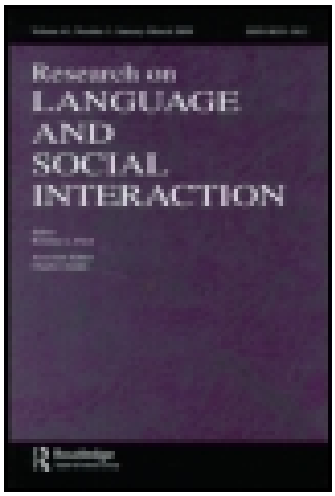

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Studies in the derivation of predicative structures: Part I

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Studies in the Derivation of Predicative Structures
Part I

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0. Prolegomena.
0.1. Introduction.

This work was written at the University of Chicago in 1968-69 as a Ph.D. dissertation,[1] and appears here completely unchanged.

If it makes some original contribution (however small) to the science of linguistics, it does so despite quite a few failings which might have been eliminated in the thorough-going revision which has not been possible. Instead, the past has been left to its own devices; in a revolutionary field such as linguistics it seems preferable to let a monograph such as this appear with all its original failings showing (a few typos and some inelegancies of phrasing quietly set right) than to wait on events which are liable to render its ideas *hors de combat* by way of obsolescence.

Nonetheless, I have chosen to comment below on a few controversial points and one or two simple errors of fact.[2]

Perhaps the most serious weakness of this paper, as noted by several readers, is that (to paraphrase Alice) "somehow it fills one's head with ideas, only one doesn't exactly know what they are!" A reading of the text may be insufficient to dissipate the mental fog generated by the somewhat opaque title. In this section, accordingly, I shall attempt to tell what the work is all about.

The two major theses of the work are (a) that the traditional belief that the syntactic properties of lexical items are reflexes or correlates of the semantics of those items is justified (taking a neutral stand here on whether by 'lexical item' one means a word, a morpheme, or something else), and (b) that this relationship between syntax and semantics can best be stated and best be explicated in accord with general linguistic principles, in that linguistic paradigm which has come (somewhat infelicitously) to be called 'generative semantics'. A third point, of equal importance, but little discussed in the paper, has to do with what I have called (in Binnick 1968c) 'the teleology of syntax' but which

today might come under the rubric of 'syntactic conspiracies'.

The major premises yield a two-fold task for the work: on the one hand, an attempt to marshall evidence to support the theory (which seems to depend precisely on the kind of lexical data studied herein); and on the other hand, an attempt to organize and rationalize a large body of interesting but hitherto incoherent facts about that lexical data by applying various aspects of the theory to it. Further, subsidiary questions are raised by the former task: What is a 'verb' (either intrinsically or extrinsically defined)?, How do lexical items relate to semantic primes?, What is the relationship between the general characterization of lexical items that govern transformations (in the sense of G. Lakoff 1965) and that rule government (if any)?, and so on.[3] The outlines of answers to some of these questions are sketched in sections I and II.

The study focuses on 'predicative' structures, by which are meant those types of linguistic structures[4] directly relevant to 'predication', the linguistic assignment of properties or relations to sets of term-denoted entities. These will be those structures derived from underlying structures containing semantic primes denoting properties or relations. Even in the paper there is doubt cast on the usefulness of this concept, and recent studies, such as Bach 1968, suggest that virtually all linguistic structures can be predicative in this sense. Cf. (Becker and Arms 1969:1):

> ... we will argue that prepositions ... may be represented at a fairly abstract level of the grammar as predicates.

The lexical items usually thought of as predicative in character, the verbs and the adjectives, are not, therefore, the only ones entering into predicative structures. That (1) and (2) are paraphrases provides evidence for this.

(1) Tom is *a fool* to love Mary.

(2) Tom is *foolish* to love Mary.

As the work focuses on the verb and the adjective, this is not an important point to discuss here. The subcategorization of these classes of items is important, however, since in traditional grammar syntactic properties were ascribed to just those subcategories in statements such as "After verbs of *feeling* the Perfect Infinitive is used [in Latin] to denote a completed action." (Greenough et al.

1903:308) More recently syntactic properties of co-occurrence, rule-government, etc., are usually treated as either independent idiosyncracies of lexical items, to be marked in the lexicon for each entry, or as features implied by independent semantic idiosyncracies marked for each entry. One of the major theses of this work is that most (if not all) syntactic properties of derived lexical items are predictable reflexes, or correlates, of the semantic subclassification of the item in question. Clearly the government of the dative case of its 'indirect object' by Latin *dō* (or German *geben*) is due to its being a 'verb of giving'; less clearly, that *want* positively governs NOT-TRANSPORTATION (thereby allowing [3] to be a possible paraphrase of [4]) is due to *want* being a 'verb of desiring'.

(3) Tom doesn't want Mary to marry Bill.

(4) Tom wants Mary not to marry Bill.

The evidence provided for this position is that when an item is systematically ambiguous[5] the syntactic properties of each of its meanings vary constantly. Thus, when a usually stative verb has an active meaning, it has the syntactic characteristics not of a stative verb, but an active one (sections 1.4 and 4.2); when a complement verb takes one type of complement it has one meaning, when it takes another type, it has another type of meaning (chapter IV); the syntactic properties of a verb of motion vary with its inchoative or durative interpretation (1.3, 1.4, and 2.2); and so on.

By 'semantic properties' is meant here not a set of features attached to some morphosyntactic lexical item inserted into trees from the lexicon in the form of bundles of phonological, syntactic, and semantic specifications (as in interpretive semantic theories of transformational linguistics). Rather, the lexical items inserted in the most-underlying, semantic, structure are abstract semantic primes, such as there is/are , not ,...., and referential indices, both variables such as x, y, z,...., and constants, such as x_1, x_2,.... These semantic structures are trees whose *Gestalt* is specified by a set of local derivational constraints called 'node admissibility conditions'. It is the transformational component which transforms such semantic structures into (surface) syntactic structures. As part of this "derivation" complexes of semantic primes in the form of constituent subtrees are replaced by a second, morphosyntactic type of lexical item inserted from the lexicon by 'pre-lexical' transformations. These items will contain morphophonological

and (possibly) some syntactic, but no semantic, information. Various parts of this theory are unclear and some vaguenesses, if not downright inconsistencies, appear in the text, but the outlines are as just stated.

In this theory, all surface lexical items belonging to a certain semantic class are derived transformationally from a certain set of underlying semantic primes whose placement in the most-underlying, semantic, structure determines the meaning of sentences consisting of such items. To attempt to derive meaning from the dictionary-type definitions of surface derived lexical items is to define the brick in terms of the building, put the horse into the cart, and needlessly complicate semantic theory.

The use of abstract predicates (see R. Lakoff 1968: 157ff.) to govern rules or co-occurrence, is not merely a formal notational difference between this theory and those which use features: different substantive claims about vocabularies and lexical items, and different formal constraints on grammars, can be derived from the competing theories. Furthermore, there may be a crucial empirical consequence, since the real difference between the two solutions lies in the fact that predicates are ordered in a way features are not. If there were cases of syntactic phenomena whose relative ordering could be shown to depend on that of some semantic properties, this would, I think, provide conclusive evidence in favor of the abstract predicate solution. To my knowledge no such evidence exists, but a study of verbs such as *ask*, which have both a communicative aspect and a desiderative aspect, might provide it. *Ask* can gloss either Spanish *preguntar*, in which case it takes a question as a complement, or it can gloss Spanish *pedir*, in which case its complement is an imperative-type one with *to* or the non-finite *that*, or it can take an object. In either case it takes a dative-ablative indirect object of the person or thing being addressed. The indirect object is a function of the communicative aspect of the verb, the object or complement, one of the desiderative aspect. If it can be shown that some ordering involved in the derivation of sentences containing *ask* depends on the relative order of the elements <tell> and <want> in the semantic structures underlying those sentences, the use of features instead of predicates would be excluded. Until much more work is done, however, this all remains speculative. Possibly the kind of asymmetry required for this argument will be found in the study of presuppositions, which Morgan (1969, 1970) has shown to be ordered. Perhaps from Morgan's data the type of argument I have attempted to provide through the study of the verb *ask* (see sections 3.1 and 4.2

herein) can be constructed.

The third point made in this thesis is that although there are a great many types of underlying structure, there are relatively few surface structures. The configuration

for example has a great many different derivational sources, as does, indeed, each class of derived lexical item. This topic was briefly discussed in Binnick 1968c under the rubric of 'the teleology of syntax'. Today we would talk of 'syntactic conspiracies': over a whole derivation, transformations literally co-operate to transform a great variety of structures into just certain surface configurations. The study of such syntactic conspiracies has just begun.

The focus here is on semantics, but the syntactic aspects of this study might also have provided a focus. The questions listed in the Preface are still open, although Georgia Green (1970) has already begun their further study. In regard to these questions all that need be said is that recently transformations have been shown to be a special case of a more general phenomenon, the local derivational constraint. Paul Postal (G. Lakoff 1969:138) has called into question both rule ordering and the cyclic principle. It may be that future research will do away with transformations as we know them as necessary conceptual components of transformational linguistics. This would of course necessitate a revision of the questions posed in the Preface. For example, item 5, "Where there are constraints on transformations there are lexical gaps." would have to be considerably modified.

Meanwhile, these ten questions have only but barely begun to be studied. The last year-plus has not brought us substantially closer to a solution to these problems. This is due to two factors, one being a turning-away from lexical semantics towards an interest in reference and quantification, the other being a change in emphasis in lexical research. Within the last few years there has been a development which, not having fully assimilated it, I only barely revealed in this work, namely the discovery that 'meaning' is not a simplex, that aside from assertion one must talk of presupposition, implication, and a host of other properties of language. Unfortunately, the interesting work which has been done on the presuppositions of lexical items came too late to affect this work. Had I revised it, I would have had, in effect, to completely re-work it in light of these studies.

A factual error which would have been set right in that revision has to do with the evaluation in section 1.4 of

Reichenbach's theory of time and tense reference. Reichenbach was probably the first philosopher to seriously consider the logic of natural language as a thing in itself, and ch. VII of his *Elements of Symbolic Logic* has a real empirical interest for the linguist. Although I was introduced to this book by Prof. Victor Yngve and in the Summer of 1968 heard lectures by Prof. James McCawley on Reichenbach's theories, in section 1.4 I betray an (inexplicable!) ignorance of his theory of time and tense. True, he did "[fail] to go far enough" (though, when he wrote, Ordinary Language philosophy was still a novelty and Semantics "not a fit topic" for linguists to discuss), but not because his work "restricts itself to too simple structures". In fact, in section 51 Reichenbach gave what was at the time perhaps the best definition of sequences of tenses. It is simply not the case that "his analysis . . . is useless for sentences with more than one verb and more than one clause." In fact it is those cases in which it is most interesting, with his notion of constant reference point.

Finally, one of the most interesting questions raised by this dissertation and by Binnick 1970 is whether our competence theories of the formation of words, with their notions of 'morpheme' and lexical 'insertion', are correct, or whether a performance theory of the lexicon might not be more nearly right. In contrast to the intellectually placid presentation of the theory of lexical insertion throughout much of the work, the discussion of *defenestrate*, *horseshoe*, *handkerchief*, etc., at the end of section 1.6, and that of *beauty*, its derivatives, and *delightful*, at the end of 3.3, betray fundamental doubts concerning the adequacy of derivational lexical semantics. Discussions in recent literature of nominalization and of the abstract causatives hypothesis have tended to support these doubts. In regard to the latter topic, a very interesting paper, Gragg 1970, has appeared.

Gragg's basic contention is that (267)

> . . . derived stem markers are not always, or even in general, transformationally introduced. Rather, derivation, in the morphological sense, is largely a process of forming lexical items from lexical items prior to the matching of lexical items with syntactically derived structures.

This sounds like a more conservative position on lexical insertion than has been taken here. But Gragg does not completely reject lexical insertion. He merely says there are cases

where it is outside and in some sense prior to the transformational process. Since reading his paper and reconsidering the difficulties attendant to the theory of lexical insertion as it has been formulated, I myself am inclined to accept a much more complex view than that given in the present work. But lexical research of the last few years has been characterized by an over-abundance of theories and a corresponding paucity of hard and fast data, so I will leave the formulation of such a theory to the future when, hopefully, a much harder look has been taken at the lexicons of a much larger group of languages than anyone has done to date.

0.2. Preface.

This dissertation has its origin in work done on the lexical semantics of verbs since 1966. At first I hoped to write on the general problem of the "structure and content of the lexicon," and prepared a five-page proposal for this project, dated October 13, 1968. On the basis of this proposal, Victor H. Yngve, director of the Mechanical Translation Group of the Graduate Library School, allowed the dissertation as my project in connection with a research assistantship in 1968-69.

At that time I intended to investigate, and hoped to contribute to the answering of, some basic questions in lexical semantics. George Lakoff of Harvard University made a series of suggestions to me which I include here as showing one possible line of inquiry. These suggestions were:

1. A study of transformational rules and the structure of lexical items, accidental and systematic gaps.

2. What lexical items substitute for structures that are derived by some transformational rules.

3. Which rules are there that do not and could not have lexical items inserted, replacing structures derived by their application?

4. What form verbs derived from nouns or incorporating the meaning of noun-phrases would have to have in order to represent these facts.

5. Where there are constraints on transformations there are lexical gaps.

6. Questions to be raised:

   a. In a theory with deep structure, what unexplainable lexical gaps are there (like those explainable by the constraints in Ross [1967])?

   b. What rules besides the justified ones do you need to make James McCawley's theory work? (Cf. McCawley [1968b]).

   c. What independently motivated rules define structures that lexical items would be inserted for? Which don't? Why?

7. Data to be gathered:

   a. Lists of rules: ± lexical justification; ± cyclic; ± governed; etc.

   b. Verbs: ± predicate-raising; ± derived from nouns; ± incorporating meanings of NP's; ± incorporating meanings of a verb; Gruber's types, cf. Gruber (1965).

In addition, related questions were raised by the literature:

8. At what point in the derivation of a sentence do the lexical transformations apply?

9. How does morphemicization work? (E.g., does the fact that a stative adjective has no causative require it to be marked as an exception?)

10. What are the semantic primes?

These questions were incorporated in the first plan of October 13.

Subsequently, as research progressed, the work became ever more restricted to verbs and took on a different character than I had envisaged. The plan was constantly revised as I sought to define the problems I was pursuing. Virtually nothing of the original has survived this slow evolution; the final form of this dissertation could not have been foreseen in October, 1968.

This dissertation is the product of three years of thinking about verbs. In the present work I have concerned myself with a broad but basic topic which still deserves a tremendous amount of additional research. Specifically, the

topic is that of "derivation," particularly as it applies to "predicative structures." I am using both terms in special senses. By "derivation" I mean that process by which parts of underlying semantic structures are transformed into syntactic structures underlying strings of one or more surface morphs. By predicative structures I mean essentially all grammatical structures consisting of predicates (roughly, verbs) or having predicates as their heads. This is a wide definition and it includes virtually every surface constituent with the exceptions of NP and N.

Chapter I provides an introduction to this problem. The study of the lexical semantics of predicative structures is grounded on the old problem of the classification of verbs. Gradually this problem evolved into the more general one of the relationship between the semantic and syntactic properties of verbs. Against this background I discuss the theory of lexical insertion as it pertains to these questions. In general, Chapter I rehearses the various stages by which the study of predicates has reached its present point.

In Chapter II I discuss the general problem of the derivation of surface verbs from underlying semantic complexes through lexical insertion. I have omitted discussion of such processes as incorporation, passivization, topicalization, sentence-reduction, etc., each of which deserves a dissertation in its own right, preferring to offer various examples of predicate-raising to show how the derivational process works in the case of verbs.

In Chapters III and IV I have been concerned with complements, trying to show how complements of various kinds are more closely linked to their verbs than hitherto thought. Thus both chapters III and IV concern the derivation of surface verbs from underlying complexes, while I give the historical background of this study. No effort has been made to fill in all the gaps in what one might logically include in these chapters. To a large extent not enough can be said now with assurance to warrant doing so. In this regard, this thesis can be viewed as a set of related preliminary studies.

0.3. Acknowledgments.

Throughout the writing of this thesis I have been helped greatly by what my advisor, James D. McCawley, and the rest of my committee, Carolyn G. Killean and Kostas Kazazis, have said and have not said. My colleagues Georgia M. Green

and Jerry L. Morgan have also seen the earlier drafts in fascicule form and have had many useful comments to make; discussions with them on matters linguistic have always been interesting and informative beyond expression. George Lakoff (of Harvard) and Peter H. Salus (of the University of Massachusetts) saw part of an earlier draft and I would like to thank them for comments on it.

If any people share the credit (or blame) for this dissertation, they are my friend Michael R. Ackerman, who introduced me to linguistics in 1961; Victor H. Yngve, who, despite our various differences, has always given me great support and has been financially and spiritually essential to making my career at the University of Chicago possible; and Professor McCawley, who has made my studies particularly worthwhile.

Also, since I have neither wife nor cat, I can acknowledge as helping make a very difficult year bearable only my many friends both within and without of linguistics. To each of them (to modify the Ancient Egyptian offering to the dead) a thousand of bread and beer, of oxen and fowl, of alabaster and clothing, a thousand of every good thing. . . .

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1. Introduction to Structure and System in Lexical Semantics.

1.1. The Classification of Verbs.

The original impetus to the study of the semantics of verbs, and in my case in particular the original impetus, was the recognition that verbs differed widely in their syntactic properties, and that those differences could, in general, be correlated with their differences in meaning. A theoretical question arose as well, since, in the Summer of 1966, when I first started to seriously study verbs as part of my research for the English Grammar V/VI project of the Mechanical Translation Group at the University of Chicago, it was not clear how, in any model, the general notion of verbhood could be explicated.

Consider a more basic question, namely that of how many parts of speech there are, what they are, how they are to be defined, what role they should have in linguistic description (if any), and so on. The native speaker is in some arcane way aware that there are "verbs" and "nouns." While it is true that to a large extent this is school learning, it nonetheless is true that even illiterate speakers would agree that some words denote "objects" and others "actions." One reaction to all this is that it is hard to see what objects are denoted, for example, by the nouns *peace*, *disinclination*, *humor*, *beauty*, or a host of others. Similarly, it is difficult to conceive of the actions denoted by *be*, *lack*, *suffer*, or *surround* (in the stative sense) amongst others. We see one extreme of thought on this matter in Fries 1952, where he forgoes the class names "noun," "verb," etc., and sets up four major classes, which he denotes by the numbers 1-4, and minor classes which he denotes by the letters A-O. Following Harris (1951), Fries defines these word classes solely in terms of structural frames. Fries felt (1951:54-57) that considering meaning in making structural analysis would be merely a reflection or transformation of the original, given semantic analysis.

Unfortunately, the Fries-type analysis gives absolutely no insight into the role of words in the lexical systems of a language. For example, there is forthcoming no explanation of why there should be parts of speech, nor is there any explanation of their roles in the grammar. No explanation is offered as to why some words should be nouns and others verbs (or adjectives), why there should be precisely four major classes of words and not, for example, forty-two, and so on. In Chomsky's terms (1966:289), this approach is totally non-explanatory. While it yields results different

than the semantic given, it in fact provides no additional information.[1]

The problem did not disappear with the advent of transformational syntax. In his 1964 book, Emmon Bach noted that there was, from the point of view of then-current theory, a problem with using the symbol "V" say for both the verb in English and the verb in Japanese. He was forced by that theory to point out that (1964:50-51) "it is quite true that 'verb' does not mean the same thing (in terms of categories of inflection, and so on) in discussing, say, Japanese grammar and English grammar."

Therefore, insofar as using the same symbol for Japanese and English verbs appeared to be a claim of universality, such use could not be sanctioned. Nonetheless, "it is just as true that Japanese verbs parallel English verbs in many ways, and there is no need to apologize for calling both classes by the same name," especially as the symbols are in any case only arbitrary. We can see applying here on the one hand the insight that Japanese verbs cannot be structurally defined in the same way as English verbs, but on the other hand the insight that there is an essential similarity between the two classes which is somehow not captured by the formal criteria. Bach's compromise is, however, not totally satisfactory in that an essentially similar compromise made by Chomsky (1957) could, and did, lead to a fundamental misunderstanding. The *Camelot Report* states (Benwick et al. 1968:3):

> . . . for all their talk about explanatory adequacy, those who were concerned with simplicity wrote better-looking grammars than they deserved to. That is, their grammars *looked* better than they really were. For example, as Ross pointed out [in lectures at the 1968 LSA Summer Linguistic Institute] in the affix-hopping rule in *Syntactic Structures* Chomsky says that what affixes hop over is the term
>
> v
> M
> have
> be
>
> Why the ad hoc feature "v" and not "!" or "$"? And why does this disjunctive set recur in so many rules? Intuitively we feel that ordinary verbs, modals (M), *have* and *be* are all members of a single set, verbs. But in Chomsky's theory this is only an accident. It was only by reading too much into Chomsky's *notation* that we

made any sense at all out of this disjunctive set, for, as Ross pointed out, the terms could as well have been

onto
labial
toastmaster
and.

