour, whereupon we all got up and left.

(82)

	Intransitives	{words / *yech!*}	{a story / a joke}	your name	*Complements*
say	No	Yes	No	Yes	Yes
speak	Yes	No	No	(Yes)	No
tell	*No*	*No*	Yes	Yes	Yes
utter	No	Yes	Yes	Yes	(Yes)

There verbs might be termed "simple communication verbs" (SCV) as opposed to "complex communication verbs" (CCV). Actually, as we shall see, the SCV are themselves derived.

There are a huge number of CCV. To classify them and to relate them to the SCV I have devised three test frames that differentiate them roughly. The frames are given in (83) and the results in (84). Note the results for the SCV.

(83) a. he ____ {ø / us / to us} that Watson was a fool.

b. he ____ {ø / at us / to us} for an hour.

c. he ____ {ø / the doctor / to the doctor} "ouch"!

(84)

	VERB	Test IIa	Test IIb	Test IIc
1.	spy		x	
	speak	x		x
	tell		x	x
	utter		x	
2.	pronounce	?	?	?
	voice	?	x	?
	mouth		x	
	articulate			
	enunciate			
	fabricate		x	x
	paraphrase		x	x
	transcribe			
	deliver			
3.	jeer			
	jest			
	joke			
	jape			
	gibe			
	scoff			
4.	gesture			
5a.	proclaim			x
	declaim			x
	spout			x
	remark			x
5b.	note		x	x
	observe		x	x
	suggest		x	x
	remind		x	x
5c.	sermonize			x
	pontificate			x

VERB	Test 11a	Test 11b	Test 11c
6.	cable		
	radio		
	phone		
	telephone, telegraph		
	semaphore		
	wire		
	write		
	signal		
7.	chant		
	sing		
8a.	whisper		
	murmur		
	mumble		
	mutter		
	grumble		
	moan		
8b.	holler		
	scream		
	yell		
	shout		
	bellow		
	screech		
	shriek		
	wail		
	cry (out)		
9.	translate		
	orate		
	quip		
	moon		
	editorialize		
	ad lib		
	blurt out		
	lisp		
	spit		
10.	reply		
	answer		

These tests fail to characterize endoverbal classes. Nonetheless, although this classification can only be very rough, for reasons stated below, we can conclude that there are verbs typically complement verbs--they test out for (83a) alone (like *tell*, *fabricate*, *paraphrase*, and class 5b); that

there is at least one verb typically intransitive--that tests out for (83b) only (*speak*); that there are verbs typically transitive--testing out only for (83c); and that the vast majority of CCV test out for all three (as do *articulate*, *enunciate*, *deliver*, classes 3, 4, 6, 7, 8, 9. and 10), or at least (83a) and (83b) (classes 5a and 5c). There are no verbs testing out for (83a) or (83c) alone. This in turn suggests that (83a) and (83b) are more closely linked that either is to (83c), and, furthermore, that the process which derives the CCV neutralizes the three-way division of verbs somehow.

I shall attempt here to show how all these surface syntactic facts can be explained by a consideration of the structures underlying these verbs, and in particular, the SCV.[24]

In order to study the SCV we ought to investigate whether apparent overlaps in (82) are real. For example, are the various versions of (85) synonymous?

(85) a. Harry said to Bill that Mary is a whore.

b. told Bill

c. uttered to Bill

(85c) is strange. This strangeness is due not to an inability of *utter* to bear a complement (85d) but rather on the strangeness of uttering a complement to someone.

(85) d. Harry uttered that Mary is a whore.

(85b) is not synonymous to (85a)--cf. (86) and (87).

(86) a. ?*Harry said to Bill by cable that Mary is a whore.

b. *Harry said to Bill that Mary is a whore by showing Bill her police record.

(87) a. Harry told Bill by cable . . . .

b. Harry told Bill . . . by showing Bill her police record.

Clearly *tell* is a causative of knowledge, not basically a CV at all, but in neutral cases it is assumed, if nothing else is present and if the subject either possesses or consists of

speech or writing, that *tell* means *tell by saying*. (Since writing this it has been pointed out to me by Victor Yngve, James McCawley, and others, that the verb *know* is factive whereas *tell* is not. That is, the complement of *know*, but not of *tell*, is assumed to be a fact. Therefore it cannot be the case that *tell* is the causative of *know* as is claimed here.) *Tell* really means *cause to know*. That it can take some objects, but not others, is indicative. You can tell an anecdote, a joke, a story, but not a few words, *yech!* a paragraph, or a page. The objects *tell* takes represent complements. The fact that (88) with *say* and not (88) with *tell* is good says something about *say* and *tell* as complement verbs.

