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Thus, the (9f) is derived according to (10):

(10) it(for the sauce to be thick) came about

⇒ IT - REPLACEMENT

the sauce came about (for to be thick)

⇒ ABOUT-DELETION

the sauce came (for to be thick)

⇒ FOR DELETION

the sauce came to be thick.

We are told:"All of these transformational processes are independently motivated," but in fact these are highly conjectural "Lakoff claims," We can derive 'the sauce became thick' and 'the sauce got thick' in essentially the same way if we consider 'become' and 'get' as verbs of the same class as 'come about', except that they undergo a further rule which deletes 'to be'. "Elsewhere he remarks that" 'get', and 'grow' work essentially like 'become' when they function in change construction so 'the sauce became thick' would undergo a similar derivation; Thus (11)it (for the sauce to become thick)

became ⇒ IT- REPLACEMENT

the sauce became(for to be thick) ⇒

FOR-DELETION

the sauce became (to be thick) ⇒

TO BE-DELETION

the sauce became thick.

Similar derivations are proposed for (9 c-e).

And again these derivation are highly conjectural. For example, there is no evidence that THICK should be represented as an S in underlying representations, nor is there

evidence that BECOME selects sentential subjects. Furthermore no evidence to motivate TO BE- DELETION is adduced by Lakoff. Thus, besides the fact that none of these rules are explicitly formulated in Lakoff's article, they are not, in fact, independently motivated and must therefore be considered as no more than ad hoc.

REMIND- clauses claims that these should be paraphrases of sentences with PERCEIVE main verbs and complements involving assertions of similarity. He explicitly claims, then, that by adopting (5a) as the underlying structure of (5b), it follows that (5b) is a paraphrase of (6).

(6) I perceive that Larry is similar to Winston Churchill. Postal goes on to assert explicitly that this analysis also predicts that "just as (7a) is contradictory, so is (7b)"

(7)a. I perceive that Larry is similar to Winston Churchill although I perceive that Larry is not similar to Winston Churchill.

b. Larry reminds me of Winston Churchill although I perceive that Larry is not similar to Winston Churchill.

Postal concludes that these predictions are correct and that therefore they support the postulation of (5a) as the underlying representation of (5b). By what logic, Brame(1976) in his paper "Conjectures and refutations in syntax and semantics", asks, does the postulation of (5a) predict that (5b) is a paraphrase of (6a) and that (7b) is contradictory because (7a) is contradictory? Postal offers no answer, but within this framework postal must mean that (5a) is the underlying representation for both (5a) and (6). Since both (5b) and (6) have the same underlying representations, similar properties of REMIND- clauses and PERCEIVE-

clauses will be expected to emerge in surface structure.

Upon scrutiny, Brame holds, we learn that postal's predictions are false. Thus, Bowers has shown that (7b) is not contradictory by citing example such as the following:

(8) For some reason Larry reminds me of Winston Churchill although I perceive that Larry is not really similar to him at all. Sentence(8), unlike(7a), is not contradictory, indicating that the semantic properties of REMIND are not those intrinsic to PERCEIVE AS SIMILAR. It is therefore dubious that (5b) and (6) derive from (5a) as suggested by postal.

The other piece of evidence that can be marshalled to refute generative semantics concerns the verb THICKEN. In his work, "Some verbs of change and causation," Lakoff (1969) has treated sentences such as the following:

- (9)
- a. The sauce thickened
 - b. The sauce became thick
 - c. The sauce got thick
 - d. The sauce turned thick
 - e. The sauce grew thick
 - f. The sauce came to be thick

Lakoff comments: "We would like to suggest that the differences among these sentence types are all superficial, that the types are transformally related, and that their underlying structures are essentially identical."

reasons. In their opinion, items call for definitions in the form of syntactic trees, with hierarchies of labeled constituents, not unordered sets of features. The reasons are both semantic and syntactic. Among the semantic arguments we can give the following. Take the verb KILL (Mc Cawley's main example for his causative analysis, as in Mc Cawley 1971 C presented on pages above). The sentence JACK KILLED FRED entails that Fred was alive but is now dead. A semantic analysis of this sentence must, in order to be adequate, enable us to derive this entailment from it. If the semantic definition of KILL were an unordered set of features, such as (+event)(+causative), (+dead), no entailments would follow but only vague associations. But if KILL were to be represented as, for instance, CAUSE TO BECOME DEAD, as part of a syntactic tree, with a subject for CAUSE, i.e. Jack, and a subject for "dead", i.e., Fred, then the element BECOME will be seen to entail a transition from Fred's being alive to his being not alive, with Jack as the initiator of the process.