That is, by using his symbolism in an informal way, Chomsky accidentally arrived at a generalization that his theory did not permit him to make, but one which everyone assumed was being made both purposefully and validly.

A similar criticism could be lodged against those who attempted to write lexical phrase structure rules employing class symbols such as "V_{t14}." It was early realized that syntactically speaking Fries' frames were too rough. In fine, surface syntactic detail there are dozens (if not hundreds) of subclasses of verbs with specific syntactic properties. In Lees 1960, each such subclass is denoted by a unit symbol such as "V_{t14}." In terms of then-current theory, such unitary symbols were, in effect, arbitrary. Thus "V_{t14}" could have as easily been replaced by an arbitrary numeral, say, "1248," or an arbitrary unitary symbol such as "β" or "□." However, readers were struck by the fact that Lees' symbols correlated with their intuitions in that subclasses whose members were traditionally termed transitive tended to have a "t" in their subscript. Each element of one of Lees' unitary symbols could thus be misread as a marker of class membership. The same was true of Bross' non-transformational generative grammar of German (1963). Although there was no way in such theories of explicating the general notions of "verb" or "transitive," the reader assumed that the arbitrary symbols were in fact conglomerates and that these notions were in some way being explicated by the placing of a "V" or subscript "t" on the page. However, this was not the case. While such theories correctly described the disparateness of lexical items they could not explain their innate unity, the fact that there is a reality to categories like "verb" which transcends a particular test or theory or even a particular language.

In studying some part of the lexicon, say, verbs, we are faced then with a cruel choice. If we attempt to show the reality of intuitive judgments of class membership we may find ourselves with no (surface) syntactic justification for out results, but if we attempt to show syntactic realities we may find ourselves left with no way to capture class membership in general. It is at this point that the problem

stood upon the appearance of Chomsky 1965. Chomsky 1965 differs from Lees 1960 mainly in treating verbs not as members of classes denoted by unit symbols but as members of ones denoted by a set of features represented in complex symbols. Depending how one treated such a view, it could be a terminological variant of the earlier one.[2] If we interpret Chomsky's treatment of verb classification as being from a purely formal point of view, then he is making precisely the same claims as Lees 1960, but in a simpler way; if we interpret it as being from an intuitive point of view, however, different claims are to be derived.

This will be precisely the viewpoint taken here. While Chomsky is merely adopting a simpler mechanism to account for essentially the same facts as did Lees, here we will attempt to go beyond that formalism to derive different claims. I will describe the treatment of the problem of the verb and its subclassification from the intuitive point of view, and in terms of the theory of "generative semantics," which has developed in the last four years, and which is essentially an outgrowth of Chomsky 1965, attempting thereby to define the unity of verbhood on the level of "most-underlying" or "conceptual" structure, while defining the disparateness of verbs on the "surface structure" level. The lexicon will be seen as a transformational mapping device turning very complex, very abstract universal semantic structures into relatively simple, language-specific structures containing (surface) lexical items. In such a theory "underlying lexical items" and "surface lexical items" will be birds of quite different feather, thus solving one of the great conceptual difficulties which have arisen in the field of lexical semantics by capturing seemingly contradictory realities of lexical items without contradiction.

As we pointed out above, it was quite early noted that in terms of syntactic properties, verbs enter into various subclasses. Lees (1960) and Bierwisch (1963) include lexicons consisting of lists of such subclasses and their members in the form of rewriting rules. It should be noted that some verbs could appear more than once in such a lexicon: thus in Bierwisch 1963:84 *denk-* appears in both V_{cAcb} and V_{1a}. A similar treatment of verb class membership held in the various German and English grammars of the Mechanical Translation Group at MIT (later Chicago) headed by Professor V. H. Yngve. (Cf. Bross 1963.) As Yngve has pointed out (class lecture) such classes are not strictly speaking classes of verbs so much as classes of syntactic frames. Much of the early work on verb classes was in fact of this type. Frames were set up and it often happened that a verb might fit

several of these, but not in such a systematic way always as to allow collapsing of several of these test frames into one. We will call such a lexicon an *exoverbal* lexicon, while reserving for that type of lexicon in which each item appears only once the name *endoverbal*. We shall see later that neither type is in fact optimal.

Work such as Lees' set off a search for the most significant set of syntactic frames with which to obtain the optimal set of categories. Representative of such later work are papers by Fillmore (1964) and papers of various projects at Indiana (Alexander & Kunz; Bridgman, Householder *et al.*; etc.). These projects attempted to catalog the verbs of English in terms of maximally useful categories and provided much information on the ways verbs could differ. Also, these projects rapidly showed two peculiarities which led eventually to a completely different mode of lexical research: first, that the members of each subclass had remarkable semantic cohesiveness.[3] That verbs taking desentential complements should all be close in meaning, e.g., fall within the same articles in *Roget's*, was an insight of traditional grammar and should occasion no surprise. The second peculiarity was a bit less predictable: that there was an amazing stability from frame to frame of the set of verbs entering into them, which could not always be explained in terms of surface constructions being transformational variants. When in completely unrelated structural frames one finds the same set of verbs, a set characterized moreover by semantic cohesion, one cannot appeal to coincidence for an explanation. What ended this early period was on the one hand a realization of the inadequacy of unitary class symbols and on the other a realization of the lack of explanatory power of the whole approach. Basically, as Lees put it in the 3rd edition of his monograph ([1960] 1963:xxxviii),

> It is easy to see that many a subclass in, or implied by, the present work should rather be formulated in terms of some semantic "markers" motivated by the simplicity of "projection" rules to assign "readings" to sentences which in turn will successfully represent semantic features such as ambiguity, synonymy, deviance, analyticity, contradiction, etc.

Lees also pointed out that with hierarchically arranged categories, such as he had been using, maximum generality of subcategorization cannot be achieved (xxxix-xli). Chomsky (1965) studied this problem in detail and below I will summarize some of his conclusions, along with various criticisms which

were to be made of Chomsky's formulation.

In order to achieve generality, it was decided that feature complexes rather than unitary symbols be used to define verb classes. If nothing else such an approach would avoid the criticism that in Lees' system there was no category of verb *per se*. Insofar as one needed to refer to verbs as a class (and we have already seen that even in Chomsky 1957 there were rules that really do need to make such a reference), such an improvement had to be made. The way Chomsky (1965) handled this problem was to introduce category symbols such as V, and then to rewrite these as complex symbols (*CS*). In various environments features are added to the *CS* by rules. Ultimately the feature complexes under the *CS* would be replaced by lexical items. The advantage of this system is to permit cross-cutting categories, in the form of unordered sets of features.[4]

Chomsky (1965) sharply distinguishes selectional restrictions from strict subcategorization. In terms of syntax there is a third type of feature--the exceptionality feature, which formed an important part of G. Lakoff's (1965) theory of markedness and irregularity. A fourth type of feature is called "inherent," and here we are treading on the borderline of syntax and semantics. It is likely that only these four types of feature have ever or ever will enter into lexical research. I will below define these features and show various systems of verb classification which have been built upon them in the past. In this way we shall see precisely what the range of hypotheses has been.[5]

1.2. Methods of Verb Classification.

In the previous section I considered in gross outline some of the why's of lexicology; one has as well to consider the how's. Obviously one has to decide at the outset how to subcategorize verbs. Due to their hierarchical treatment of categories, Lees 1960 and such works have the additional problem of having to arrange their membership criteria in some order of priority. Insofar as hierarchical treatment is wrong for verb subcategorization (which it is), such ordering tends towards the arbitrary. Many subcategorizations were forced upon Lees by his hierarchical system which fail to correspond to any intuition of the native speaker as to the relative similarity of lexical items. Thus Lees is forced to first differentiate *be* from other verbs because (1960:6)

> The . . . analysis . . . [of] the placement of [the] Prev[erb] after the second member of the Aux[iliary] gives unique treatment to sentences in which the finite verb stem is *be* . . .

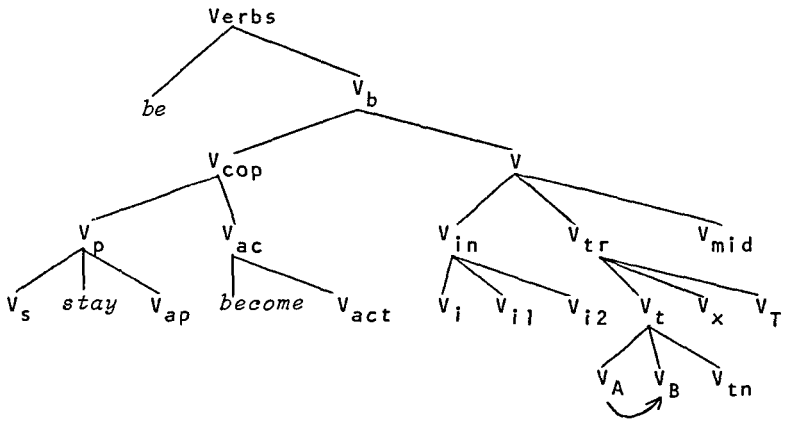
and because

> sentences with *be* are also singled out in many transformations

so that such rules as

> those which yield the post-nominal modifiers by deletion of a relative [must refer to the term] all verbs *other* than *be*.

In the diagram is shown how Lees subcategorized verbs (1960:5-20).



(Exx. of verbs:
V_s *feel*, . . .
V_{ap} *appear*, . . .
V_{act} *get*, *grow*, *turn*
V_i *arrive*, . . .
V_{i1} *lie*, *stand*
V_{i2} *go*, *look*, . . .
V_A *aim(at)*, . . .
V_B *bring(up)*, . . .
V_{tn}: several classes not specified
V_x *flirt (with)*, . . .
V_{mid} *cost*, *weigh*, . . .)

It should be noted that there is no general category of verb (I added the "verbs" in the above diagram), that there is no category relating *be* and V_{cop} in a class of copular verbs, and that *stay*, *be*, and *become* have special and separate status. There is also introduced the curious practise of rewriting category symbols: V_A becomes V_B plus Particle (PRT). Thus the configuration V_A + Acc ultimately becomes V_B + Prt + Acc.

Lees is forced in his transformations to specify sets against which the same criticism may be made as against Chomsky's {v, M, have, be}. In three "contraction" transformations Lees makes reference to the set {M, have, be}. In two "predicate number rules", as well as in rules on pp. 61, 73, and 84, he makes reference to {V_c, V_{cop}}. In two "object" rules and in rules on pp. 80 and 95 he refers to {V_{tr}, V_{mid}}; in his "auxiliary" rule he is forced to introduce Chomsky's "v," since he otherwise has no way of referring to verbs in general.

These criticisms are not meant to be pejorative; Lees' grammar of English was in 1960 nothing less than monumental. He correctly observed that syntactic properties have to do with co-occurrence on the one hand and with transformational government on the other. For example, he characterized V_{ac} as those V_{cop} which can co-occur with manner adverbs, V_p as those which cannot:

Harry became a leader gradually. (V_{ac})

*Harry stayed a leader gradually. (V_p)

On the other hand, he splits off V_{in} from V_{tr} and V_{mid} (p. 8) not only because they do not co-occur with nominal objects, but because they enter specially into certain rules, such as the prenominal gerundive modifier transformation (*The front advances rapidly.→ The rapidly advancing front . . .*)

In terms of co-occurrence what is important is co-occurrence with certain types of adverbs, complements, nominals, and so on. In terms of transformations it is a question of the largest categories needed to be mentioned in a rule. To a very large extent the two criteria yield similar results. Of course, the verb categories depend to a large extent on other categories. Intrinsically, a grammar which did not recognize a category of, say, manner adverbs, could not use co-occurrence with manner adverbs as a criterion of verb class membership. Inevitably, as the notion of the phrase structure component has changed, that of the lexicon has had as well to change. Conversely, each change in the lexicon has had its

effects on the phrase structure. Skewing in the lexicon provides such an example of how lexicology can influence syntax (and vice-versa).

A great deal of research has been conducted on verb complementation by Fillmore, Rosenbaum, and others (and now R. Lakoff). This research has emphasized that certain surface structures are derivational reflexes of completely different underlying structures. For example, many verbs co-occur with a following *ing*-phrase, such as *beating one's wife*. Among such verbs are *abhor*, *avoid*, *dislike*, and *begin*, *commence*, *keep on*, etc. (Cf. Fillmore 1964:104). As soon as we realize that the *ing* form is actually derivable from two different sources--either a verbal complement or a nominalization--we obtain two different classes which have semantic cohesion. Verbs taking what Fillmore called an *ing-phrase nominalization* are all in the semantic sphere of *abhor* (and *like*) or *endure* and *try*, while those taking an *ing-phrase complement* are all synonyms of *start*, *continue*, *stop* and *practice*. Fillmore gives two criteria for distinguishing the two types of phrase (93):

> First, there is a pronominal expression associated with *He enjoyed swimming.*, namely *He enjoyed it.* The sentence *He kept it.*, however, is not the pronominalized partner of *He kept swimming.* Second, we can say *Swimming was something he enjoyed.* . . . but not **Swimming was something he kept.* . . .

In the same way, Fillmore distinguished between a *to-phrase complement* and a *telescoped future* even though both would appear on the surface in the same form. Fillmore's system has the great advantage of predicting ambiguities which would arise when the same verb entered into more than one of such constructions.

Thus when there is a non-parallel classification of items, otherwise similar, we should suspect insufficient analysis. Notice that Fillmore's categories are in terms of underlying structures which must undergo transformation to be realized on the surface. Thus his phrase structures are more abstract than Lees'. It should be noted in passing that Fillmore had one category, "verbs subject to the NOT-shift transformation" which in no way should be thought of as entering into a hierarchy with such classes as V_{in}; nor did the category have any definition in terms of co-occurrence.

1.3. Categories and Systems of Verbs.

A further contrast of Fillmore's work with Lees' is that Fillmore recognized that constituent-structure rules permit only hierarchical classification, in which each subclass is contained in one and only one higher-level class. (Victor Yngve has pointed out [in a private communication] that this is not true for the type of CS grammar the Chicago MT group has been writing; in general, it is not true for context-sensitive CS grammars and CS grammars equivalent to them in generative power, it is only true for context-free CS grammars.) Hierarchies cannot express cross-cutting categories involving mutually independent properties. In this regard, Fillmore considered (1964:90)

> the class of verb taking a complement and an object, where the object is the subject of some other [underlying] sentence, and the complement is the word *to* plus the tenseless verb phrase of that sentence. Ex. of such verbs are *advise*, *enable*, and *help*, in such sentences as *He advised John to come*, *He enabled John to come*, *He helped John to come*.

He recounted the following facts (81):

> Some of these verbs may take the passive transformation, while others may not. . . . Some of these verbs permit the constituent to have the perfect in the auxiliary, while others do not. . . . Some allow a *not* in the constituent sentence to be shifted forward to the matrix verb, while others do not. . . . Some of these verbs permit the progressive element to be chosen in the matrix sentence, while others do not.

Noting (90) that while

> there are . . . some [mutually] dependent gramatical categories associated with these verbs,

the above properties

> are somewhat independent of each other, and all name distinctions which apply to other verbs as well.

Fillmore suggests that

> some modification of the constituent-structure rules is necessary

and that

> It is possible that transformation rules will be sensitive to lexical features. . . .

This is precisely the case.

If we abandon the use of CS (PS) rules to generate the lexicon, then there is no reason to refer to hierarchical categories at all. No such dependence has ever been shown to play a role in grammatical description. On the other hand, in Lees 1960 it was already apparent, in his use of V_{in}, V_{tr}, and V_{mid} in the structural descriptions of T-rules, that cross-cutting or independent categories would have a role in grammar. Later claims were made for a role for semantic hierarchical features (cf. Wall 1967), but such attempts have not established that grammatical description ever need to refer to class inclusion of one class in another. On the other hand, certain properties definitely have to be stated. It was for this reason that syntactic features, which could be combined freely in unordered sets, were devised. The classification of a verb no longer depended on what category it was in, but rather in what features it had.

This may be the proper place to point out that the syntactic feature approach (as outlined in Chomsky 1965, for ex.) can lead to rather bad skewing. When a verb appeared in two or more of Lees' or Bierwisch's classes, it would, in such an approach, have a set of features. Thus if the feature complex (A) were equivalent to membership in a V_A, and if the same were true of (B) and V_B, it would in fact, be the case that in the post-*Aspects* grammar such a verb would have to have the feature complex C. It could very well be the case, however, that mutually contradictory or absurd sets of features could appear in such a complex as C. It takes no great imagination to find such examples.

(A)	(B)	(C)
+f1	-f1	+f1
-f2	-f2	-f1
...	...	-f2
		...

Cases such as (C) should never occur with real verbs, they would in such a lexicon nonetheless. It is for this reason that no purely endoverbal lexicon can be optimal. We must recognize that many verbs, perhaps most verbs, have different meanings with different properties, that have to be

separated. To seriously regard the auxiliary, passive, causative, and possessive *have*'s as one verb would be mad. Nor would it then be possible to capture the ambiguity of the sentence uttered by the commander of the *Pueblo* at his first news conference after the release of his crew by the North Koreans: *Last week I had half of my crew beaten*. . . .

The syntactic features which enter into complex symbols are of the two types--"strict subcategorization" and "selectional restriction" features.

Chomsky distinguished strict subcategorization from selectional restrictions because of his concern about semi-grammaticality (cf. Chomsky 1961). Chomsky pointed out that breaking a subcategorization rule would lead to such deviant sentences as in (1) (148-49),

(1) (i) John found sad

(ii) John elapsed that Bill will come

(iii) John compelled

(iv) John became Bill to leave

(v) John persuaded great authority to Bill

whereas breaking a selectional restriction would lead to such deviant sentences as in (2)(149),

(2) (i) *colorless green ideas sleep furiously*

(ii) golf plays John

(iii) the boy may frighten sincerity

(iv) misery loves company

(v) they perform their leisure with diligence

and claimed (149) that

> Sentences that break selectional restrictions can often be interpreted metaphorically . . . or allusively in one way or another, if an appropriate context of greater or less complexity is supplied. . . . Clearly, one would proceed in quite a different way if forced to assign an interpretation to sentences that break

subcategorization rules, for ex., the sentences of (1).

Formally speaking, strict subcategorization rules in the widest sense simply specify what set of structures a particular item may co-occur with; they do not specify the class membership of items in such categories. Thus a strict subcategorization feature might state that a particular verb may be followed by an NP and an S in that order, but no specification would be given or what the NP was or what the S could contain. In a sense the old labels like "transitive" are strict subcategorization features: "transitive" as usually used means that the verb in question may be followed by a noun phrase.

Many of the early exoverbal lexicons were essentially based on subcategorization. It might be argued that Lees set up his classes on the basis not of subcategorization frames, but rather of the government of transformational rules by verbs. Although rule government is a very difficult problem not yet solved (the earliest extensive discussion is in G. Lakoff 1965), it can be stated that in a Lees-1960-type grammar, rule government is put essentially in terms of constructions (i.e., strings) rather than features on verbs, as later proposed. So this argument does not hold up. A transformation is a function relating two classes of structures; obviously it will not apply to a structure containing a verb unless that verb is at least a verb permitting itself to be embedded in a structure meeting the structural description of the transformation in question.

Of the structures usually listed in subcategorization features by far the most interesting are complements. Major studies of complements have been undertaken by Fillmore and by Rosenbaum in various papers, as noted above. Transformational researches radically reduced the number of classes as more and more cases of set stability from class to class were explained away as transformational variation between various complements.

However, enough cases of set stability unexplained in this way remained to prompt an eventual re-evaluation. This will be discussed below.