(88) Harry {said / ?* told} that Mary is a whore.

(21a) can be said of Harry speaking to himself in an empty room, (21b) cannot. The complements of *tell* come from a lower sentence, as do its objects. The subject of this lower S is not the subject, but the object, of *tell*. In the case of *say*, the complement is in the same sentence as *say*, but a different sentence than the indirect object. That is, (85a) is much like (89) in structure.

(89) Harry said in Rome that Mary is a whore.

Speak is basically intransitive. It means to utter speech. That is, it is underlay by a transitive verb, *utter*, and its object. Since *utter a few words* and *speak a few words* are synonymous, we can only regard the latter expression as partially redundant.

Treating *tell* as the causative of *know*, *speak* as an intransitive derived from *utter speech*, and *say* as a transitive of some kind can explain the transitivity portion of (82). In this regard cf.

(90) a. He couldn't say his name.

b. speak

c. tell

d. utter

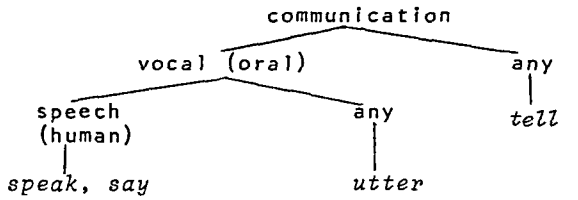
These are not at all synonymous. (90c) means for some reason he could not let anyone know his name; (90d) that he had trouble with his vocal tract, which might or might not be the

same as in (90b)--cf. (91); and (90a) possibly the same as the others, most likely meaning he hated the sound of his own name so much that he had an aversion to producing it aloud.

(91) a. He couldn't utter his name because he was paralyzed with fright.

b. He couldn't speak his name because it was Italian and he only knew French.

Further differences between *say* and *speak* on the one hand, and *utter* on the other, can be explained by the former, but not the latter, containing an element "speech." We might diagram a characterization of the SCV as follows:



Two problems remain: (1) what about *utter* used as a non-communication verb? and (2) how does *speak* differ from *say* on the underlying level?

Utter is perhaps the most neutral of CV. You can utter a cry, a scream, a murmur, or even a quotation. A dog can utter a howl. So *utter* is basically *not* a CV at all, but rather means "emit (a sound)": a machine can utter a shriek; but usually the verb is used to refer to vocal or oral sounds and is thereby restricted to animate beings. It is possible that non-vocal uses are restricted to those metaphoric of speech sounds, such as a shriek. The use of *utter* as a complement verb is probably an example of CCV and will be so handled below, where the reasons for this treatment are likewise given.

On the second question, *speak* and *say* differ in that the former needs no object, while the latter does. In (89) *say* comes close to meaning "utter in speech," as it does in "Say [a:]." Therefore *say* incorporates *speak* plus some element requiring an object, which only future research will identify.

Now to turn to the CCV. The majority of CCV tested out both for (11a) and (11b). None of the SCV work this way,

but *utter* comes close. For example, consider *sigh*. In (92) it means something like "say by emiting a sigh," but in both (92b) and (92c) it means simply "emit a sigh."

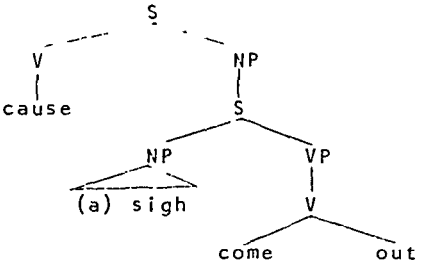
(92) a. Harriet sighed that her husband didn't understand her.

b. Harriet sighed a sigh.

c. Harriet sighed.

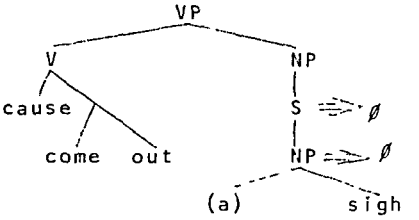
Now you can utter something or utter an utterance, but you cannot just utter. This means the structure of *utter a sigh* must be:

(93)



where *sigh* is a vocal sound. *Utter* cannot be intransitive because it requires a lower S, which has an NP (subject), which derives an object, which is not deleted. But if *sigh* is (93) also, then *sigh* differs from *utter a sigh* only in that in the case of *utter* predicate-raising occurs before lexical-insertion, deriving

(94)