Selectional restrictions already tread on the border of semantics; it might then be considered that any features "inherent" to a verb should be semantic in nature. However, there is a class of syntactic features which deserves the name of "inherent" because while it has to do with the nature

of the verb, it as well has to do with co-occurrence restrictions and is hence syntactic. It may be the case that the equivalent of some complement verb in English cannot have a complement in some other language simply because that language lacks complements of the English type. Obviously, that verb cannot share subcategorization features with its English counterpart, and similar cases for selectional restriction can be thought up. But inherent features, it may be argued, are universal. If an English verb takes manner adverbs, we can be pretty sure that its counterpart in any other language will as well. This will be discussed later in connection with semantic features. Several persons (in private communications) have attacked this position as circular. Actually, what is claimed here is essentially what R. Lakoff has claimed (1968:17-18), namely that if a verb V of a language L is a perfect gloss of a verb W of a language M, then the syntactic properties of V will tend to be those of W, excepting systematic peculiarities of L relative to M, or vice-versa. By "verb" I definitely mean "one specific meaning of a verb": it is a semantic, not morphological definition. For some peculiarity of L relative to M cf. Greek *hos* plus indicative construction with Latin *ut* plus verb construction. (See R. Lakoff [1968:6-8].) But the crucial difference between inherent and other syntactic features is that inherent features are not specified in terms of environments, but are, rather, simply labels on verbs. It should be noted that while it makes some sense to talk (as Chomsky [1965] does) of ordering rules which set up the other syntactic features, simply because they may involve related structures (and certainly subcategorization has priority over selectional restrictions) it makes no sense to order inherent features. Furthermore, while the formal elements apparently making up subcategorization and selectional features are of the same class as category symbols ("apparently" because such features are supposedly units), inherent features are arbitrary. Thus while a symbol such as a "□," not used as a category symbol elsewhere, could not enter into the specification of the other syntactic features, one could perfectly well have an inherent feature denoted by a "□" or even called "box." Furthermore, inherent features may enter into exceptionality with no reference to structures *per se*.[6]

1.4. Inherent Features.

With these considerations in mind, we can go on to discuss inherent features, which straddle the line between syntax and semantics. Since inherent features have not attracted as much attention per se as the other syntactic features, I will run through here the history of one system

of inherent features, namely those concerned with aspect.

One of the major studies of recent years has been that of tense and aspect. There is a huge literature on the subject. I will concern myself here only with the question of active-stative verbs, and specifically with the treatment of this problem by Ota, Allen, Binnick (1966) on the one hand, and by Vendler, Kiparsky, G. Lakoff and Ross, and myself at present on the other.

The distinction between "active" and "stative" verbs is an important one in English grammar. The earliest discussions I have seen are those of Allen (1947; quoted in Joos 1964:115ff.; *I have not seen the original*) and Ota (1963; mentioned in Joos:116; I read the manuscript in microfilm prior to reading Joos). Allen notes that

> Certain verbs are practically never used in the Present Continuous . . . even when describing the real present.

Allen characterizes those as (Joos 1964:115)

> verbs of condition or behaviour not strictly under human control; consequently they go on whether we like it or not.

Allen lists among such verbs the following (Joos 1964:115):

> see, hear, smell, recognize, notice; remember, forget, know, understand, recall, recollect, believe, trust (=believe); feel, (that), think (that); suppose, mean, gather (=understand); want, wish, desire, refuse, forgive; care, love, hate, like, be-fond-of, adore, be-angry, be-annoyed, be-pleased; seem, signify, appear (=seem), belong-to, contain (=hold); matter, possess, consist-of; have, be.

By placing his semi-colons as he does, Allen shows that he recognizes the semantic cohesiveness of certain sub-classes of this list; further, by putting glosses in parentheses he shows that he considers this an endoverbal list in the sense that insofar as inherent features are reflexes of semantic features, differing properties pertain to differing senses of the same verb, which are then to be treated for the purposes of such a list as separate verbs. Thus when *contain* is a close synonym of *hold* it will act like *hold*, but when it means *hold back* it will not. Joos points out that when he

extended Allen's list, most of the verbs "resemble in meaning" seem, signify, appear, belong-to, contain, matter, possess, consist-of, have, and be. We can predict that close synonyms of such verbs will all belong to this list.

In the interests of accuracy I should note that these verbs do take the so-called present continuous or present progressive, but only in the restricted senses of intensive, recurring, or inchoative action, as in (1) below; these uses were recognized by Allen, Ota, and Joos.

(1) a. (intensive) Jane is being nasty tonight.

b. (inchoative) The Russians are seeming more and more belligerent.

c. (recurrent) The nations of the Middle East are forgetting themselves a good deal these days.

Such restrictions do not apply to other verbs. Ota called the verbs in question "statal"; Joos preferred "status" over both this and "stative," which he reserved for Chinese, for some unstated reason. Here we will use "stative." Opposed to these were "process" verbs, but (despite the term "activity" used by some) here we will call them "active" verbs. We will see that there are important syntactic differences between the two classes of verb beyond the matter of the progressive; Joos noted one: a stative verb "cannot have future reference without an explicit time-shifter such as *will* or *be going to*," where as an active verb can (Joos 1964:118). Joos also characterized most of Allen's verbs as verbs of "psychic state," while he found another class, one of "relation," which is close to a class of verbs I have called "Gestalt" verbs, and which was extensively studied by Gruber (1965). Amongst such verbs are: make-a-difference, fill, complete, suit, resemble, extend, reach, adjoin, border on, fail, differ, include, exclude, preclude, comprise, complicate, vitiate, demonstrate, show, intersect, be supposed to. Gruber's discussion is the best that has appeared on this topic.

Joos 1964 and Reichenbach 1947: 51 influenced a 1966 working paper of mine wherein I was concerned with the problem of co-occurrence of verbs and adverbs (of time). I noticed that the class of verbs (stative) which do not take the present progressive form as the "real" present tense (2a) also do not allow the present tense with future adverbs (2b), as allow (2d) those that do take it (active verbs)(2c).

(2) a. *"*I am seeming to have forgotten your name*," he told me.

b. *The Pope {seems / is seeming} stupid Tuesday if he gives that speech.

c. "I am trying to remember your name," he told me.

d. The Pope {gives / is giving} that speech Tuesday if he has the time.

Co-occurrence of verbs with "*time expressions*" (such as tense markers and time adverbs) would depend on the nature of those expressions and on the verbs themselves. There are, for example, *some actions* that cannot be done over an extended period of time (3a), some that cannot be segmented (3b), and some that demand extended periods of time (3c). The nature of the action or state named by a verb therefore could affect its co-occurrence relations because time expressions may refer specifically to what I called "duration," "segmentation," and "punctation."

(3) a. *Harry Schmidt dropped dead all day yesterday.

b. *Every three minutes, Lyndon Johnson used to be President.

c. **It was precisely at noon yesterday that Harry kept on being obnoxious.*

An important advance was registered by Vendler's 1957 paper, which was generally unknown among linguists until it was reprinted in 1967 in book form with other essays. Prior to this the only philosopher to venture into the analysis of tense and aspect in natural language in a serious way was Reichenbach, whose study fails to go far enough, and in particular, restricts itself to too simple structures. While easy to handle, such structures are rarely as instructive as more complicated ones, and in discussions of Reichenbach's work, it quickly becomes apparent that his analysis per se is useless for sentences with more than one verb and more than one clause.[7]

Vendler conceived his task as (1967c:98-99) "to locate and to describe the most common time schemata implied by the use of English verbs." He recognized the distinction between

active and stative verbs, but pointed out that "some of the [stative verbs] can be predicated only for single moments of time . . . , while others can be predicated for shorter or longer periods of time. One reaches the hilltop, wins the race, spots or recognizes something, and so on at a definite moment. On the other hand, one can know or believe something, love or dominate somebody, for a short or long period." (102) The former he called "achievement terms," the latter, "state terms." The former he characterized as occurring at single moments, while the latter last for a period of time (103).

Similarly, Vendler pointed out that there were at least two kinds of "active" verbs: "the activity of drawing may . . . go on for a time, [but it does not take any definite time]; . . . it takes a certain time to draw a circle [however]." (101) Thus, the question *How long did it take to push the cart?* sounds odder than *How long did it take to push the cart around the block?; For how long did he draw?* sounds better than *For how long did he draw the circle?*, which, in any case, implies a failure. In Vendler's terms, pushing a cart is an "activity"; pushing a cart around a block is an "accomplishment." (102) It can be seen here that Vendler has deviated from other approaches in considering predicates as a whole, not just verbs. In other approaches, *push* and *push. . . around the block* would have lumped together, but clearly they are quite different.

To summarize, Vendler found (106) that there were four categories.

Vendler's Time Schemata

For activities: *A was running at time t* means that time instant t is on *a* time stretch throughout which *A* was running.

For accomplishments: *A was drawing a circle at t* means that t is on *the* time stretch in which *A* drew that circle.

For achievements: *A won a race between* t_1 *and* t_2 means that *the* time instant at which *A* won that race is between t_1 and t_2.

For states: *A loved somebody from* t_1 *to* t_2 means that at *any* instant between t_1 and t_2 *A* loved that person.

Vendler concludes (107), "This division has an air of

completeness about it. Perhaps it is more than a mere presumption to think that all verbs can be analyzed in terms of the four schemata."

G. Lakoff has developed a 4-way classification of verbs similar in some ways to Vendler's which was presented in LSA Summer Institute lectures, 1968: stative, active, inchoative (which are very much like actives) and sense ("perceptual stative") verbs, which also are like actives for the most part. G. Lakoff made up a list of twenty-five tests for which each class had different properties. The names of the tests and the results obtained (as of July 16, 1968) are as follows:

	STATIVE	SENSE	ACTIVE	INCHOATIVE
1. What he *did* was . . .	*	*		*
2. MANNER ADVERBS	*	*		*
3. Be careful in(at) . .	*	*		*
4. Do so (do it)	*	*		*
5. In order to	*	*		*
6. Because he wants to	*	*		*
7. IMPERATIVE	*	*		*
8. ORDER	*	*		*
9. Instead of	*	?		*
10. For someone's sake	*	*		*
11. PROGRESSIVE	*	*		
12. *I saw him . . .*	*	*		
13. Persuade	*	*		*
14. ROOT SENSE OF MODALS	*			*
15. Use	*			*
16. Instrumental *with*	*			*
17. By (means of) . . .	*			?*
18. Enable	*			?*
19. Together	*			
20. With of accompaniment	*			
21. ITERATION	*			(* Absolutes)
22. Keep on	*			(* Absolutes)
23. Happen	*			
24. LOCATIVES	*			
25. He seems to . . .		*	*	*

This analysis is a working sketch alone, very rough and inadequate. No one has studied this in great detail. Nor does there exist an adequate theory. Furthermore, Ross believes (as stated in LSA Institute lectures, July, 1968) that in an adequate theory these constraints should have a single source--"none of these tests will be separated in a good analysis, but in a 'morpheme spitter' these are different

constraints."[8]

There are further difficulties. It was pointed out in discussing these tests that with a certain extension of meaning these constraints could be violated and good results would still be obtained: G. Green gave a sample sentence like *The playwright had the girl be tall instead of stocky.* Other counter-examples had to do with the progressives already mentioned, and, as noted by G. Lakoff himself, with imperatives--there are imperatives which are really conditionals of various kinds, and with these, statives do occur. Sentences like (4) (Lakoff's exx.)

(4) a. (threat) Leave the room and I'll slug you.

b. (prediction) Leave the room or you'll be late.

can occur with any verb in them. Cf. Jesperson 1933:205;

> Imperatives are often used in such a way that no real request is meant: the hearer or reader is only asked to imagine some condition, and then the consequence is stated. . . .

Thus simple statements are not to be forthcoming from an analysis such as Lakoff's.

Lakoff's results are endoverbal in that in his rough analysis no verb entered into more than one class. However, in finer detail it can be seen that many problems which arise do so because of a failure to recognize the basically exoverbal nature of the approach: different senses of the same verb have radically different behavior. That sense verbs should form a separate category seemed especially strange to me, and I hypothesized that perhaps, if differentiated as to meaning, various meanings of the sense verbs would clearly fall into either the active or stative category. Work in progress has more or less shown just that, as well as showing that several of Lakoff's tests are just plain bad. I shall run through part of this current research in 4.1 below to show how Lakoff's analysis can in part be refined so as to eliminate a separate category for sense verbs.

Three closely related problems arise in connection with Vendler and Lakoff's work. When we set up a total categorization or classification, we first want to know about coverage, whether the set of categories is air-tight, whether all of the items being classified of necessity fall into one or the other of these classes. Secondly, we want to know

about optimality, whether the set of categories is the smallest set of categories possible. Finally, the question arises whether an item will fall in only one class or not. These are related questions. We can be sure of the answer being yes in each case only if there is some recognizable reality about our categories. For example, we know that all normal human beings are male or female. This is an absolute. We likewise know that the range of height for normal humans is approximately 18 inches to 9 feet. But this is not an absolute. We can be relatively sure no 10 foot humans will occur, but we cannot be absolutely sure. Past experience and logical necessity produce different kinds of assurance. But logical necessity is not always useful in linguistics: it helps us not at all to use various obvious but empty classifications that could be made.

To assure ourselves that a categorization is air-tight and optimal we have to find some underlying organizing principle of the item set at precisely the right level. Too high a level and our categorizations are unenlightening, too low a level and they are trivial. At the moment there is no certain method of determining the proper level, and probably there never will be.

For example, we could categorize all living species as either animal or vegetable. This would be what I call a high-level classification, absurdly high, operating with an air-tight but overgeneralized system. A low-level system is one so detailed and under-generalized that one fails to see the forest for the trees. In general we want a system which achieves maximum generality while not leaping from categories relevant to the level in question to categories on a higher level. For example, it is more important that *dolphins are mammals than they are finned. Finnedness is a* lower-level category than mammalness. Things should be so categorized as to show the intuitively-felt relationships between them.

Let me provide another example of a system which purports to be air-tight, although it is clearly not optimal. In Binnick 1967, I attempted to "define a set of air-tight compartments into which to place the surface transitive verbs of English" (36). There were defined seven classes, plus one residual class of verb which, it was claimed, were also underlying transitives, the others not being so. These classes and their definitions were (36-37).

A. *Gestalt verbs* which (1) . . . are synonymous . . . to *go* or *come* or a phrase containing *go* or *come* (such as *cause to go*) and a preposition . . . , (2) has both a stative and an inchoative usage (*surrounds*; *is surrounding*), and (3) is a surface transitive verb. (Thus *reach* is a gestalt verb, but *arrive* is not.)

B. *Cognate accusative verbs* [permit] only objects which are etymologically [or semantically] related to the verb, as *think thoughts* [or sing carols]. . . .

C. *Complement verbs* [permit] a desentential complement, or a quasi-nominalization (see G. Lakoff 1964:51) as objects, but not real nominal [Vendler's "first-order" nominals (1968:34?)] objects. Ex.: *hate* in *hate to leave*, but not in *hate Harry*.

D. *Pseudo-transitive verbs* are equivalent to Lees' pseudo-intransitives. . . . Ex.: *Tom is eating (cheese)*. Cf. *Tom is using (scissors)*.

E. *Causative verbs*. Ex.: *weaken* in *Tom weakened Sue*, not in *Tom weakened*.

F. *Topicalized (or Passive) verbs* are those which can be replaced in situ . . . by *be* plus adjective, *come* or *go* plus a preposition, but which do not have an inchoative sense. (Thus *surround* is a gestalt verb, but *suffer* is a passive verb.)

G. *Instrument verbs* are those which form synonymous sentences through replacement by a verb phrase plus *with* and the instrument related to their stem, or *use* plus the instrument plus *to* plus the verb phrase just mentioned. Ex.: *boat*; *knife*.

I concluded (38) that "the above classes are too many in number and perhaps arbitrary in division. . . ." What makes this conclusion seem true is that the definitions have no central plan, no central categorization.

1.5. Semantic Basis of Syntactic Features.

We have already mentioned how classes determined on syntactic grounds seem to have semantic cohesion. Traditional

grammars assumed in fact that syntactic properties are reflexes of underlying semantic properties. They accordingly feel free to treat syntax and semantics promiscuously, making statements such as the following, listing the syntactic properties of semantically-defined classes of verbs.

> Zu den Verben, die ein Dativobjekt neben dem Akkusativobjekt fordern, gehören vor allem: die Verben der Gebens und Nehmens . . . [und] die Verben der Mitteilung und des Verschweigens. (Grebe 1966: §5310.)

> Many [Latin] verbs take either a subjunctive clause or a complementary infinitive, without difference of meaning.
> Such are verbs signifying *willingness*, *necessity*, *propriety*, *resolve*, *command*, *prohibition*, *effort*, and the like. (Greenough 1903: §457.)

> Verbs expressing acts of perception may take the infinitive of an impersonal verb as object. (Ramsey 1962:§19.31.)

> Verbs of saying, speaking, etc. (*verba declarandi*), have [in Mongolian] a special form to introduce direct speech. (Grønbech and Krueger 1955:§34.)

In the past linguistics have used such examples to show the unscientific and confused character of traditional grammar, but it is in fact possible to find a good deal of truth in such formulations. The relationship between syntactic and semantic facts is not to be explained as an accidental correlation, but as a causal relationship. All the evidence suggests that there is value to a theory in which terms like "verbs of giving and taking" and statements about their alleged syntactic properties make sense.

We have already noted that selectional features relate to semantic ones. McCawley has proposed that selectional restrictions are in fact semantic; maintaining "first that any piece of information which may figure in the semantic representation of an item may figure in a selectional restriction and secondly, that no other information ever figures in selectional restrictions" (1967:134). For this he argued from the "incredibly specific selectional restrictions" of such items as *diagonalize*, *benign*, and *devein* (134). We can predict that in any possible extraterrestial language the verb *devein* will have precisely the same range of permissible

subjects and objects as the English verb, all other things being equal.

Furthermore, selectional restrictions reflect, after all, a certain set of presuppositions. The sentence *Golf plays John.* is odd because John is not the sort of thing you play, and Golf is not the sort of thing that plays. Note that if *John* is interpreted as the name of a game (like *Monopoly*) or the name of a stage role (like *John Lackland* in a play about Robin Hood) or an actual role (where *John* could mean "client of a prostitute") and if *Golf* were a man's name or title (like *Private Office*), this sentence is perfectly fine.

It is usually said that only animates can serve as the subject and object of *decapitate*, for example (see Wall 1967:17). This is not true. The guillotine has decapitated many people, but it is not animate. In fact, one can decapitate anything that has a head (with the exception of beer), and it need not be animate. It could be stative: a corpse can be decapitated though it is not very animate. On the other hand, worms, although animate, cannot be decapitated, since they have no head. The sentence *Buffo the clown decapitated the worm.* implies that in some sense the worm had a head. Anything with a head can be decapitated, anything without cannot, and animateness has nothing to do with it.

In general, selectional restrictions are simply not grammatical facts. The conditions under which ovens can dance (cf. Wilhelm Busch's line *De Aben danzet mit der Tange.* "The oven is dancing with the tongs.")--if I am ill, the oven might even do a jig--or colorless green ideas sleep furiously are not limitless, but "metaphor" is not necessary to explain such usage.

1.6. The Theory of Lexical Insertion.

We are now prepared to see why neither the endoverbal nor exoverbal approach is optimal. The exoverbal lexicon assigns no role to systematic lexical relations, and therefore fails to capture essential generalities. An endoverbial lexicon can be designed in two ways. It could merely list each verb as an entry. This would fail to distinguish systematic and unsystematic ambiguity in the same way dictionaries fail to do so. Or it could separate each meaning of a verb. This would be equivalent to an exoverbal lexicon, and would have the same failings. Thus neither type is optimal.

This paradoxical result can be avoided only if we

realize that an assumption has been made throughout this discussion which, although traditional is false. That assumption is that morphemes have meanings, that for any morpheme we can list its meanings. Below I shall argue against classical morphemics in much the same way as generative phonologists have argued against classical phonemics. But more to the point is the relation between syntax and semantics.

The first serious endoverbal lexical theory was that of McCawley. He can be viewed as taking an essentially neutral position in regard to this question (1968c:125-26):

> there is no a priori reason why the information in the dictionary must be grouped together on the basis of phonological identity. . . . Moreover, there is no a priori reason for items in a dictionary to be grouped together at all: one could perfectly well take the notion "lexical item" to mean the combination of a single underlying phonological shape, a single syntactic category, and a single set of specifications of exceptional behavior with respect to rules.

This is the "Weinreichian" lexicon, proposed by Uriel Weinreich in his paper "Explorations in Semantic Theory" (1966a). McCawley supports this with the following evidence: the source of the oddity of *John is sadder than that book.* is probably that sad_1 (*John is sad.*= unhappy) and sad_2 (*The book is sad.*= causes unhappiness) are not the same lexical item and therefore cannot participate in comparison. Cf. examples (1) from Chomsky 1965.

(1) a. *John is as sad as that book he read yesterday.

b. *He exploits his employees more than the opportunity to please.

c. *Is Brazil as independent as the continuum hypothesis?