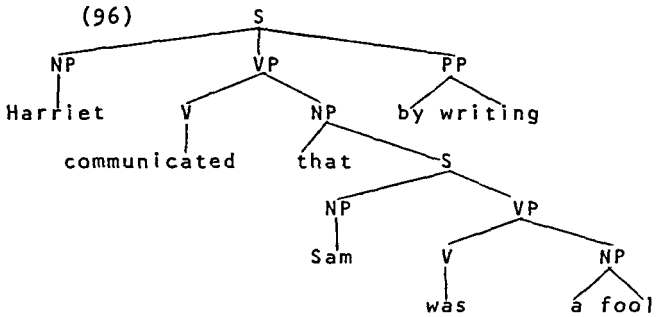
where V⇒ *utter*, whereas in the other case (*sigh*), something like the whole tree (94) is replaced in lexical insertion by *sigh*. *Sigh*, like *speak*, is intransitive because it incorporates its object.[25]

In the case of the complement use of verbs like *utter*

and *sigh*, something like manner or instrumental raising is at play. That is (92a) means "say by sighing," where the "by sighing" comes from an outside S. All cases where a main complement verb can be paraphrased by "say" or "communicate" plus "by" or "with" plus nominalization are cases of predicate-raising. Thus an intermediate stage of derivation of the structure of (95) is (96).

(95) Harriet wrote that Sam was a fool.

(96)



Most communication verbs are underlay therefore by *cause to know* or *cause to come out* plus a fairly complex structuring of manner or instrumental modifiers which are combined by predicate-raising into constituents replaced by those verbs in lexical insertion. It is for this reason that CV are *that* verbs: the central, basic semantic element in their makeup, insofar as they are complement verbs, is *know*, a *that* verb.

Turning now to non-IO verbs, we are confronted with the problem of which verbs take *to* and which take *that*. If we except communication verbs as basically causatives built on verbs of knowledge or belief, then these verbs are those that take *that*. This defines a large class of verbs, as does the labelling of verbs taking *to* as emotion verbs, as opposed to these cognition verbs. These broad categories are probably universal. The question is how to define these classes and explicate the difference between them.

The case of the *that* verbs is fairly clear. Probably all *that* verbs are built upon *know* or *think*. We can therefore define *that* complements as properly the objects of an underlying *know* or *think*.

The case of the *to* verbs is by no means obvious.

Excepting such verbs as *begin* and *start*, *to* verbs fall roughly into two groups, verbs of causation, such as *cause*, *force*, *ask*, *tell*, and verbs of liking, such as *like*, *love*, *want*, *wish*, *hate*, and verbs like *refuse*, *omit*, *decline*, *offer*, etc. The variety of *to* verbs is, however, large: consider in comparison

(1) ask, offer; refuse, decline; remember; omit, forget.

(2) care; decide, arrange; desire, ache, aim; agree.

(3) begin, commence, start; continue; cease, *stop.

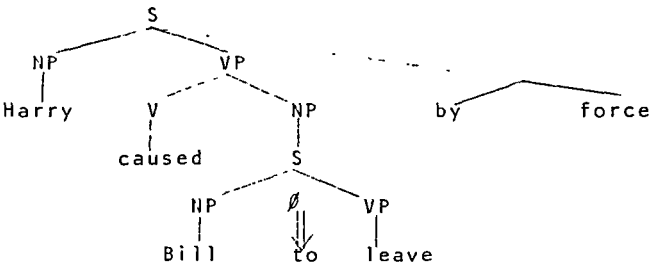
(4) want, wish, love, like; hate, dislike.

(5) appear.

(6) afford.

The verbs of causation can be explained as taking sentential complements. The *to* (as usually thought) is the neutral reflex of the underlying tense element. Thus (97): *Harry forced Bill to leave.* has the structure:

(98)



The verbs of liking are precisely those verbs Lakoff has called "world-creating" verbs in various recent papers. Here again *to* is derived from the tense element of a lower S at some intermediary stage, but the most underlying structure of sentences involving these verbs is as yet an unanswered question.

FOOTNOTES

**Part I appeared in PIL 3:2.*

Footnotes to Chapter III

[1] Note that it cannot be argued *a ball in Japan* in (12b) is an NP, and therefore the two structures differ. *A ball in Japan* with the intonation (12b) would have cannot be a constituent. (Cf. 12c.)

(12) c. John has a ball, in Japan.

Notice that (12d) suggests the possibility of bigamy on John's part more than (12e) does.

(12) d. John has a wife in Japan.

e. John has a wife, in Japan.

In this regard cf.

(13) a. ?*John has a ball, in Japan, and a ball, in Ohio.

b. John has a ball in Japan and a ball in Ohio.