McCawley's conclusion here seems sound enough, but one can draw different conclusions from this than those which he did. Relevant here is the notion of 'implicational relations' which led him to conclude that not "every 'lexical item' of a language must appear in the lexicon of that language" (1968c: 130). He gives two examples of this, first one suggested by Lester A. Rice, the ambiguity of temperature range terms like

warm, which can represent "not only . . . these temperature ranges but also . . . the temperature sensation produced by an article of clothing" (130), and secondly, what Lakoff calls 'reification' (which will be discussed below) (131). To treat these 'implicational relations,' McCawley proposes 'derivational' rules; these would be akin to but different from Weinreich's 'construal rules.' Thus he recognizes relations between lexical items, but these are not quite the same relations as Katz and Fodor have reported on, nor are they treated in the same way. The relationship between a sad_1 and a sad_2 is just as valid as that between a $warm_1$ and $warm_2$; can we propose treating the two relations the same way? Apparently not. But the nature of McCawley's derivational rules is not clear, nor is their status in a grammar of English. It should be noted at this point that the relation between sad_1 and sad_2 is shared by $happy_1$ and $happy_2$:

(2) Is their choice of words as happy as George?
cf.:

(3) a. Their choice of words was a happy one.

b. George is a happy fellow.

McCawley also makes a further criticism of the Katz-Fodor theories, which, while tangential to the question of implicational lexical relations will nonetheless be shown to be relevant to wider questions. McCawley claims (129) that

> disambiguation actually involves not merely linguistic competence but also the language user's factual knowledge; indeed, it is merely a special case of the judgement of a speaker's intention.

Essentially, the Katz-Fodor and McCawley studies have shown that various relations hold between differing senses of a single lexical item or groups of items. But they have left the status of these relations vague. As the theory of transformational grammar now stands, these relations may have one of the following statuses:

A. Transformational rules may alter the semantics of lexical items in syntactic context.

B. Mapping rules may associate underlying semantic structures with various phonological entities in semantic and syntactic context.

C. The distribution of lexical items and their nature will be specified in a lexical component.

These seem the only choices. The first is equivalent to saying that there exists a corpus of basic phonological-semantic entities whose ultimate shape is defined by transformations. The second treats lexical items as abstract entities which are assigned phonological shape prior to the transformations. The third proposal treats lexical items as unique phonological-semantic entities which never vary.

What I will argue for here is a combination of proposals A and B. That is, the question is not why the morpheme *sad* is ambiguous, but rather why two different meanings happen to have the same phonological shape. This question is protean and basic for the entire theory of transformational grammar.

The alternative is to regard the lexicon as relating underlying semantic structures to surface morphemes. In this way both systematic and unsystematic ambiguity can be correctly exemplified.

So far I have been making an assumption which is probably wrong, namely that "verbs have meanings," or, more generally, that "morphemes have meanings." We ought to consider what morphology is all about.

I think it not unfair to state that no satisfactory definition of the morpheme has ever appeared; however, it might not be unfair to describe the *morpheme* as a class of *allomorphs* in free variation or complementary distribution, that is, in a statable, non-contrastive distribution with each other, where by *allomorph* we mean a class of *morphs* characterized by (1) approximately similar (i.e., a canonical) phonological shape, and (2) approximately similar (constant) meaning, and where, in turn, by *morph* we mean a phonological string with definite meaning. The first requirement has obviously been relaxed for *good* and *be(t)-*, *go* and *went*, and so on, which are usually treated as representing the same morpheme. Requirement (2), as we shall see, creates a different kind of problem, and will call classical morpheme theory into question.[9] I think *systematic ambiguity* pretty well demolishes any morphemics. In a strictly endoverbal lexicon each morpheme would have a list of meanings associated with it. In certain cases the meanings are so divergent that by no stretch of the imagination can they be reconciled; McCawley proposed making these different entries (1968c:124-29), thereby suggesting these were different morphemes. An example of this is his treatment of *sad*. However, there were

cases recognized by him of quite divergent meanings which he nonetheless felt did not rate such treatment because such divergencies were predictable. Thus he notes that[10] *warm* in (4) is not the same as in (5):

(4) The weather is warm.

(5) The coat is warm.

Indeed, (6) would be at least two-ways ambiguous (it is four-ways ambiguous, but the meanings of "friendly, out-going" and "sexually aroused" do not enter in here):

(6) The man is warm.

McCawley accordingly set up what he called *implicational relations*, the nature of which was not made clear (130). Moreover, he failed to point out that it made quite a difference what the status of these relations were. I have preferred the term *systematic ambiguity*, which indicates the fact that the relationship between the *warm* in (4) and that in (5) is not a fact about two morphemes, but about two classes of meanings. This is even more clear in McCawley's second case, that of reification. The meaning of *John's dissertation* in (7) is not quite that of it in (8), nor is that of *P.S. 12* in (9) that of it in (10), nor *John* in (11) that in (12).

(7) John's dissertation is about Beethoven.

(8) John's dissertation weighs five pounds.

(9) P.S. 12 is in Rome, N.Y.

(10) P.S. 12 fired Mrs. Brown.

(11) John fell down dead.

(12) John sold his house.

It would be intolerable to declare that *John's dissertation* is morphologically different in (7) and (8) or that *John* in (11) is a different morpheme from *John* in (12). Yet if they are permitted, the meaning requirement for morphemes must be dropped or weakened to "similar" from "constant."

Again and again we see cases of items of similar shape differing quite dramatically in meaning, but in a predictable way. If we know *John* can refer to either John's

body or his identity, then we know that fact of every expression, not just morphemes, that refers to a person. In the same way, every verb like *kick*, *shove*, *push*, etc. can refer to an action, as in (13) or the cause of an action (14).

(13) John kicked strongly.
shoved
pushed

(14) John kicked his girlfriend out.
shoved
pushed

Similarly, virtually all instrumental verbs can be used in an extended sense; if we know that you can axe someone with your hand then you know that *axe* does not only mean "use an axe" or "use an axe on," and you similarly can predict that *semaphore* means more than just "use a semaphore" or "use a semaphore on."

We arrive accordingly at a theory in which a "morpheme" is a class of units each of which is itself a class of units, that is, we really have a "morpho-syntacteme." *Send* and *go* are in complementary distribution, therefore they form one morpheme; but *go* has the allomorphs *go* and **wend*. Therefore the morpho-syntacteme GO has the members *go* and *send*, themselves morphemes. No one has ever seriously proposed such a theory, because it treats the relationship of *go* and *send* as precisely the kind of special fact the relationship of *go* and **wend* are, which is not the case. The relationship of these latter is idiosyncratic both morphologically and syntactically, that of the former entirely regular save only on the morphological, that is, the phonological level.

Come and *bring*, like *go* and *send*, represent a case of a verb, *come*, having a causative, *bring*, completely unrelated to it phonologically, whereas most causatives in English at least share a stem with their corresponding non-causatives and often are identical to them. In some languages the causatives of *go* and *come* are expressed by overt affixation: thus Buriat *jabaxa* 'go,' *jabuulxa* 'send.' In English, these verbs have different stems. It cannot be argued that we are confronted here by a complementation on the semantic level in the sense that two different verbs happen to fulfill a paradigm usually realized using one verb or verb stem. This approach would render impossible any attempt at a reasonable theory of semantics. Instead, the facts argue for *bring* being a representation of 'cause to come.'

The main evidence for *bring* being the causative of *come* is the amazing parallel between the verbal idioms of *bring* and those of *come*. In the following table I follow each idiom of *bring*, as listed in Woods, with the corresponding idiom of *come*. These lists are virtually exhaustive for the idioms of these verbs. I think the glosses indicate clearly that the *bring* idioms are just causatives of the *come* idioms.

BRING ABOUT cause to happen, accomplish [zustande bringen]
COME ABOUT happen

BRING AROUND (1) awaken, wake up (tr.) [wieder zu s. bringen] cf. BRING TO
COME AROUND (1) awaken, wake up (intr.) [wieder zu s. kommen] cf. COME TO

BRING AROUND (2) cause to come here
COME AROUND (2) come here

BRING AROUND (3) persuade of something
COME AROUND (3) be persuaded of something

BRING AWAY remove
COME AWAY be removed or removable

BRING BACK return (tr.)
COME BACK return (intr.)

BRING DOWN (1) depress (mental attitude: slang)
COME DOWN (1) be depressed (mental attitude)

BRING DOWN (2) fell
COME DOWN (2) fall

BRING DOWN (3) lessen (tr.) [herabsetzen]
COME DOWN (3) lessen (intr.)

BRING FORTH produce; bear (a child) [hervorbringen]
COME FORTH be produced, appear; be born [hervorkommen]

BRING IN (1) cause to come in; enter (tr.)
COME IN (1) come into; enter (intr.)

BRING IN (2) yield as income
COME IN (2) be yielded as income

BRING OFF effect, accomplish
COME OFF happen, be effected

BRING ON (1) cause to happen, occur, appear (cf. set off)
COME ON (1) happen, occur, appear

BRING ON (2) cause to appear (on a stage, etc.)
COME ON (2) appear (on a stage, etc.)

BRING OUT (1) introduce a novelty
COME OUT (1) a novelty appearing

BRING OUT (2) expose, reveal some object
COME OUT (2) some object being exposed or revealed

BRING OUT (3) mention or discuss (cf. BRING UP)
COME OUT (3) something being mentioned or discussed (cf. COME UP)

BRING OVER cause to come here
COME OVER come here

BRING TO revive (tr.)
COME TO revive (intr.)

BRING UNDER--no idiom
COME UNDER --no idiom

BRING UP (1) raise or rear [cf. aufziehen, erziehen]
COME UP (1) rise or be reared (unusual)

BRING UP (2) mention
COME UP (2) be mentioned

BRING UP (3) vomit (tr.)
COME UP (3) something being vomitted

BRING UP (4) stop (tr.) (unusual)
COME UP (4) stop (intr.) (unusual)

If *bring* means "cause to come," then we can explain not only such pairs but the fact that the passive of "cause to come up" (*bring up*), *be brought up*, is rather close in meaning to *come up*, i.e., the passive causative of a verb is close in meaning to that verb, since it represents the end of a process, which is the same as the goal action. But if *bring* means "cause to come," it cannot enter into an allomorphic relationship with *come*, as it seems to do. At best it might be considered a portmanteau of "cause to come" with the same semantic core as *come*.

But there are many cases which argue against such a treatment. Consider for example the sentences

(15) He imprisoned the suspect in a dungeon.

(16) He entombed the suspect in a dungeon.

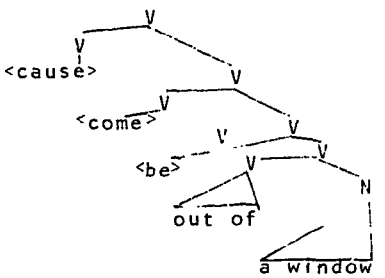
Here the semantic interpretation of the sentences is identical except for the morphemes *prison* and *tomb*, which are the only morphemes in which they differ. Had the second sentence been instead

(17) He caged the suspect in a dungeon.

its interpretation would have been identical to that of (15), save for *prison* and *cage*, but in this case these are not the only morphemes in which the two sentences would differ, since the second would lack an *in* or *en*. It is impossible to claim that *cage* is here a portmanteau, rather the *in* or *en* seems an excrescence, since far more morphemes of this class act like *cage* than like *prison* or *tomb*, for ex., *pen*, *paddock*, *coop*, *corral*, *net*, *stable*, *pocket*, *bag*, *box*, *crate*, *vat*, *bag*, *can*, etc., as opposed to *impen*, *encapsule*, *enchain*, and a few words in *be*-like *benet*. The treatment of *imprison* as two morphemes, but *cage* (vb.) as one does violence to any attempt to provide a systematic lexical semantics.

One question which arises is how morphemes get inserted for the semantic units present in underlying trees prior to entry into the phonological component. There seemingly can be only two solutions to this problem: surface lexical items must replace either whole sub-trees or they must replace semantic items item by item. Part of the difficulty here is, as we have seen, surface lexical items by no means accord with morphemes as classically defined. This difficulty should be considered further before discussing mapping rules.

In the case of Latin or French borrowings we can consider that the speaker either has or has not the entire system. If he does not, then each stem, such as *adjucate* will have to be treated as a unitary surface lexical item. In the case of *defenestrate*, for example, the tree, which is something like the following:



would be replaced as a unit by the word *defenestrate*. But the problem is more difficult for those items which are old compounds of which one half has ceased to have independent function. In *world* both spelling and phonology hide the fact that historically the work is a compound of *wer* 'man' and a word for 'age' in the sense of eon. But this *wer* occurs in *werwolf*. It is clear that while everyone understands the *wolf* part, for no speaker is *were* meaningful; I have seen a poem punning *werewolf* on *willwolf*, etc., as if *were* 'man' were *were* 'past tense . . . of *be*.' A similar case is that of *mermaid*: all speakers recognize the *maid* because of *maiden* and archaicizing uses of *maid* to equal 'girl,' but even speakers knowing French might ignore the *mer* morpheme; a wilder example is *beldame*, a corruption of *beldam*, which originated in *bel* 'fine' plus *dam* 'female parent' (usually of animals). The *dame* part is identified, but the *bel* part will undoubtedly miss all speakers because of the irony involved: not even the wildest etymologist would feel free to sit in his armchair and construe a beldam as being *belle*. *Woman* is a similar case: the correct interpretation as *wo* + 'man' is never made because *wo* has no meaning. The compound *U-boat* is similar: the English-speaker accepts the *boat* part even if ignorant of the *U*'s meaning; similarly in *Q-ship* and *FT boat*. Many trade names are built up of a meaningful element and an unmeaningful one, thus *Kelvinator*. Such cases as the above are myriad in the annals of folk etymology and back-formation, and I will desist here.

Even in the case of transparent lexical items, such as *horseshoe*, a good case for unithood can be made. The combinations in such compounds are extremely unsystematic, and one is surprised Lees' work ([1960] 1963:113-201) is as coherent as it is. Furthermore, we might do well to consider the relationship between storage and computation in language, and hence between competence and synchronic grammar. The vast majority of sentences uttered are unique, and even the sentence form, devoid of lexical items, has extremely low

probability. But the vast majority of surface lexical items are not unique, and even the most-outrageously long compounds of German, Eskimo, or late Sanskrit will, for some speaker and under some set of circumstances, have extremely high probability as compared to all but a few sentences. The feeling is inescapable that the word *Altertumsforschung* is just as frozen a form as *defenestration*, and for this reason. Suppose that there were an underlying sub-tree, say that underlying the equivalent of *defenestration* in all languages. For some fairly longish paraphrases, virtually all languages would be free to use the same forms: that is, a literal translation of "cause some human being to come to be outside of a window. . . ." etc. might adequately express *defenestrate* in a large number of languages. But with the shorter, more customary expressions of such ideas each language is severely restricted in using. "Old time investigation" and "investigation of old time(s)" are not as good English as *archaeology*, even for speakers with not the faintest idea of what *archae* means. Structurally, *Altertumsforschung* is equivalent to an English phrase; but in German it functions as a word. Similarly *jazykoznanija* in Russian is a compound, like *Sprachwissenschaft*, but they function just like *linguistics*, which is not a compound. There is something eminently frozen about *horseshoe* in the same way; we do not talk of pigshoes or dogshoes, for example. Thus we could argue that the surface lexicon really is stored and not re-generated each time we speak. This makes great sense. It seems absurd to argue that everytime we use the term *horseshoe* we have to start out with a semantic complex like "shoe-like . . . for horses" and go through the entire derivational process before arriving at the word we want. Probably the private language of a married couple or close friends in part depends on certain structures usually computed being treated as frozen, stored forms. This might be an interesting topic for research. On the other hand, as I shall show below, this argument leads to its own counter-argument. Before I do that, however, I should point out how these matters reflect on the status of the term "competence."

In recent linguistics it has been assumed that each speaker internalizes a grammar which is more or less identical with the ideal grammar of his language. Thus if it is a fact of English that *horse* + *shoe* = *horseshoe*, then it ought to be a fact in most grammars of modern English as well. If the above argument is correct, however, this is wrong. While it remains a synchronic fact of English that *horseshoe* is derived by rules, it would be the case that for many if not all speakers, the word is simply retrieved from memory and "plugged in." Thus competence on the part of the speaker

could define a totally different type of system, a system operating on a different level as it were, from the synchronic facts of the language. One could argue perhaps that lexical items are stored, but that in some secondary sense they are also derived. What this might argue for is a dual approach. The subtree represented by *defenestration* would be replaced in lexical insertion by a frozen element, the word *defenestration*, which is itself generated in accord with rules for the morphological shape of words. In this way both the frozen, stylized nature of the lexical insertion process, and its innovative, generative nature can be characterized.

But a very good argument can be made against the position outlined above. If lexical items are merely plugged in for whole sub-trees, then only minimal subtrees could be so replaced. That is, *handkerchief* is a counterexample. If *kerchief* is replaced, then *handkerchief* must be treated as derived; but if *handkerchief* is replaced, then the identification of *hand* is impossible. This argument is clearer in those cases, like *U-boat*, where the compound is clearly endocentric even if part of it is unknown. But a stronger argument against the above argument is provided by words like *until* and *unless* which can be shown to be alternates of discontinuous elements, and by optionally discontinuous items like *break up*, or better German *ansehen*. If *ansehen* is a unit but *sehen . . . an* is not, real violence is done to the grammar. But combinations like *ansehen* are as unpredictable as *horseshoe*.

What this argues for, I think, is a two-level approach. The derivation must be stated in the grammar. But such derivation seems not to be a fact of individual grammars. Further evidence is provided by the fact that the active and passive vocabularies are not merely quantitatively different for speakers, but qualitatively different as well. The speaker who would never use a word like *agress* can understand it and accept it so long as he has *aggression* in his vocabulary. Thus as far as the lexicon is concerned, each speaker has two different systems, the active and passive, which may differ not only as to quantity, but may differ in their rules of lexical derivation as well. Furthermore, the difference is not between different dialects. For the phrases of ordinary language to become lexical units in technical, slang, or "private" language, demands that there is a constant shift between the stored, with which we might identify the active vocabulary, and the generated, with which we might identify the passive.

Very great difficulties would remain if we accepted

the position that the grammar contains two lexical components, but almost any other position raises greater difficulties. In order to avoid further problems, I will accept below the one-component thesis; this however leaves no final determination as to whether whole trees are replaced, or items are replaced item by item.

In a language like English, in which derivational processes are present but not alive, such problems are inevitable. I see no reason however why a language which is maximally agglutinative should not have item-by-item replacement. However, it is quite clear that no language fits this descriptive perfectly. Therefore, until we reassure ourselves as to how the lexicon works, it will be difficult for any language to be sure competence is a sound basis for a grammar.

As a practical position in what follows, I will fall back on the weak and theoretically undefensible position that semantic items are replaced one by one unless there is a clear argument for some subtree to be replaced. Naturally this is a very controversial topic. The evidence seems to indicate that the frameworks adopted here--competence, synchronic grammar, and the attempt to capture significant generalizations about grammar, may be inadequate in various ways. Nonetheless the general framework is so useful and the alternatives so under-developed, that I have avoided the question for now.

II. The Derivation of Surface Verbs.

2.1. Derivational Processes.

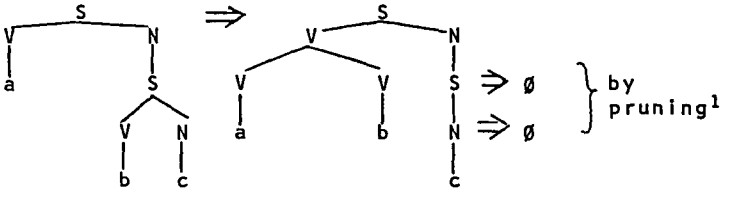
As noted above, until 1965 it was generally assumed that lexical items were basic units. Then Gruber introduced the notion of pre-lexical transformation and research into lexical insertion began.

One of the processes Gruber discussed (1965) in connection with pre-lexical transformations was that of *incorporation*. He argued, for example, that a verb like *cross* incorporated *go across*. Incorporation is a process in which some predicate and an element lifted out of a lower S (which in Gruber's theories--see especially Gruber 1967--need not even be a constituent) become one constituent, and thence a verb. Incorporation is one of the basic processes of lexical insertion.

There are three other processes of great generality which are important for lexical insertion. Passivization is not only involved in the formation of such verbs as *cut* 'be able to be cut,' but also in the case of appearance verbs such as *look* and *sound*. The well-known FLIP transformation which is involved in the derivation of these verbs, is essentially a passivization transformation.

Another important process, and a related one, is topicalization. Topicalization is the process of subject-selection, and is involved not only in the case of desymmetric predicates, such as *mean* and *resemble*, but in sentence-reduction as well.

The third process has received a great deal of attention. This is predicate-raising. This takes a predicate out of a lower sentence and Chomsky-adjoins it to a predicate in a higher sentence, e.g.,



It is predicate-raising which will form the subject matter of this chapter.

In particular, I will discuss it primarily in terms of inchoation and motion, which I will argue is a special case of inchoation. In addition, I will briefly consider a question raised by this research, namely the relationship between causation, purpose, instrumentality, transitivity, and activity.

2.2. Predicate Raising: Motion and Change-of-State.

It was Gruber (1965) who first studied extensively the close connection between verbs of motion and verbs of change-of-state. Because of a great many similarities, both semantic and syntactic, Gruber felt that both classes of verb could be treated in terms of a two- or three-dimensional set of categories (see 1965:14-83 and 193-98). What we will here refer to as verbs of motion and of change-of-state (henceforth c/s) proper, Gruber marked with a feature *motional*. What we will refer to as verbs of location and of state (*essive*, to be specific), he marked *durational*. Thus *keep* in all senses would be durational, while *turn* in all senses would be, on the other hand, motional. Crosscutting this feature-pair is a quartet of features, of which one, that of *identification*, is of particular interest here. An example of a motional verb of identification is *become*, whereas *stay* is a durational verb of identification. A third pair of categories cross-cutting these two sets is that of *nonAgent* and *C-Agent*, which is equivalent to the distinction between the Agentive and Object cases in Fillmore's system (1968). Thus Gruber calls the verb in sentences like (1) *Mandrake turned into a cow*. non-Agentive, whereas that in those like (2) *Mandrake turned his girlfriend into a cow*. is C-Agentive. This is equivalent to Fillmore's treatment of the overt subject in (1) as an Object, but that in (2) as an Agent. In traditional terms, what is involved is who is doing what to what. (Or whom.) (Gruber's table of the various categories and the verbs fitting into them is in Gruber 1965:265. See also, Gruber 1967.)

In this Section I will be concerned with handling Gruber's interesting data in a framework without features. The premises of such a framework are so different from those of Gruber on the one hand and those of Fillmore on the other that it would serve no purpose to discuss their observations in detail. A certain amount of information will be taken over, mainly from Gruber, and, after being added to, will be reworked and re-structured greatly. Although certain insights of Gruber, Fillmore, and others, such as Lyons, have

been incorporated in general into this dissertation, their specific proposals are filtered out by my basic system.

This section is an outgrowth of two papers of mine where some of the material herein first appeared, namely Binnick 1968a and Binnick 1968b. No doubt some of the strong criticisms made of and against those papers will apply as well to this section 2.2, but the extension here is one of both expanse and depth.

I will be specifically dealing with the relationship between verbs of motion and c/s verbs, presenting the data that argues for their underlying similarity. This data divides logically into four kinds: first, the types of complements held in common are presented; second, verbs in common are presented; third, it is shown how the semantics of motion and that of c/s interrelate; and then, it is shown how causation related to both types of verb.

The first evidence relating motion and c/s verbs concerns phrasal complements, and phrasal complements essentially consist of two classes of linguistic entities: locative expressions and motive expressions. By locative expressions I mean both locative adverbials, either locative words or locative prepositional phrases, and locative adjectivals, which, for the most part, are homophonous. By motive expressions, on the other hand, I refer, significantly enough, to motive adverbials alone, be they words or phrases. There are no motive adjectivals. We will argue later that, conversely, there are no true locative adverbials. That locative and motive expressions should thus be in complementary distribution is significant because, for the most part, they are homophonous in English. (Unless otherwise stated, all claims in this paper are made specifically and solely for English, from which the data here, in the main, has been drawn, although, hopefully, such research as this will ultimately form the basis of a universal theory.) One of the most important differences between locatives and motives involves two motive prepositions, which, when heading phrases (as opposed to when they function as adverbial particles), have a different shape than their locative counterparts (namely *in(to)* and *on(to)*). It should be noted that in colloquial speech this distinction is lost in the environment of a verb of motion (thus *John went in the house.* is a variant of *John went into the house.*). but not in the environment of a c/s verb. (Thus *John turned in a fool.* is not a valid version of *John turned into a fool.*) (It will be assumed, thereby removing certain ambiguities, that all *in*'s and *on*'s are locative, and *into* and *onto* are to be reserved exclusively for their motive counterparts.) In Table 1 are listed lexical

items serving as locative-motive words or prepositions in motive-locative phrases. Those only marginally locative are marked ^{mot}; those not serving as prepositions are marked ^{w} for "word"; those not usually predicate locatives are marked ^{P} for "preposition" (cf. *in*:*inside*; *out*:*outside*).

TABLE 1

about	(in) front^{mot} (of)
above	here^{w}
abroad^{w}	in ~ into^{mot}
across^{mot}	inside (of)
aloft^{w}	near
alongside (of)	nearby
anyplace . . .^{w}	next (to)
anywhere . . .^{w}	on ~ onto^{mot}
apart (from)	out^{P} (of)
around	outside (of)
away (from)	over^{mot} (cf. above)
(in) back^{mot} (of)	someplace^{w}
backward(s)^{mot,w}	somewhere^{w}
below	there^{w}
beneath	through^{mot}
by	throughout^{mot}
down	under^{mot} (cf. below)
down below	underneath, underground
down { stairs^{w} / state / town }	up^{mot} up above up {stairs}^{w} (etc.)

TABLE 1.--Continued

downward(s)$^{mot, w}$	upward(s)$^{mot, w}$
elsewhere^{w}	yonder (cf. beyond)
everywhere^{w}	
farther, further$^{mot, w}$	
forward(s)$^{mot, w}$	

Not on the above table are two words which seem to be in complementary distribution, *at* being locative mainly, *to* being mainly motive. *To* and its antonym *from* can be used with both motion and c/s verbs, as can the compound of *to*, *into* and its antonym *out of*. These form the substance of those elements heading complements common to both type of verb.

The first I will discuss is *into*. Motion verbs take *into*-phrases (3,4) and their corresponding *in* adverbials (5,6).

(3) Mandrake went into the river laughing.

(4) Mandrake came into the room to get his wand.

(5) Mandrake went in laughing.

(6) Mandrake came in to get his wand.

c/s verbs also take *into*-phrases (7-9), but, it is interesting to note, there are no corresponding *in* adverbials with such verbs (10-12).

(7) Shirley went into hysterics.

(8) Xerox developed into a major success.

(9) Mandrake turned the girl into a candy bar.

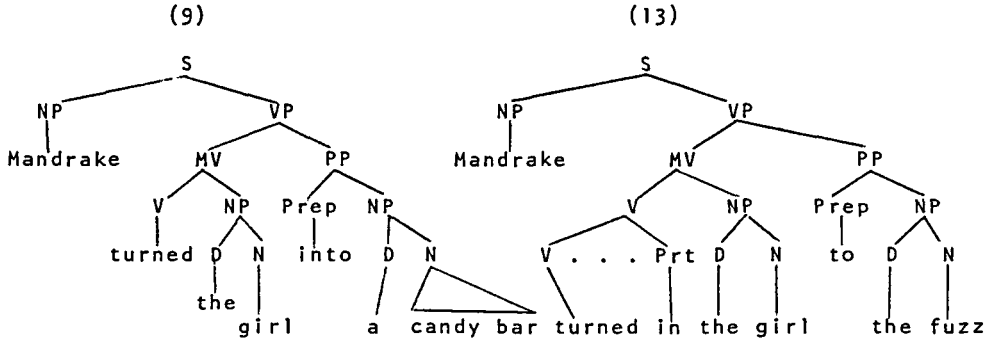
(10) *Shirley went in.

(11) *Xerox developed in.

(12) *Mandrake turned the girl in.

In regard to (12), compare the surface structure of (9) with that of (13), of which the sentence (12) is the correspondent:

(13) Mandrake turned the girl in to the fuzz.



I have used a discontinuity in (12). The point, of course, is that in (9) *to a candy bar* is not a constituent, whereas in (12) *to the fuzz* is. One merely deletes a constituent to get from (13) to (12).

A third use of *into* is that in complement structures, where it is equivalent to *to* in *get . . . to* phrases, so that there are regular paraphrases such as

(14) Mandrake got Shirley to unload the truck by sweet-talking her.

(15) Mandrake sweet-talked Shirley into unloading the truck.

Another use of *to* is in phrases like *turn to begging, change to Kents*, and *force to vote* (cf. *force into voting* and *force into a round hole*).

The antonyms of *to* and *into*, namely *from* and *out of*, share their general properties. (3-9) can be paralleled by (16-22), (14-15) by (23-4), and the above phrases by those in (25).

(16) Mandrake {went / kept} out of the river laughing.

(17) Mandrake {came / kept} out of the room to get his wand.

(18) Mandrake {went / kept} out laughing.

(19) Mandrake {came / kept} out to get his wand.

(20) Shirley stayed out of hysterics.

(21) Xerox developed out of a small firm.

(22) Mandrake made the candy bar out of a girl.

(23) Mandrake kept Shirley from unloading the truck by sweet-talking her.

(24) Mandrake sweet-talked Shirley out of unloading the truck.

(25) turn from begging, change from Camels, keep from voting, etc. (cf. keep out of trouble: get into trouble)

These expressions have been discussed in somewhat greater detail in Binnick 1968c; also see below.

The second class of similarities concern the verbs entering into motive and c/s expressions, starting with *be*, which expresses states associated with these, namely location and state proper (essivity). To a certain extent the locative use of *be* may be compared to the Spanish verb *estar* (from Latin *stō* "stand"), the essive use to *ser*, although these correspondences are inexact. Aside from this double use of *be*, however, there are great differences between the locative and the essive, although the two seem brought together in existential expressions such as *there is*. The differences might be briefly noted here.

The causatives of the two *be's* are different: the essive has *make*, the locative *put* or *set*. It is not hard to find evidence that either *make* is the (or a) causative of *be* (cf. Cl. Mong. *bayilgaqa* from *bayiqa*) or that, alternatively, in sentences such as (26) there is a deleted *be*:

(26) Quixote made Sancho into the governor of a province.

This follows from the fact that sentences containing *be* never show up as complements of *make* , whereas all other verbs do. A sentence like (27)

(27) Quixote made Sancho be the governor of a province.

simply does not paraphrase the above sentence. The *makes* are different. If *make* either incorporates or deletes *be* then we can explain not only this gap but the appearance

of NP complements, as in (28):

(28) Quixote made Sancho the governor of a province.

or PP complements, as in (26).

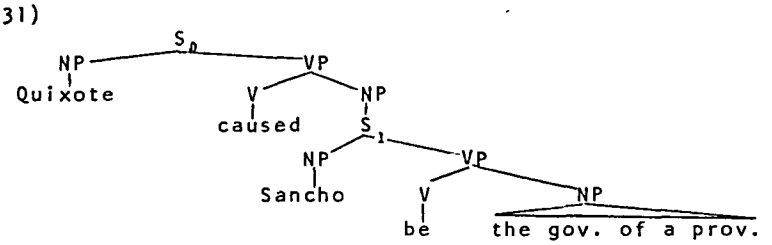
Furthermore, deletions of one element or another from a sentence containing *make* do not arrive at the results we would predict if the complements of *make* were independent. (29) is not, for example, a close relative of (28), nor is (30).

(29) Quixote made Sancho.

(30) Quixote made the governor of a province.

This is perfectly explainable if the underlying structure of (28) were like (31), because the derivation of *make* depends crucially on its role linking elements which are closely bound, namely the two NP's of S_1 after *be* has been raised to form part of *make*.

(31)



Essentially the same arguments apply to *put* and *set*. It happens that *make* does not act as causative with locative *be*, thus compare:

(32) a. John is king.

b. They made John king.

(33) a. John is in Rome.

b. *They made John in(to) Rome.

c. They put John into Rome.

This is precisely the role of *put* and *set*. And again we can argue for this result from the absence of sentences like the following, supposedly related to (33c).

(34) They put John.

(35) They put into Rome.[2]

It should be noted that whereas *be* takes locative prepositions, *put* and *set* take motive ones.

Harking back to the similarity of locative and essive *be*, it should be noted that *be* forms a perfect with both kinds of state, as in (36-37). See below for the use of the *sein* ~ *être* perfect.

(36) This soldier is newly wounded.

(37) This soldier is newly arrived.

In regard to the causative, a certain amount of support is obtained from the close parallel of such pairs of idioms as *be friends with* and *make friends with*, *be off (with)* and *make off (with)*. (Admittedly these are overshadowed by the quite different idioms of *be* and *make*, and the case is not as clearcut as for *come* and *bring*. [See Wood 1967 from which I have drawn my data.]) Idioms with *be* with no correlate with *make* include be afraid to, of, that, be in with, be up to[2], be up to much, etc. (A superscript numeral refers to the number of different meanings.) Those with *make* with no *be* correlate include *make* . . . a clean breast of, a move, a play for, away with, certain, do, do with(out), ends meet, for, fun of, game of, good, haste, head or talk of, it, light of, money, much of, something of, someone of, out, over, shift with, sure, the fur fly, the grade, tracks, up, up for, up one's mind. Be out, get out, and put out (information, say) form a nice triad, but in general *put* is as refractory as *make*. Still, the data seems to indicate a close relationship between *make* and *be* on the one hand and *put* (or *set*) and *be* on the other.

To say further that the two *be*'s differ in their complements would be circular in that it is only by their complements that we can tell them apart. But they probably do differ on the semantic level.

Another verb linking motion and c/s is *get*. *Get*, like *turn*, but unlike *change*, can take an adjective complement, as in (38) *John got livid*. But whereas *get* (like *turn* and *make*) can also be a causative verb (as in [39], but cf. [40]), the sentence (41) cannot be paraphrased (42), even if he *is* a magician, nor can (43) be paraphrased by either (44a) or (b).

(39) a. Bill got John angry.

b. turned

c. made

d. *changed

(40) a. Bill turned the leftovers into a tasty dish.

b. made

c. changed

d. *got

(41) Mandrake got Shirley pregnant.

(42) Mandrake turned Shirley pregnant.

(43) Bill got the book into the slot.

(44) a. Bill turned the book into a slot.

b. changed

Get also paraphrases *have* and *be* in forming the passive:

(45) This soldier got *wounded* at the Marne.

I have already mentioned the causative usage of *get* in

(46) Mandrake got Shirley to ring his chimes.

There is a corresponding intransitive use in

(47) Shirley got to ring Mandrake's chimes.

There is also a purely motive use of *get*, as in

(48) Sam got out at Adams St.

(49) Harry got to Rome before the Pope did.

Both in such sentences and "goal" sentences such as (50), *get (to)* paraphrases *reach*.

(50) Shirley got (to) the solution before Harry did.

Get is interesting because it acts as an inchoative to both *be*'s, locative in (43), essive in (39).

Turn, a verb of motion, also serves as a verb of c/s. This is by no means restricted to English. In the Spanish language the verb "turn" (*volver*) serves also as verb of c/s, and there are such perfect glosses as English *return* and Spanish *devolver*. French *devenir* "become" is a derivative of *venir* "come", and German *werden* "become" is an old verb of motion as well.

Reach is another verb common to both, signifying either arrival at a state or arrival at a place.

All the verbs of duration (*keep*, *stay*, *remain*) are held in common:

(51) a. Harry kept off the road.

b. Harry kept off smoking.

(52) a. Harry stayed away from Phoenix.

b. Harry stayed away from poverty.

(53) a. Harry remained in New York.

b. Harry remained in agony.

Finally, the arch-motion verbs, *go* and *come*, serve to represent c/s as well, as in

(54) Harry went mad.

(55) The soldier never came to.

(56) Jean came to taking dope.

(57) The hobo came into money.

(58) Karen went into hysterics.

There is a very close relationship as well between these verbs and locative *be*. This is discussed in Binnick 1968a. We will refer to this relationship later.

Another way in which motion is like c/s is that the notions of state, inchoation, and c/s proper all apply to both in precisely the same way, whereas they do not apply so well

(if at all) to other classes of expression, although state itself is so general a notion that in a secondary sense they do. One might argue, for example, that in (60) John is in the "state" of "doing a cross-word puzzle." We can characterize the first two notions as roughly equivalent to Gruber's durational and motional respectively. Gruber fails to recognize a separate category for what I call c/s proper.

By state here I mean either what is usually referred to as a state, or on-going action at some moment. Thus state in this wider sense is expressed by *be* or the durational verbs--*stay*, *keep*, *remain*, etc., as in (59-63).

(59) John is in trouble.

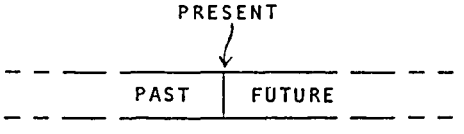
(60) John is doing a crossword puzzle.

(61) John stayed in trouble.

(62) John kept on doing the crossword puzzle.

(63) John remained in Rome.

(61-63) clearly show that the durational verbs, as well as *be*, apply to both stative and active verbs. A state in this sense takes place over a period of time; that is its characteristic. Because the present is only a point in time,



to express an action on-going at the present the *ing*-form is used; one can argue that the *ing*-form does not represent such a usage in the past or future simply because they are not points. This argument is weakened because of the different grammar of stative verbs, but I think it basically true. In any case, states can be represented as taking place over a period of time, or as occurring "at" (really "through") a point in time:

(64) At 3 P.M. yesterday Harry was jogging around the block.

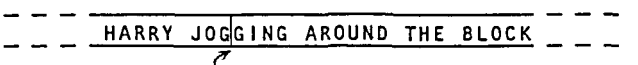
Notice that (64) is different from (65) in that (65), if understandable at all, implies that the entire, complete act of jogging around the block took place in a negligible period of

time either surrounding, beginning at or ending at 3 P.M. yesterday, whereas (64) has none of these implications.

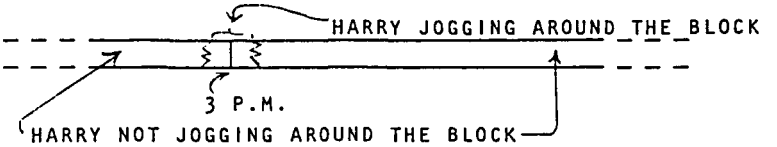
(65) At 3 P.M. yesterday Harry jogged around the block.

We might represent (64) by the diagram (66a) and (65) by (66b).

(66) a.



(66) b.



A certain amount of ambiguity creeps in here because jogging around the block and having jogged around the block are two different things. One is an activity in Vendler's terms, the other is not. Jogging around the block does not imply that one has actually gone around the block, although if one is going around more than once, one could have, whereas having jogged around does. In other words, (64) merely states that at 3 P.M. Harry was jogging, although in some sense he was intending (or fated!) to go completely around the block by jogging.

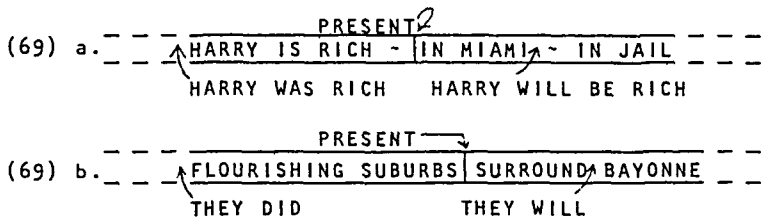
Jogging is, of course, a state in our wider sense. But suppose a runner were detailed to go from Athens to Sparta with a message and decided to jog the way. We could then regard the jogging as a journey between two states, being in Athens and being in Sparta. If he jogged all the way TO Sparta, it is a necessary concomitant that he should have arrived AT Sparta. We can regard motion then as an inchoateness between two locative states, just as we might regard dying as an inchoatness between two essive states, being alive and being dead. That we can say of a person that he is arriving, although he has not yet arrived, as we can say he is dying, although he has not yet died, shows that these inchoate states are quite different in some way from states proper, at least in their linguistic expression.

Consider in this regard stative verbs, as in

(67) Harry is rich - in Miami - in jail.

(68) Flourishing suburbs surround Bayonne, New Jersey.