That the structure of (12b) is as I suggest is supported by the difference between (13a) and (13b). The former is odd because sentences like (12a) imply John has only one ball, whereas those like (12b) do not. But the phrase *a ball in Japan* definitely implies only one ball again. Hence (12b) cannot have a ball in Japan as a constituent.

[2] In languages with obligatory spatial reference probably locatives would have co-occurrence restrictions with obligatory verb categories.

Footnotes to Chapter IV

[1] My original concern here was to see if there was a connection between not taking the passive and being stative, between the FLIP rule and not taking the passive, between change and the copular and other syntactic and semantic properties, between genericness and pseudo-intransitives as defined by Lees, and so on. I therefore set out to investigate measure verbs (*weigh*, *last*, *measure*, *cost*, etc.); *resemble*; *have* and *lack*; *befall*; SOP verbs; copulars and verbs of change; creation verbs (*write*, *build*, *make*, *paint*, . . .); pseudo-intransitives (*eat*, *breathe*, *use*, . . .); and a subset of "gestalt" verbs, specifically *contain*, *include*, . . . The study of SOP verbs was to be just one of several

studies. However, as research progressed, it became apparent that the subject of SOP verbs was not only far more complex than I had expected, but that it was extremely rich in that there seemed to be clear-cut cases of parallel multiple meanings for a set of verbs, each correlated distinctly with a set of syntactic properties. This area was therefore extremely promising: conclusions forthcoming from SOP verb research could be tested later on the various classes of verb mentioned above. That there is a large store of philosophical literature on the topic made it clear that philosophers had advanced the semantics and pragmatics of the area far more than linguists; although the philosophers had a different goal than linguists might in doing this research, so that works like Russell 1940 and Moore 1953 would not be useful to me, others, such as Barnes 1954, Sibley 1955, and Vendler 1967b had brought certain aspects of the problem to a very advanced and sophisticated point. This study is therefore different from the one originally contemplated. It is nothing less than a full-blown syntactic, semantic, and pragmatic study.

[2] Good if *spot* is interpreted as something like "look for."

[3] George Lakoff has commented that (10b) is no problem. (10c) is good, but (10d) is not. Therefore (10b), he notes, must be from something like (10c) rather than (10d) as I evidentally thought. Furthermore, (10e) shows the relationship of (10a) to the sentence (10c).

c. He spotted the honest man *using* his telescope.

d. *He spotted the honest man *by using* his telescope.

e. He used his telescope in spotting the honest man.

[4] There is a sense of seeing akin to this one which can terminate in a success, as in *Last week I saw Ben-Hur at the Hyde Park Theater.*

[5] Watching, however, may be purposeless as well as purposeful. Sibley (1955:465) distinguishes "mere watching" from scrutiny, because sentences like (11) are bad, whereas those like (12) are good.

(11) *I was very careful in merely watching him.

(12) I was very careful in watching him.

While "merely watching" shares important features with scrutiny, it also differs. It is, however, unclear that

even if it differs substantially, what the basis of that *difference is: probably purposefulness.*

We might characterize mere watching as in Table 7.

TABLE 7

MERE WATCHING

1. as in Table 9
2. Can be non-conscious.
3. Durative.
4. Takes effort (?)
5. No success involved; determinate objects.
6. No instrumentality.

TABLE 8

VERBS OF MERE WATCHING

Sight: *gaze at, gape at, watch, look at.*
Hearing: *listen to, hear* (?).
Touch: *feel, touch.*
Taste: *taste .*
Smell: *smell.*
General: *sense* (?).

[6] A copy of a handout by Lakoff in conjunction with class lectures of course 481 at the LSA Institute at Urbana; July 16, 1968.

[7] I will also in passing show certain weaknesses in these tests.

[8] I have already noted that the indirect objects of appearance verbs are underlying subjects. Accordingly, I will treat them as such in this section.

[9] Under synaesthesia all of these are good. Many people are mildly synaesthetic even without drugs. To them, colors can be warm, names cool, a sound orange, etc. Synaesthesia is also a literary device. In all such cases our adjectivals may be used in unexpected ways. It is probably synaesthesia *which underlies such extended usages as in the idiom tickled pink.*

[10] It may be questioned whether (57 = (56), but like *St.*

Paul's in 1801, it may be that *a corpse on the table* in sentences like (56) has no meaning per se and derives not from "a corpse which is on the table" but rather from "that there is a corpse on the table."

[11] *He felt warm with a sweater on.* means ". . . when he had a sweater on." which is not = (71b).