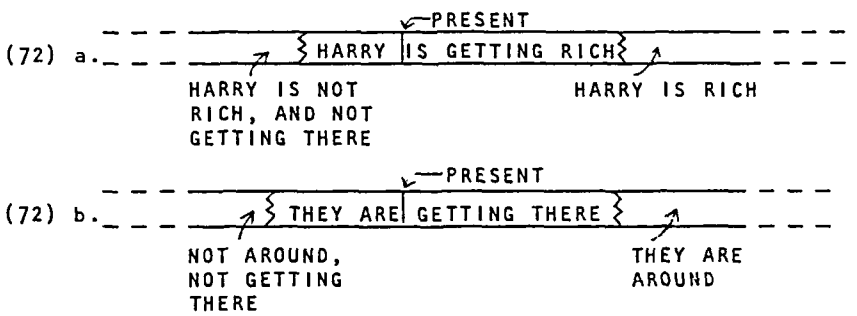
We might represent these thusly:

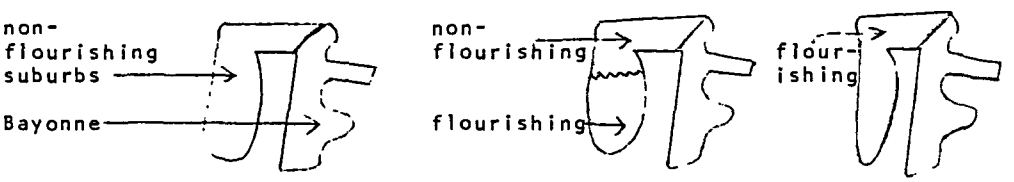


Notice however that in the *ing*-form the implication is that whereas Harry is not quite rich, or the flourishing suburbs do not quite surround Bayonne, they are both on their way to doing so. Thus we could represent (70) by (72a) and (71) by (72b).

(70) Harry is becoming - getting rich.

(71) Flourishing suburbs are surrounding Bayonne, N.J.

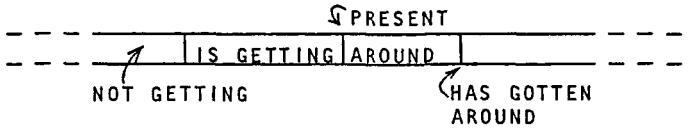




Precisely the same relationships hold for motion. Thus (73) can be represented by (74):

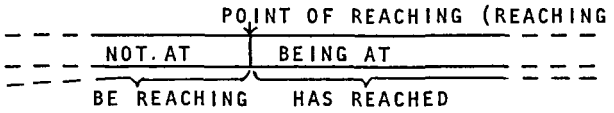
(73) Harry is getting around the block by jogging.

(74)

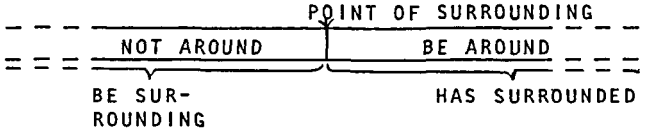


In the same way, *reaching* involves approaching without yet actually arriving. Surrounding, however, is ultimately a state, the end of the surrounding action, but there is no corresponding reaching state which is the end of the reaching action. Reaching is merely a transient between the approach and locative states. When you surround something you can keep on surrounding it, but when you reach something, you are there, in no real sense can you keep on reaching it. These facts apply to both senses of *reach*. When you reach wealth you are wealthy, etc.

(75)



(76)



Change-of-state proper, therefore, is a transient between an inchoation and a new state.[3]

Now I will just present some similarities in the use of causatives formed from verbs of motion and from verbs of c/s:

GET HIM N (a job) = CAUSE HIM TO GET N (a job)

GET HIM {INTO TROUBLE / INTO A STRAITJACKET} = CAUSE HIM TO GET {INTO TROUBLE / INTO A STRAIGHT-JACKET}

GET HIM Adj (beaten, rich) = CAUSE HIM TO GET Adj (beaten, rich)

KEEP HIM N (his job) = CAUSE HIM TO KEEP N (his job)

KEEP HIM Adj (happy) = CAUSE HIM TO {STAY / KEEP ON (BEING)} Adj (happy)

KEEP HIM {IN TROUBLE / IN A BOX} = CAUSE HIM TO {STAY / KEEP ON} {IN TROUBLE / IN A BOX}

FLY HIM INTO ROME = CAUSE HIM TO FLY INTO ROME

SEND THE BALL FLYING INTO THE STANDS = CAUSE THE BALL TO GO FLYING INTO THE STANDS

[ROLL / SEND / BRING=TAKE / PUT] IT DOWN THE HILL = CAUSE IT TO [ROLL / {GO ROLLING} / GO / COME / BE] DOWN THE HILL

PUT IT INTO THE CORNER POCKET = CAUSE IT TO GO INTO THE CORNER POCKET

[CHANGE / TURN / MAKE] HIM INTO N (a drunk) = CAUSE HIM TO [{CHANGE / TURN} INTO (a drunk) / BECOME (*INTO)]

PUT HIM UP TO {MURDER / MURDERING THE CHAIRMAN} = CAUSE HIM TO {COMMIT MURDER / MURDER THE CHAIRMAN}

KEEP HIM FROM {MURDER / MURDERING THE CHAIRMAN} = CAUSE HIM TO { KEEP FROM / {STAY / KEEP} AWAY FR / {STAY / KEEP} OUT OF } {MURDER / MURDERING THE CHAIRMAN}

GIVE HIM TO BELIEVE = CAUSE HIM TO BELIEVE

RELEASE HIM FROM HIS INHIBITIONS = CAUSE HIM TO BE FREE OF HIS INHIBITIONS

RELEASE THE PROLETARIAT FROM ITS CHAINS = CAUSE THE PROLETARIAT TO BE FREE OF ITS CHAINS

From what I have written above, it seems clear that there is a great parallelism between verbs of motion and c/s verbs. The only reasonable explanation is that motion is a kind of c/s, and that the two classes are identical on a deeper level. This solution is implicit in the treatments of Lyons and Gruber. The terms "locational" or "durational" and "directional" or "motional" merely define the two main categories, while subsuming their application both to motion and c/s verbs. But Gruber's terminology suggests that the motion--c/s split is as valid as that between motional and durational, while Lyons offers no real explanation for, nor even a general statement of, the phenomena.

Therefore we must build from scratch a theory of c/s which incorporates the motion verbs. In order to clarify the problem, I have divided it roughly into three parts: I will concern myself with the causatives of motion and c/s, isolating the special side issues of causation, purpose, and instrumentality.

I will also be concerned with inchoation--both inchoation proper and transience. Here I will particularly discuss motion as inchoation and transience. I will discuss the semantic primes and most-underlying structures of state.

In general I will be arguing that the syntactic properties of lexical items are deducible from the semantic primes and structures underlying them, that is, that essentially all syntactic properties can be expressed on the semantic level. This is related of course to the treatment of a grammar as something that can only handle good material; "if garbage is inputted, garbage is outputted," as the computer technologists say.

I noted above that there were two basic uses of *be*, which corresponded to the meanings incorporated into *make* and *put* respectively. I called these the *essive* and *locative* meanings. John Lyons notes that four uses of *be* have been distinguished (1968:389-90): the existential, equative, attributive, and locative, and that the last three have usually been grouped together by linguists in opposition to the first. Lyons himself seems to feel that the existential is merely a special case of the locative, arguing from the general necessity of a locative or temporal complement with an existential expression, the close similarity of existential and locative sentences (he quotes *Coffee will be here in a moment.* and *There will be coffee here in a moment*). Because existentials have an indefinite subject as a rule, Lyons argues for their treatment as "indefinite locatives." As a final argument, he repeats the well-known fact that the existential *there is* of English, *il y a* of French, and *ist da* of German are derived from obviously locative expressions. (The regular translation of *il y a* in German is *es gibt*. But the use of *ist da* approaches *es gibt*. Wolfgang Borchert, particularly in such short stories as "Stimmen sind da in der Luft--in der Nacht" and "Die drei dunklen Könige" in his *Gesamtwerk*, Rowohlt, various editions, uses *ist da* in such a way, as when he writes of a starless night, "Sterne waren nicht da.") Since the equative and attributive uses are probably just special cases of set membership, as noted in Lyons (1968:389), it seems that Lyons reaches the same conclusion as I did, namely that there are just two basic uses of *be*.

The question arises as to whether *be* is an underlying verb, and if so, how many. It is now generally accepted by transformational linguists that the essive *be* at least is not an underlying verb. G. Lakoff (1965) presented evidence that *be* with adjectives is not; I think it is not difficult to

argue against an underlying essive *be* in general, and on similar grounds as Lakoff's argument. But what of the locative *be*? If it is the same as the essive *be*, then no underlying *be* occurs at all, but if it is different, there remains the question of whether the locative *be* is an underlying verb. Let me first consider whether the two uses represent different underlying verbs. I will present evidence both for and against, and despite my conclusion, I am still not strongly convinced one way or another.

I will start with the evidence for two *be*'s. The first piece of evidence is that *be* has two different causatives. (However, in some languages, such as Mongolian, it has only one: thus Classical *bayiɣul-*, Mod. Standard *bajɣuulax*, 'cause to be or exist; create, realize, establish, institute, found, organize, build, erect, construct; from Cl. *bayi-*, Mod. St. *bajx*, be, stay, exist, live, reside, occur'). A similar argument is based on the fact that *become* cannot be used to indicate coming to be at a place. However, this fact could be considered as a limitation on the derivation of *become* from *come to be*, rather than evidence bearing on the meaning of the *be* underlying *become*. Also, it is not impossible that rather than *make* optionally incorporating *be*, that *be* simply deletes obligatorily with *make*. This argument, or counter-argument, is weakened by the fact that the causative or compelling *make* does occur with the active *be*, as does *have*: *Harry made Susan be pretty for the party*; *the playwright had Susan be stupid in act III*. (I believe this type of sentence was devised by Georgia Green.) Another piece of counter-counter evidence is the creation verb *make*, which looks very strongly like a causative. (See Fillmore 1968:3.)

Considering the active *be*, it should be noted that it can occur only in the essive, not the locative. If Sue is pretending to be in Rome, she can nonetheless still not say "I'm being in Rome," whereas if she is pretending to be dumb, she can very well say, "I'm being dumb."

A third type of evidence concerns the use of the verbs *ser* and *estar* (*ésser* and *estar* in Catalan). It is usually said that *ser* in Spanish (and *ésser*) "expresses what is inherent, characteristic or permanent," while *estar* represents "a temporary attitude, estate, condition, or an accidental quality" (Gili 1952:54-55). As far as location is concerned, in Spanish *estar* is exclusively "used to denote the location of a person or thing, even though it be a permanent one," (Ramsey 1962:308.) and *ser* is never so used, while there are various functions (such as with a nominal predicate) where *estar* is never used. This rather simple usage does not hold in Catalan, where *ésser* is used for "the place where

someone or something happens to be," while *estar* is used "to denote the place where one lives permanently, as opposed to a temporary residence for which *ésser* is used" (Gili, *idem.*).[4]

A fourth type of evidence concerns the separate existence of one or more verbs translating "be" in languages where expressions such as "be angry" tend to appear as independent verbs. In Mongolian, for example, there has never been a strongly independent verb "be," although the verb *bai-* has tended to take on this role in the modern dialects. Many separate verb stems have been used, with overlapping functions, although each has retained a core meaning based on its original sense. Thus in Cl. Mong. there were *a-* (related to *ami-*, 'live'?); *bu-*; *bayi-*, originally 'stand'; *bol-* 'become' and the existential *bui*. In general, *bayi-* has retained its locative flavor, and extended to existential uses only secondarily (see de Smedt and Mostaert 1933:146).

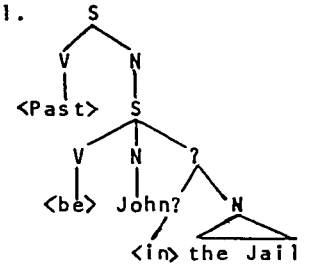
We might compare Hieroglyphic *wn(n)*, which developed from a motion verb. It was used only for existence, other uses of *be* being expressed without a verb, using the preposition *m*, which meant "in, on; as." (Gardiner 1961, §§107, 162.)

In Japanese, several verbs are used. The most typical copular verb is *da* or *de aru*; *aru* is existential or possessive; and *aru* or *iru* locative, *iru* if the subject is human (examples from J. McCawley).

Thus despite the connection Lyons finds between existentials

John was in the jail.

1.



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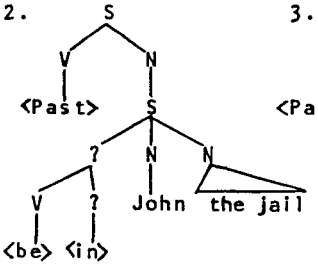

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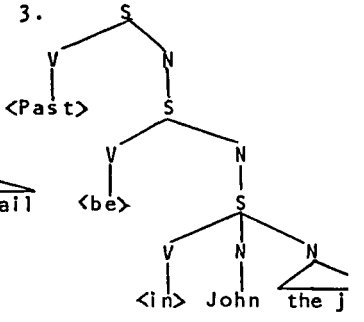
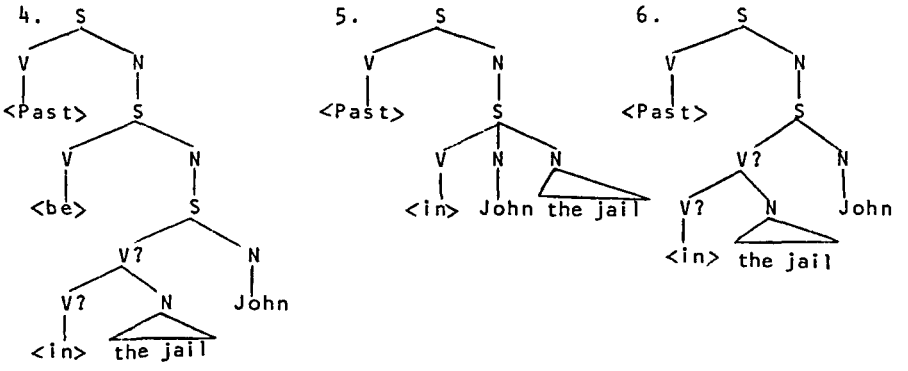
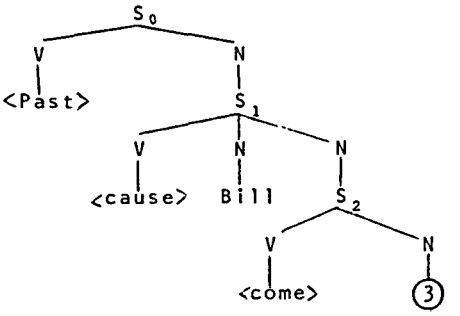




Bill caused John to come to
be in the jail.

Bill caused John to go (in)to the jail.

Bill sent John to the jail.



<cause>

+<go>

⇒*send*

and locatives, many languages tend to separate the two formally. Certainly the locative is a distinct form, probably in all languages to a greater or lesser extent.

However, there is more counter-evidence to the above arguments than noted above. To begin with, that English can use one verb for both meanings with no confusion may argue

for a kind of semantic complementarity which would argue against two different underlying verbs.

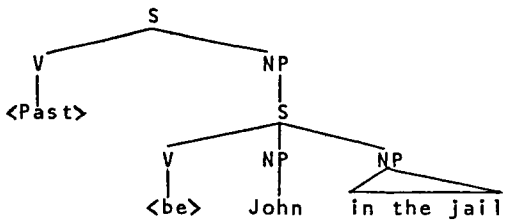
Secondly, one could very well argue that the difference between *ser* and *estar* is not one of locative or essive, but rather of permanent versus impermanent. Location is thus seen as merely a special case of impermanent state. Alternate proposals can be made. But this argument may be persuasive.

Finally, the use of a single verb for both meanings, as in English, or the change, often found, of a verb like 'stay' or 'stand' (Latin *stō*, Mong. *bayi-*) to a *be* verb, argue for a closeness difficult to explain if two different underlying verbs are concerned.

Thus there is evidence in both directions. Before making a final judgment, one ought to consider whether it is likely that no underlying locative occurs, which is a possibility if there are two different verbs.

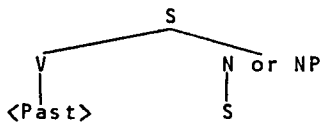
In this regard, consider the trees proposed for *John is in the jail*. Above are drawn six obvious candidates for the underlying structure of the sentence *John was in the jail*. Since drawing this page J. McCawley has suggested another possibility to me, namely:

7.



"where *in the jail* is a definite description for 'the inside of the jail' or something such."

Uncontroversial here is the *Past* predicate. The tree in any case must have at the top:

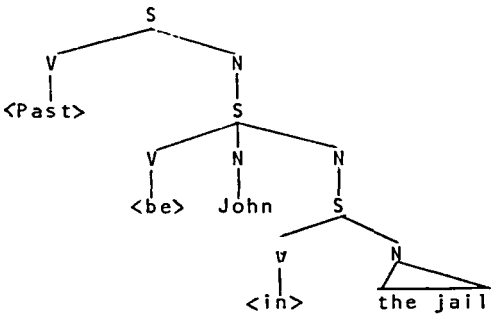


Now we must question what the predicate under the lower S is.

If it is *be*, then we might try to relate *John* to *in the jail* as in (1), (3), (4) or McCawley's (7). If not, then perhaps *in* is the predicate, thus in (5) and (6). In (2) both form a composite. I did not suggest that *in the jail* be treated as the main predicate of the lower S. I doubt if anyone can find good arguments for any other (8th) tree.

Since drawing these trees I have realized that tree (1) should be labelled as follows:

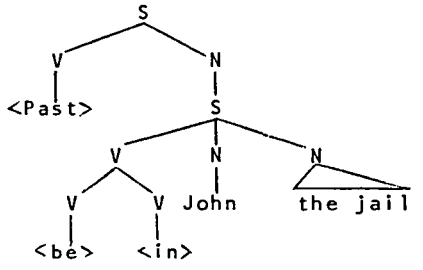
(1)



I am not convinced that this differs substantially from McCawley's proposal.

Tree (2) should be drawn:

(2)



This tree looks much like a derivation from a tree in which *in* is the predicate of a third, lower S. Such a solution seems unlikely. Similarly, the higher questionable V in (4) looks like a derived VP. (6) is essentially (4), differing only in *be*, as differ (3) and (5).

I will argue here for an underlying locative *be*. If *John came to be in the jail.* is a true-paraphrase of *John went*

to the jail, we ought to expect that they should be derivational variants. In particular, starting with a structure with *be* in it (say trees 1, 2, 3, 4, or 7), we raise the *be* and then incorporate, mapping <come> + <be> ⇒ *go*. If correct, then trees (5) and (6) are ruled out.

If so, is it (1), (2), (3), (4), or (7)? It is not likely (2), because there is no reason to suppose that only part of the predicate should be raised. (1) and (7) are objectionable because they falsify the relationship between John and the jail. We are not asserting "in-jailedness" of John, but rather stating a spatial relation between John and the jail. The same objection could also be raised against (4). In light of this, I would promote (3) as the proper underlying tree, for which reason I have awarded it a star.

In this section I will be concerned with both inchoation and causation.

Becoming is coming to be, either adjectivally or nominally. The complements of *come to be* are those of *become*, *become*, like *come to be* has as its closest possible causative *make* or *bring* (*bring into disrepute*), and the various semantic subtleties of *become* are precisely those of *be*, as we would expect if *become* derived from *come to be*. The fact that *be* + *come* resembles *come* to *be* is sheer accident. This *be* is that of *beguile*, *bewitch*, etc., it itself is inchoative here (though usually in all other cases than *begin* causative). There is no reason to assume therefore that we are confronted here with a reversal transformation.

But inchoation is not a simple process. We have already distinguished gradual change from sharp change. *Get* is essentially a verb of sharp change: you get rich, get shot, get to Rome. *Getting* represents a gradual change; *get* is thus much like statives in that its progressive represents gradual change the completion of which is a new state: you get after getting as you surround after surrounding. Both *get* and *getting* apply equally to motion and c/s.

Causation raises more problems.

It might be thought that the structure of a sentence like (78) might just be (77) embedded in a structure like that of (79).

(77) Harry came.

(78) Sam brought Harry.

(79) $_{S}[_{V}[\text{cause}]_{V}\ _{N}[\text{Sam}]_{N}\ _{N}[S{=}77]_{N}]_{S}$

However, it might also be thought that the structure of (5) is that of (80) embedded in (82),

(80) Harry went.

(81) Sam sent Harry.

(82) $_{S}[_{V}[\text{cause}]_{V}\ _{N}[\text{Sam}]_{N}\ _{N}[S{=}80]_{N}]_{S}$

obtaining thereby complete parallelism. Unfortunately, this is not the case, since (78) can imply that Sam himself, came, whereas (81) cannot imply that Sam went. Indeed, we have to distinguish three uses of *bring*.

In one use, Sam himself does not come. I doubt if this can be used with the (true) motion sense (but cf. 83)

(83) The missilemen brought the rocket down with an anti-missile.

but with the metaphorical it is usual. Thus (84) implies Sam "came up," whereas (85) does not.

(84) Sam brought Harry up (along the incline).

(85) Sam brought Harry up (in the committee's discussion).

In two other senses Sam comes up as well, but in one Sam has actually caused Harry to come with him, to accompany him; they come together. In the other Sam and Harry are only accidentally, temporally and/or locally, connected; they come together only in the sense of at the same time and/or place. This latter sense is that to be found in sentences like (86) and (87).

(86) The new year brought new taxes.

(87) The sailors unwittingly brought the plague on their ship.

The middle sense is the commonest one.

The two latter senses can be paraphrased by *come with* and *come together*. Thus (87) relates to (88) and (89):

(88) The plague *came with* the sailors on their ship.

(89) The sailors and the plague came together on the sailor's ship.

Come with, however, is symmetrical. Sentences with *with* are ambiguous. Thus (90) can answer either (91) or (92), with two different meanings.

(90) I came with Sam.

(91) What are you doing here?

(92) Whom did you bring?

Therefore *come with* is four-ways ambiguous, although some of the meanings are commoner than others. *Come together*, however, is not ambiguous, because *together* is neutral as to the causality or non-causality of the couple. *Accompany* shares the ambiguity of *come with* and must therefore be either a gloss of it or a structure parallel to it.

(90) in the causative sense (cf. 91), can only be identified with (93).

(93) I was brought by Sam.

But (93) must be derived from (94) if we are to maintain *bring* as a causative (of *come*):

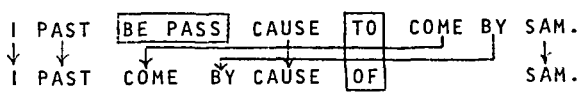
(94) I was caused to come by Sam.

How to get from (94) to (90), which is morphologically very different? Can we just delete *was caused to*? Or do we need a special logic component to factor that phrase out? Neither. Cf. (95).

(95) I came because of Sam.

Morphologically, this is quite like (96):

(96)

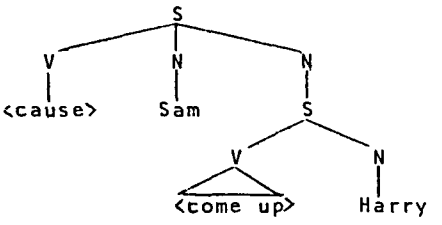


Moreover, by and with are known to be related. Therefore it should occasion no surprise that (94) and (95) are the same.

The three *brings* must have different sources. That of

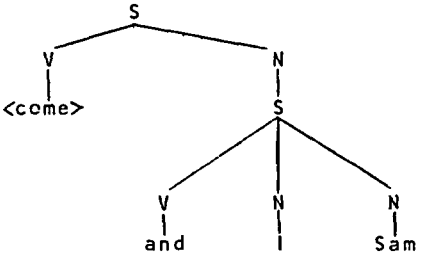
(83) or (85) undoubtedly results from an embedded *come*, thus:

(97)



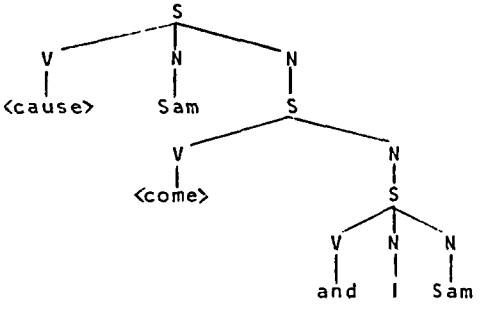
The *bring* and *come with* of neither (90) answering to (91) nor that to (92) can have as its source (98).

(98)



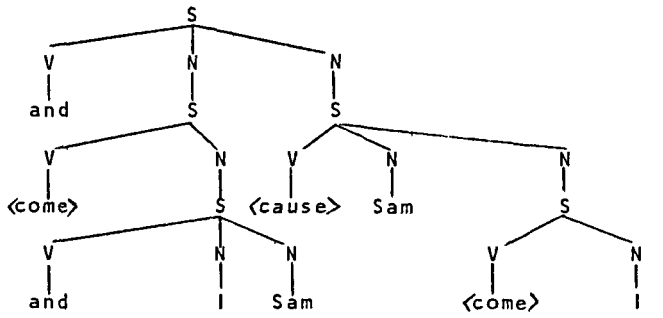
A structure like (98), however, might be the source of sentences like (88) and (89). Presumably (90) involves an asymmetry as to who brought who; there must be a causative element. But (99) is not likely.

(99)



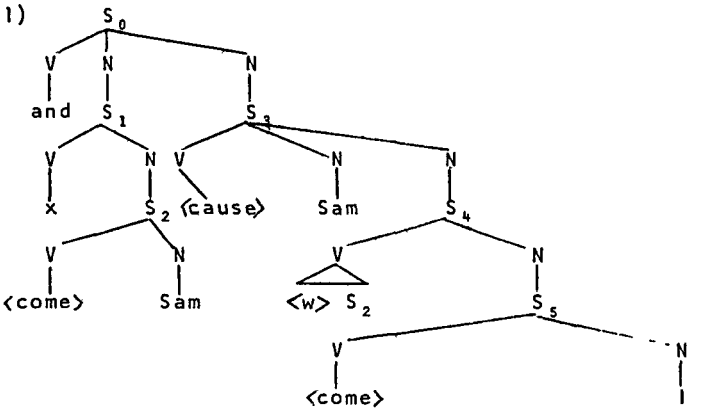
Nor is (100) very likely (for the 91 meaning, say):

(100)



The following information must be included: Sam came, I came, we came together, that is, at the same time and place, and I came because of Sam. If we symbolize "where and when" as w , then the proper structure is most likely (101).

(101)

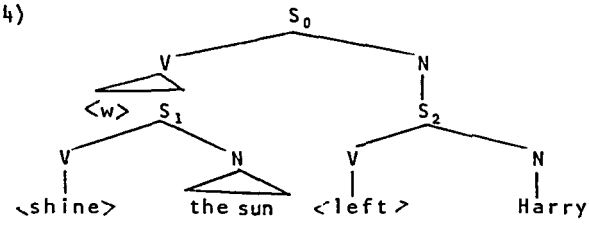


Similarly, (102) can be diagrammed (104), while (103) must be diagrammed (105).

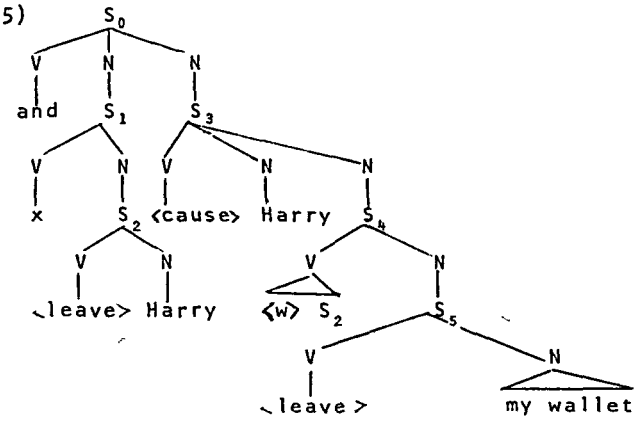
(102) Harry left with the sun's first shining.

(103) Harry left with my wallet.

(104)



(105)



The paraphrases of (85) are:

(106) a. Sam caused Harry to come up.

b. Sam caused Harry's coming up.

c. {Sam brought Harry up.
Sam brought up Harry.

d. Harry came up because of Sam.

e. Harry was caused to come up by Sam.

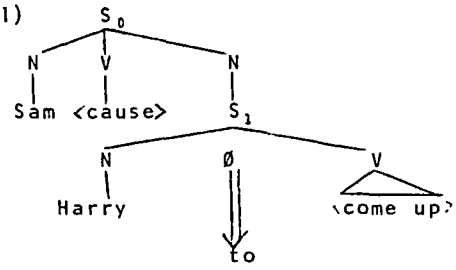
f. Harry was brought up by Sam.

g. Harry's coming up was caused by Sam.

h. Harry's coming up was because of Sam.

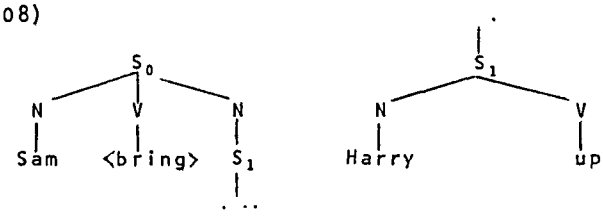
(106a) can be derived from (97) merely by a rule of NOUNS FIRST, needed anyway:

(107) (21)



If S_2 is instead nominalized, we get (106b).[6] A rule of PREDICATE RAISING would raise the *come* of S_1; it could then be incorporated with the cause of S_0 into *bring*.[7]

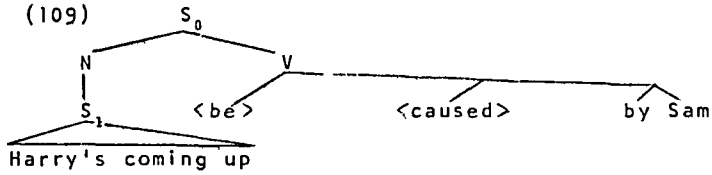
(108)



This explains (106c).

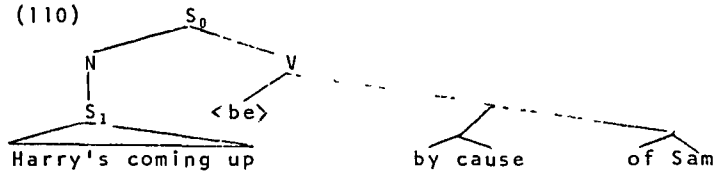
If S_1 is nominalized and passivization applies, we get for (106g):

(109)



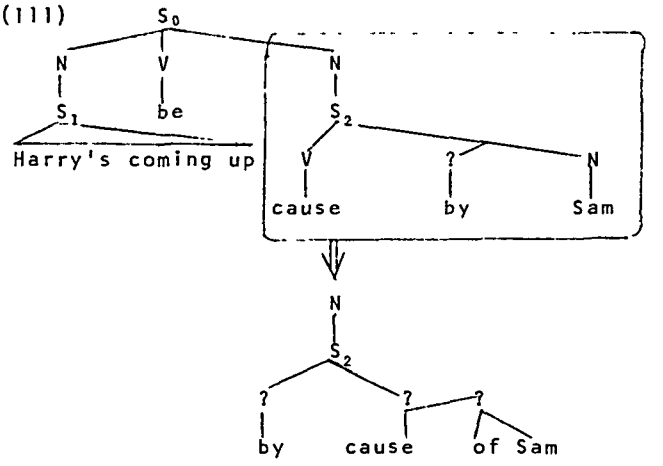
This is probably quite wrong in detail, but on the whole it is correct; it is also undoubtedly the source of (34), that is, (106h).

(110)



Cause of Sam must be a nominalization. Therefore the structure of (110) is actually (111):

(111)



Similar considerations apply to the remaining sentences.[8]

(90) clearly contains the propositions.

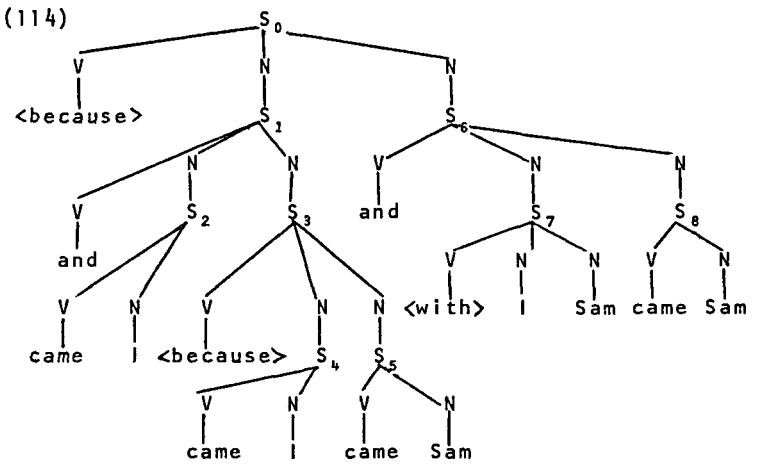
(113) a. I came.

b. Sam came.

c. I came because of Sam coming.

d. (c) because I was with Sam.

One way of diagramming this is (114), but in context much of is is presuppositional and will not actually appear in the structure.



Bring and *take* present far more problems than the other verbs in question here. *Send* can reasonably be regarded as *cause to go*, *put* as *cause to be*, and *make cause to be*, or *cause to become*. Certainly there is no question in the cases of the causative *get*, *turn*, and *change* that these incorporate cause plus their homophonous non-causative verbs. A similar relationship seems to hold between *keep* and *stay* and *retain* and *remain*.[9] For these verbs major problems arise only when more than two embeddings occur, as in

(115) Harry kicked Zelda into the river.

The underlying structure here is undoubtedly the same as that underlying (116) and (117).

(116) Zelda went into the river because Harry kicked her.

(117) Harry sent Zelda into the river with his kick.

Semantically, *kick* in (115) may be regarded as incorporating <cause>. Somewhere there has also been a <go>. Cf. (118).

(118) Stephen whipped O. into submission.

Therefore we have to regard (115), (116), and (117) as incorporating at least these notions:

(119) Zelda came to be in the river.

(120) Harry kicked Zelda.

(121) (119) was caused by (120); (alternately)(120) in order that/so that (119).

The questions raised by the facts will be considered as part of a larger set of questions in Section 2.32.

2.3. Predicate-Raising: Causation and Other Notions.

One class of complement verbs may be called instrumental verbs. These are verbs derived from the names of instruments or materials of various kinds. In various papers I have subclassified these according to the nature of the instrument and the kind of complement which the verb takes. A rough categorization is found in Table 2.

The constructions into which these verbs enter are shared by other transitive verbs such as *kick*, *push*, etc., by real complement verbs such as *dub*, *name*, etc., and even by such verbs as *write* (*Harry wrote a redhead into his play*) The complements in these constructions typically are inchoatives or motives--the subject matter of the section on change of state.

Despite the superficial similarity, there are real differences between all of these verbs. (2a) is obviously related to (2b), part of (2a) being deleted to get the latter.

TABLE 2

Class 1	Class 2	Class 3	Class 4
file	dirk	brush	whip
hammer	wrench	comb	flail
sand(paper)	knife	rake	strap
saw			
sift/sieve/			
plane			
iron			

TABLE 2 (continued)

Class 5	Class 6	Class 7	Class 8
nail	carpet	muzzle	ladle
plug	tile	(be)net	spoon
screw	shingle	shackle	fork
rivet	(wall)paper	chain	skewer
rope	varnish	fetter	
glue	paint	fence(in)	
paste	gild/gold/	gag	
tack	sod	handcuff	
staple	veneer	manacle	
(paper)clip	gum	tether	
	soap		
	oil		
	slate		
	salt		
	roof		
	floor		
	water		

Class 9	Class 10	Class 11	Class 12
bridle	pack	(instrumental motion verbs)	(instrumental communication verbs)
harness	bag	jet	(tele)phone
saddle	bale	boat	cable
dress	box	cycle	radio
shoe	jug	ferry	telegraph
	package		semaphore
	bundle		
	sheathe/sheath/		
	pocket		
	palm		

(2) a. Harry kicked Marsha into the river.

b. Harry kicked Marsha.

(3b) could also be explained as a deletion from (3a), but here the relationship is not so clear.

(3) a. Harry boxed them in a canyon.

b. Harry boxed them (in).

There are cases where such a deletion, as from (4a), will result in a sentence, like (4b), with no relationship at all

to the original.

(4) a. Harry sailed Marsha across the river.

b. Harry sailed Marsha.

Cf. (5), (6).

(5) a. Harry thought Marsha a fool.

b. Harry thought Marsha.

(6) a. Harry wrote a redhead into the play.

b. Harry wrote a redhead.

We can only conclude that whereas (2b) is an underlying constituent of (2a), and (3b) of (3a) (though it has a different meaning and possibly a different structure in isolation), (4b) is not a constituent of (4a), (5b) not one of (5a), and (6b) not one of (6a). The same surface structure can hide different underlying relationships.

It is interesting that the intransitive and transitive senses of various of these verbs work differently in this regard. (7a) and (7b) are more clearly related than (4a) and (4b), for example.

(7) a. Harry sailed across the river.

b. Harry sailed.

(4) and (7) must also have differing structures.

In those cases where a deletion is possible, paraphrasing is always possible. In the instrumental cases *with* plus the root noun can be used, as in (8) and (9).

(8) a. Harry filed the metal smooth.

b. Harry smoothed the metal with a file.

(9) a. Mandrake sawed the log in half.

b. Mandrake halfed the log with a saw.

The inchoative in (8b) and (9b) is now represented by a main verb. *File smooth* must therefore paraphrase *smooth with a file*; *saw in half* paraphrases *half with a saw*. A second

method of paraphrase which all deleting complement verbs can use is to change the inchoative into a verb and use *by* plus an *-ing* phrase based on the verb. This yields paraphrases like (8c), (9c), and (10b) (for 10a). Note the *it* that appears in (8c) and (9c).

(8) c. Harry smoothed the metal by filing it.

(9) c. Mandrake halfed the log by sawing it.

(10) a. Harry kicked Marsha into the river.

b. Harry {got / sent} Marsha into the river by kicking her.

The *with* of (10c) is actually derived from the *by* of (10b), and is not the same as the *with* of (8) and (9).

(10) c. Harry {got / sent} Marsha into the river with a kick.

With a file related to *by filing it* as *with a kick* relates to *by kicking her*, though the structuring may differ somewhat.

Such instrumental or quasi-instrumental sentences as (8), (9), (10) relate closely to two other types of sentences. The *by*-phrases of (8c), (9c), and (10b) derive from *because*-clauses (8d, 9d, 10d).

(8) d. The metal became smooth because Harry filed it.

(9) d. The log came to be in half because Mandrake sawed it.

(10) d. Marsha went into the river because Harry kicked her.

The other kind of sentence they relate to might be called purpose sentences (8e, 9e, 10e).

(8) e. Harry filed the metal (in order) to smooth it.

(9) e. Mandrake sawed the log in order to half it.

(10) e. Harry kicked Marsha to send her into the river.

There are several other alternate paraphrases, but these are

the important ones.

In context those are not perfect paraphrases. If I have been talking about a piece of metal, and have not mentioned Harry, I would not say (8e) where I might use (8d). In fact, not only is topic involved, but the subject matter of (8d) and (8e) is different. In (8d) I am explaining why the metal became smooth, whereas in (8e) I am explaining why Harry used a file on it. Therefore I have been using "paraphrase" in a special sense and am not defining it by replaceability in context. In each case we have three entities, the initiator of the action, the object of the action, and the instrument of the action. Any one of the three can be stressed (i.e., topicalized); the sentence may discuss the action itself, its cause, or its results. Because these elements are constant we can ascribe to them a common deep structure, but because their linguistic ordering varies sentences containing them are not truly synonymous. I am not by this rejecting the notion of semantic structures but rather emphasizing the co-ordinate nature of the constituents of that structure. Underlying all embeddings there are co-ordinations. We can talk of an event guilelessly, separating cause and effect; the embedding is therefore a further predication. If I see a hammer broke the glass but not necessarily that Harry did, at least not in the sense of sentence (11a) (or 11b).

(11) a. Harry dropped the hammer to break the glass.

b. Harry broke the glass by dropping the hammer.

At the same time (12) is certainly true.

(12) The glass broke because Harry dropped the hammer.

And yet, sentences like (11) (especially 11b) can still be assigned a true meaning without having to assume conscious volition. The phrase *only to* conveys such a meaning in sentences like (13).

(13) Harry carefully laid the glass on the floor, only to break it when he dropped the hammer!

This sentence completely changes meaning if we omit the comma. As it stands it is a reference to a fate; without the comma it would be roughly equivalent to (11a). Yet (11b) certainly could be used to indicate a fate. (14) is ambiguous as to volition or fate in just this way.

(14) Harry was heading for {doom / Chicago}.

Therefore the situation itself can be referred to, and with complete neutrality. But there are also structural reasons to believe that underlying sentences like those of (8) are three completely different sentences.

(15) a. Harry wanted {the metal to become smooth. / to smooth the metal.}

b. Harry used a file on the metal.

c. The metal became smooth.

As shown by (15a) even these three do not exhaust the difficulties and the ambiguities, but they are the basic sentences.

The notion of cause is undoubtedly a more general one than the notion of purpose. It is no new discovery that while every sentence like (16) has a counterpart like (17) the reverse is not true, as shown by (18) and (19).

(16) Harry hammered (on) the door to get it open.

(17) The door opened because Harry hammered (on) it.

(18) *The hammer hit (on) the door to get it open.

(19) The door opened because the hammer hit (on) it.

The question is how this fact related to instrumentality. It would seem that the three sentences of (15) *can be* combined in virtually any order, but some of those orders reflect better than others the most underlying structures. The most general form is (20).

(20) x cause y.