[12] Thus one can convince someone or convince someone of something, hear a man, or hear a man say something, want a book or want to have a book, or want a book to have a happy ending, etc. Often an object is a nominalization or quasi-nominalization: the sentence "I won't run" said by a candidate could be reported either as *The candidate said a few words.* (object) or *The candidate said he wouldn't run.* (complement).

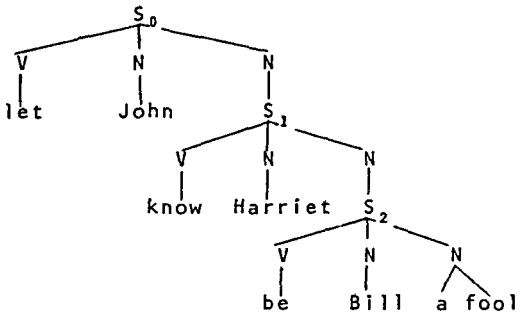
[13] One need not appeal to prosopopeia to explain sentences like *I said to the mirror that I hate eggs., I told the mirror I hate eggs., I reminded the mirror that I hate eggs.* Insofar as such sentences are accepted, they stress the communicative act; insofar as they are not, the informative function is being considered. One can talk to the wall, but one cannot remind it, convince it, etc.

[14] Although he treats both NP's in his underlying sentences as equivalent, they are rarely so in practise. There are complicated co-occurrence restrictions that he overlooks.

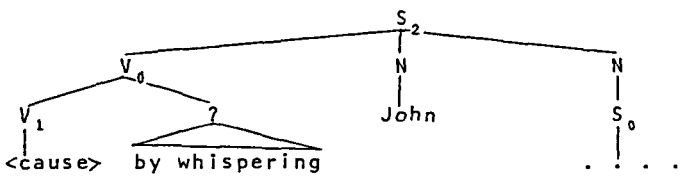
There are additional problems with *buy* and *sell* pointed out by C. Killean. *Buy* does not necessarily imply that the buyer takes possession himself (as a professional "buyer," for example); similarly, a salesman, such as someone who sells real estate, does not yield possession. The words *buyer and seller are also not preferred when the actual item* is mentioned: it is strange, that is, to say that I am the seller of my own house, or that someone else is its buyer (cf. *purchaser*, however.)

[15] In other words, the innermost V somehow determines the common syntactic correlates, so that the similarity of *teach* and *learn* are based not on a parallelism but the fact that each of them has within itself the predicate <know>.

[16] Starting with a structure like that of *John let Harriet know that Bill is a fool*, that is,



we attach the sentence underlying *by whispering*, finally achieving something like



Then V_0 is mapped into the surface verb *whisper*.

[17] Those which enter at least optionally into either of the following frames:

(1) _____ to (someone) COMPLEMENT

(2) _____ (someone) COMPLEMENT.

[18] *Cable* represents a large class of verbs to be called here "instrumental communication" verbs. Amongst others, this class contains these verbs:

4. cable
   phone
   radio
   semaphore
   telegraph
   telephone
   wire

signal possibly also belongs on this list.

[19] Note that *of* deletes before *that*:

(15) a. I reminded John {(*of) that / of the fact that} . . . .

[20] Dotted lines indicate alternative solutions for the two NP's in question.

[21] Note that the direction of derivation claimed is only a tentative solution. It may be that *concern* is derived from *be about*.

[22] Thus *recall* can mean "remember" or "remind," with some preference for the latter meaning if the causation is non-volitional.

[23] Cf. i. Tell us something about yourself.

ii. Tell me, Harry, why are you so dumb?

[24] It should be pointed out that there are many verbs of communication related to belief or assertion of belief, apart from the 10 verbs already discussed. These are here listed as groups (11) and (12):

(11)	(12)
accept	allege
acknowledge	announce
admit	assert
affirm	attest
agree	aver
concede	avow
confess	certify
confide	claim
confirm	contend
. . . .	declare
	depone
	depose
	enunciate
	insist
	maintain
	. . . .

I might also add here several verbs omitted from the above (12) groups. These can be readily added in by the reader if he so wishes: mime, report, assure, reassure, hum, bark, purr, whistle, rant, rave, babble, stutter, stammer, orate, exclaim, comment, query, question, insinuate, hint, let drop, leak, parry, explain, state, etc. This raises the number of SCV and CCV to over 100, but even this can be only a partial list, particularly as far as groups (11) and (12) are concerned. See the relevant lists in Bridgman 1965 and Alexander and Kunz 1964.

[25] In general, intransitive verbs incorporate objects. Perhaps this is a universal requirement.

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