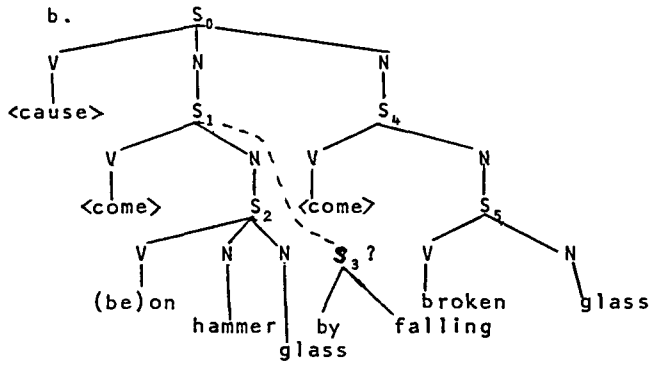
The *cause* can be self-embedded:

(21) a. (x cause y) cause z.

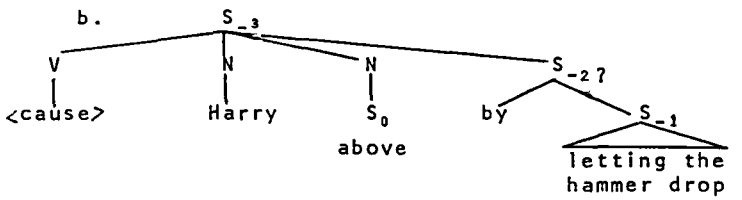
b. ((x cause y) cause z) cause a.

That is, we can have (22), (23), or (24).

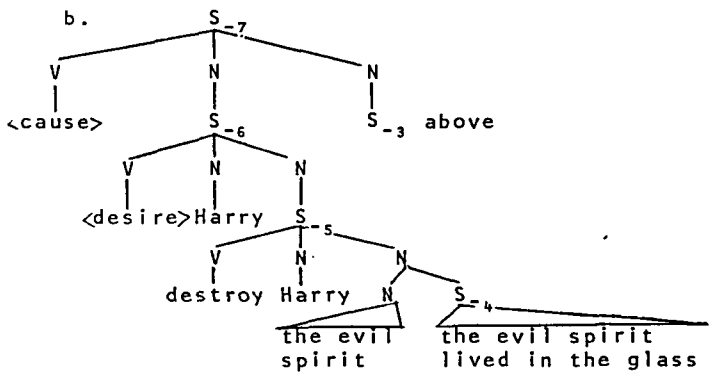
(22) a. The hammer's falling on the glass caused the glass to break. The glass broke because the hammer fell on it.



(23) a. Harry's dropping the hammer on the glass caused the glass to break. Harry broke the glass by dropping the hammer on it.



(24) a. Harry broke the glass by dropping a hammer on it in order to destroy the evil spirit living in the glass.< Harry's desire to destroy the evil spirit living in the glass caused him to drop the hammer on the glass, causing it to break.



This approach unifies all three concepts in the general notion of causation. The *cause* sentences are cumbersome but straight-forward, the *because*, *by*, and *with* sentences less so, the *to* sentences far removed from these underlying structures.

Above I showed various types of transitive constructions deriving from intransitives. Yet elsewhere I have mentioned the possibility that intransitives, with a few certain exceptions, such as the negation predicate, derive from transitives. This presents a contradiction.[10]

The question of the basis of verb transitivity is intimately connected with the problem of animateness and volition. I discussed these questions in Binnick 1968c. Rather than repeat what I wrote there I will restrict myself here to some observations.

Transitivity is based on the notion of causation. There are obvious counter-examples of transitive verbs for which it is difficult to see what they have to *do with* causation, notably *wash*. Yet, if we consider the intransitive *wash* and the use of verbs like *cut* in sentences like

(25) This cheese doesn't cut with a knife.

we can see that *wash* means "cause to wash" in the sense of "cause to be washed by," where *wash* is intransitive and in the sense it has in

(26) The waves washed the shore.

That is, (27a) has the structure of (27b), and (28a) that of (28b).

(27) a. The water washed the dog.

b. $S_0[_V[\text{wash}]_V\ _N[\text{water}]_N\ _N[\text{dog}]_N]_{S_0}$

(28) a. Harry washed the dog with the water.

b. $S_{-1}[_V[\text{cause}]_V\ _N[\text{Harry}]_N\ _N[S_0\ \text{above}]_N]_{S_{-1}}$

Footnotes

Footnotes to Chapter 0

[1] It is being published only because of the interest in its subject matter, if not (perhaps) in its content, expressed to the author by several linguists and philosophers in the form of requests for copies. It is being published for these and other interested parties, and no apologies are offered to those, discerning or otherwise, who will consider it a waste of print.

[2] In writing this introduction and preparing the text for publication my pen has been sustained by the (misplaced?) encouragement of Prof. Anthony Vanek. The original acknowledgments, to be found after the Preface, still hold, of course. Publication of this paper has been made possible in part by a General Research Fund grant, #3751-5038, from the University of Kansas.

[3] A less vague, but somewhat less general list of such questions, expressed in more doctrinally-oriented, i.e. dogmatic, terms, may be found in the Preface.

[4] Which tradition has taken, on what I consider completely wrongheaded grounds, to be the rightful subject matter of linguistics.

[5] That is, when given one of its meanings, we can predict most of the others, the difference between the meanings being a constant function over the sets of meanings for a large number of lexical items.

Footnotes to Chapter 1

[1] The attitude of many structuralists until quite recently was that "If the facts have been fully stated, it is perverse or childish to demand an explanation into the bargain." (Joos 1958:v) to which transformationalists reply "[the notion] that true linguistic science must *necessarily* be a kind of pre-Darwinian taxonomy concerned solely with the collection and classification of countless specimens, while any attempt to formulate underlying principles and to concentrate on the kinds of data that shed some light on these is taken to be some novel sort of 'engineering' . . . seems . . . to defy comment." (Chomsky 1964:25.)

[2] We might compare a purely syntactic theory of verb

classification with a purely phonological theory of phoneme classification. In such a theory it would be merely a terminological variance to write "b" rather than "voiced bilabial stop," and the difference would be of no further consequence. In a theory of phonology in which phonetics had a role, such a difference would, however, be substantive, as would a comparable difference in a theory of the lexicon which took semantics into account.

[3] This is apparent in the lexical sections of such works as the Duden Grammatik as well.

[4] See Chomsky 1965:85-86 for examples.

[5] It should be emphasized that while in the beginning the interest in the lexicon was solely to find a means of listing various classes of verbs so as to accurately predict their occurrence in syntactic structures, e.g., to prevent generation of an intransitive verb in a transitive slot, the development of theories incorporating semantics, such as that in Chomsky 1965, Katz and Fodor, Katz and Postal, and Katz 1966, caused a change in emphasis to an attempt to treat the lexicon in its own right as an important component of the semantics of a language. With Gruber 1965 there was a further shift to the study of the lexicon in terms of systems of lexical items, rather than lexical items in themselves, as isolated entities. In Generative Semantics the most radical position has been reached: lexical items and their systematization are considered the most critical area of linguistic research. The reader should not be confused in this section by the shift in emphasis: sometimes I will write as if it is the task of the lexicologist to classify lexical items in terms of their surface syntactic properties, at other times as if it is his task to elicit universal underlying principles of semantic structure in language; while I believe the latter to be the case, obviously the former is (in general) a necessary prerequisite.

[6] Concerning exceptionality, in his 1965 dissertation, George Lakoff pointed out that linguists had held that irregularities would eventually be removed from grammars by refinement of analysis. Lakoff countered that there were a great many phenomena of an exceptional nature that would never be so refined away. Fillmore's "verbs subject to the NOT-shift transformation" are an example of this; such verbs are in a minority and there is no external explanation of this property, that is, they have no other property exclusively in common. To treat such problems Lakoff proposed a fourth type of syntactic feature. While, as we shall see, subcategorizations,

selectional restrictions, and inherent features are reflexes of deeper, semantic facts, no such facts have yet been found to underly the range of phenomena described by Lakoff. The fact that some properties of verbs are completely idiosyncratic and unpredictable from other criteria denies us simple, neat-looking theories but accurately represents the facts. Most of the true exceptions in grammar represent, in fact, non-functional atavisms held over from older stages of the language. By this I mean those features of the grammar which were formerly functional, but which now are solely exceptions not patterning like similar phenomena. For example, formerly, as in German, *be-* served in English as a transitive derivational prefix, as in Old English

bebēodan 'order': bēodan 'offer'
bebycgan 'sell': bycgan 'buy'
bebyrigan 'bury': byrigan 'bury'
becierran 'betray': cierran 'turn'

etc. In such modern verbs as *betray*, *besnare*, the prefix serves no real purpose and is in any case not productive. There are syntactic examples as well: the inversion in sentences such as *Little did I expect such impudence*l is perhaps only such an atavism.

[7] It should be pointed out that the category *verb* is also to be considered to include what we usually call adjectives. G. Lakoff effectively demonstrated the absence of an underlying category of adjective in Appendix A of his 1965 dissertation. He argued that in fact there was just one category VERB. Accordingly, when we talk of active or stative "verbs," we shall also be talking of adjectives. This is really no more than Allen did by including on his list composites such as *be angry*, *be annoyed*, *be pleased*, and so on. Since the only real difference between verbs proper and adjectives is that in certain predictable environments the latter require the verb *be*, and since verbs and adjectives are so similar in English, in Japanese, and a host of other languages, the evidence is overwhelmingly in favor of Lakoff's solution. And while most adjectives are stative, *noisy*, with its antonym, *quiet*, is not.

[8] Under negation, none of these constraints are preserved.

Some of the rules behind Lakoff's tests are maintained under negation, others are not. Which are or are not would make an interesting topic for research. For example, test (1) is maintained:

*What he did was not seem rich.

but (6) is not:

(OK) Harry doesn't seem poor because he wants to.

nor is (13):

(OK) I didn't persuade him to seem poor, he just does.

It is interesting how *can't* affects the rules behind these tests. It causes them not to apply at all:

(OK) 'But,' I protested, 'you can't be seeming stupid, you just seem stupid.'

(OK) You can't be tall in order to see over a fence.

Since these sentences seem to be about linguistic expressions rather than acts, they are perhaps irrelevant to Lakoff's tests.

[9] I will not mention here several minor counter-examples usually used to argue against one or another version of morphemics: the fact that the *fl-*, *gl-*, and *sl*-elements seem to have meaning (Weinreich 1966b:146), the fact that the *sh*-element seems to have meaning (Weinreich 1953:34), the *Boysenberry* problem, that of the linking -o- (Gleason 1961: 60), the *children* problem (Francis 1950:190). Also the portmanteau problem, the problem of partial suppletion, such as in *better* and *best*, as well as (for some linguists) the problem of full suppletion.

[10] Lester Rice's example.

Footnotes to Chapter II

[1] James McCawley has pointed out (in private communication) that it is not an empty question which N is deleted by pruning, and that various theories of G. Lakoff's and Ross's would delete one or the other of the two N's here. I have arbitrarily chosen to delete the lower, but this does not imply any position on my part on the question of the formulation of pruning.

[2] Good in a different sense.

[3] It should be noted that change can proceed in terms of some state as well as in terms of a change of state. For example, when ice is melting, changing from a solid to a liquid, it goes through a nascent liquidity. At some point the ice becomes, turns into, changes into water. This entire process can be relatively instantaneous, or it can take place

over a period of time, but the change itself, the cumulation, must be instantaneous. If the water is further heated, it can get hotter and hotter for quite a while with no further change of state. But it does not get more and more liquid. Similarly, after it turns to vapor, if it is further heated, it can get rarer and rarer or hotter and hotter, but it does not get more and more "gaseous." This has to do perhaps with the fact that heat and rarity are gradients, but states of matter are absolutes. Clearly, the states involved in location are of the latter type, whereas those involved in motion, while delimited (e.g., you cannot continue on to Rome after you have gotten there), are relative or gradient in the sense that you can get closer and closer to, or further and further from, a goal. Gradient states are characterized by their relativity as well as their scale of values: a cool star is hotter than a hot volcano; a cool volcano is hotter than the hottest tamale.

Confirmation of the similarity of motion and c/s in terms of modality may be sought not only in English but in other languages as well. In many, if not all, languages, verbs of motion form a significant class with special syntactic properties. Sometimes these properties are similar to those of stative or c/s verbs. In Hieroglyphic Egyptian the relic verb-form called the Old Perfective was primarily used to express the results of an 'action' (thus *rḫ·kwi* "know" from *rḫ·n·i* "learn") or the results of motion: to quote Gardiner (1961:238):

> "with verbs of motion it describes, not so much the movement itself as the *position reached as the result of the movement* [Gardiner's italics], ex. *h3·kwi* 'I went down' to the mine."

It should be noted as well that (Gardiner, 1961:238)

> "the old perfect expresses a *state* or condition of things. . . . "

By way of contrast, with the so-called *sḏm·n·f* form (a preterite), verbs of motion emphasize the motion itself. Thus Gardiner writes (1961:331):

> "In the cases of verbs of motion, English uses 'I have come' and 'I am come' with hardly any perceptible difference. Egyptian, on the contrary, seems to have felt a distinction between the old perfective as in [hieroglyphs omitted] *ii·kwi* 'I returned' or in [h.o.] *mk wi iy·kwi* 'behold, I am come' and the

> *sḏm·n·f* form as in [h.o.] *i·n·i* ['I have come']. The latter is certainly preferred when any stress is laid on the movement as an action performed by someone; such a stress occurs, for ex., when words indicating the purpose of the movements are added. Ex. [h.o.] *ii·n·i ʿ3r nis r·k* I have come hither to summon these. [ex. from *Westcar* papyrus 7,20.] The difference, then, with verbs of motion is that the *sḏm·n·f* form emphasizes the fact of the movement, while the old perfective merely calls attention to the result."

We might compare the old perfective and *sḏm·n·f* forms with the perfective and imperfective systems familiar from other languages, such as Russian, although the Egyptian and Russian systems are not completely parallel. The same distinction is mirrored in other modern European languages in the *sein~haben* (*être~avoir*) contrast. The passe compose form of French when formed with *avoir* "have" denotes action, while *être* ["be"] denotes state or condition *resulting from* action." (Fraser and Squair 1901:§229). In general, the French distinction is similar to that in German, where

> ". . . intransitiven Verben, die eine Zustands- oder Ortsveränderung, einen neuen, erreichten Stand bezeichnen, bilden ihr Perfekt mit 'sein.'" (Grebe 1966, §760.)

The *Duden* grammar adds (§760)

> "Verschiedene Sehweise ist immer möglich bei den Verben der Bewegung: tanzen, reiten, segeln, paddeln, fahren, fliegen, bummeln, flattern, rudern, treten, u.a. Sieht der Sprecher den Vorgang, die Dauer in der Bewegung, dann steht das Verb im Perfekt mit "haben." . . . Sieht der Sprecher eine Veränderung in der Bewegung (eine Ortsveränderung), dann steht das Verb im Perfekt mit 'sein.'" . . .

The points to be emphasized here are that "Bewegung" is to be regarded as "eine Ortsveränderung" and that while *haben* is used for motion per se, *sein* is used for motion qua change of state.

Obviously, these points provide clues for the derivation of motion verbs.

To cite yet another (non-Indo-European) language, Khmer is a language which has no tense system, but it does

have an aspect system. In particular,

> "La verbe [en Khmer] oppose reglierement l'action en voie d'accomplissement a l'action accomplie." (H. Maspero [1952], quoted in Gorgoniyev 1966:80.)

Various free morphemes, which also function as main verbs (thus *ba:n* "get," *nʔw* "live," *laəŋ* "rise," and *thlɔəp* "get used to," among others), some to mark aspectual distinctions. Of special interest here are *ba:n* which Gorgoniyev considers to mark the *completive* (our *perfective*) aspect, *nʔw*, the *durative* aspect, and *laəŋ*, the *inchoative* aspect. Of *ba:n* he writes (81-82):

> "When preceding a verb this morpheme gives a form which resembles the analytic forms built by means of the verb 'to have' in some Indo-European languages (cf. the English *have*, the German *haben*, the French *avoir*, etc.).
>
> "the form obtained . . . shows the completeness of the process. . . . This form may occur only with verbs whose action refers both [*sic*] to the past and to the future, although it is most frequent in the past."

of *nʔw* he writes (83)

> "When preceding a predicative, the morpheme *nʔw* denotes a prolonged action or state. This form [in contrast to *ba:n*] is found both in verbs and adjectives."

For *laəŋ* he only gives the examples (84)

> "kẹ niyẹay laəŋ 'They began to speak.'
> kɔɔt ɲɔɲum laəŋ 'He began to smile.'"

This Khmer data, along with that already presented for Egyptian, Russian, German, etc., suggests an underlying, universal aspectual system in which motions of inchoation, completion, state, etc., play a central role. This is not surprising, but transformationalists have been slow to come to grips with material such as Jakobson (1957) presented long ago.

The only linguists of the newer schools who have gone into these topics in depth are Gruber, Fillmore, and Lyons.

It should not be thought that arriving at a universal theory will be merely difficult. But interesting results are forthcoming from the consideration of even so prosaic a language as Russian. On top of the perfective-imperfective distinction, Russian has, as far as motion verbs are concerned, a determinate-indeterminate distinction. One of the swarm of monographs about verbs of motion is Foote's study of Russian "verbs of motion" (1967). The indeterminate aspect represents motion per se, the determinate, in terms of some goal:

> "In Russian [writes Foote] certain verbs, . . . the 'verbs of *motion*,' have two separate imperfective forms, which . . . give different information about the nature of the action. . . . The group consists of the . . . verbs of motion which indicate . . . the basic types of action involving locomotion. . . . The two imperfectives are normally referred to as the 'determinate' and the 'indeterminate.'" (Foote 1967:4.)

Foote quotes various authors on the precise definition of these aspects. Generally, the determinate represents "motion tending toward a goal," taking place in a "*precise direction*," and/or "actually taking place at a given time." (See Foote 1967:4-6.) He notes (6) that the indeterminate forms

> "are characterized as being the opposite of the [determinate] *verbs in these respects* . . . , special mention being made of their use to describe habitual and repeated actions and the capacity for movement (to walk, swim, fly, etc.)."

He isolates two essentials of the determinate verbs. One is (7)

> "that they refer to progressive motion, motion [involving] a *change of location*."

Thus direction or aim can be irrelevant, as in

> "Prijátju idtú pod dotdjom. (It's nice to walk in the rain)."

Another is that

> "the action is envisaged as 'actual' or in progress"

although the action need not be particular. Thus one can

perfectly well say

> Kátdyj denj v 9 on idjot v kontóru. (Every day at 9 he goes to the office)."

On the other hand, if the action involves shifts of direction or in time, or no change of location, like running on a treadmill, the indeterminate form is used.

The notion of directionality ties in with the bizarre use of *into* noted above. Such a use is even more frequent in Khmer than in English, Khmer having a semantic category of direction for verbs of motion and "active action in general" [*sic*!],

> "which is expressed by a number of verbs of the type 'to come,' 'to go (away),' 'to go (out),' etc." (Gorgoniyev 1966:98.)

Thus "action directed inward" would be expressed by the verb *co:l* which usually means "enter." The verb *laəŋ*, which basically means "ascend," and which we already have seen can be used to mark inchoation, also can be a direction verb, in which case it denotes growth or increase, going up in the metaphorical sense, thus in the example (Gorgoniyev 1966:99-100).

> "co: aeŋ mʔl tumpɔɔ nih laəŋvɨŋ 'Read (the whole of) this page.'"

[4] The Catalan usage accords with earlier Spanish to a certain degree; see Lapesa 1959:256, 318. I will have more to say about these verbs below.

[5] Notice that in may be wrong: inside-ness is, like most spatial relations, reversible: if John is inside of the jail, the jail surrounds John. Perhaps there is a neat Navaho word for the kind of spatial relation expressed by both *in* and *out* which could be used to denote the semantic prime that belongs here.

[6] Nominalization may well occur before NOUNS FIRST because of the order in *the coming up of Harry*.

[7] I am avoiding all kinds of problems involving and V-PRT combinations like *come up*.

[8] The paraphrases of (12) and (13) are:

(36) a. The plague and the sailors came on the ship (together).

b. The plague and the sailors came (together) on the ship.

These may be explained by phrasal conjunction.

[9] *Keep* and *retain* are probably synonymous on a lower level.

[10] Actually, not all intransitives derive from transitives. It is an interesting speculation that surface adjectival/adverbial predicates are basic intransitives, while surface verbs are derived. This might lead to a device for predicting which underlying configurations come out as adjectives and which as verbs.

Part II will appear in the next number of PIL.

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