4.3. Autonomous Syntax (Syntacticism) VS Generative Semantics (Semanticism)

Generative semanticists posit a great deal of transformational syntax inside lexical items, specially verbs, as was mentioned

above. For example, according to generative semantics, the (b) examples of (1-4) derive from structures akin to the (a) examples:

- (1) a. John struck Bill as being similar to a gorilla.
b. Bill reminded John of a gorilla.
- (2) a. The sauce came to be thick.
b. The sauce thickened.
- (3) a. John caused Harry to die.
b. John killed Harry
- (4) a. Mary persuaded Bill not to go.
b. Mary dissuaded Bill from going.

In all these examples, we see that simple words such as REMIND, THICKEN, KILL and DISSUADE are treated on a par with longer syntactic sequences. Generative semantics claims that well-motivated syntactic rules can be brought to bear in deriving them. Let us therefore investigate the arguments for such a claim.

Postal has investigated "the verb REMIND and concluded that" There is an elaborate array of evidence indicating that this element has a transformational derivation from a complex underlying source in which there is no single verbal element corresponding to REMIND" (1970:37)

Postal's initial proposal for the underlying source of REMIND is provided in (5):
(5) a. me PERCEIVE (Larry SIMILAR Winston Churchill)

b. Larry reminds me of Winston Churchill
Postal remarks that such an analysis of

deep structure. Although the ASPECTS-theory implies unitary lexical insertion, it does not imply that the items enter the deep structures in their actual phonological form: later rules may add refinements as to the form which will be input to the phonological rules.

In his "Remarks on Nominalization", Chomsky draws attention to a number of difficulties which arises in the light of ASPECTS. First, the presumed S-embeddings must be of a special kind: derived nominals do not contain an element "tense". Their internal structures is that of a noun phrase, with adjectives(not adverbs), and prepositional adjuncts. Their phonological shape is highly idiosyncratic. Chomsky writes (1972:17)"We might extend the base rules to accomodate the derived nominals directly (I will refer to this as the "lexicalist position"), thus simplifying the transformational component."

Generative semanticists take a view of lexical items which is,in many ways, directly opposed to Chomsky's. Instead of reducing the role of transformations in the grammar, they seek to increase it. Not only do they reject the lexicalist hypothesis, they posit a great deal of transformational syntax inside lexical items, especially verbs. They claim that unordered set of features are inadequate for a semantic definition of lexical items: such a definition requires a phrase-

marker (labeled tree), often a transform, with more primitive, sub-lexical items at the end of branches. A lexical insertion rule is seen as a particular kind of transformation, replacing part of an underlying tree by a specific lexical item.

The first to develop a theory of the lexicon along these lines was Gruber, whose thesis of 1965 STUDIES IN LEXICAL RELATIONS already meant a radical departure from the views held by Chomsky. It was followed by FUNCTIONS OF THE LEXICON IN FORMAL DESCRIPTIVE GRAMMAR (1965) Gruber adheres to the principle of unitary lexical insertion. This principle is, however, an obstacle, rather than a help, in explaining observed facts, and nobody maintains it. Insertion rules are now generally held to operate in alternation with other syntactic transformations. Sometimes, however, a syntactic transformation, such as predicate Raising (Mc Cawley (1971) is constrained in the sense that it creates a structure which must then be replaced by a lexical item. Such a constraint will fall under Lakoff's term GLOBAL RULES or GLOBAL CONSTRAINT (Lakof (1970). Rules which are thus constrained belong exclusively to what is called prelexical syntax (Mc Cawley 1971 c).

The proponents of generative semantics consider lexical description in terms of features unsatisfactory for a number of

used in America for referring to "blood relatives". These dimensions are (a) sex of the relative, (b) generation of the relative, and (c) linearity.

Componential analysis is a useful method for getting at the underlying, distinctive semantic features of a given collection of terms. But there are two central problems of this sort of analysis. One problem is whether such an analysis of a domain has any psychological reality. Some linguists might react by saying that their components are purely analytic and only for the purpose of description, but the problem still exists. The other large problem is whether this technique of componential analysis can be applied to other sorts of domains than kinship. The question is most clearly posed when we have alternative componential analyses for a given domain. Romney and D'Andrade (1964) in an article called "Cognitive aspects of English kin terms" demonstrate that the Wallace and Atkins (1960) method is not the only possible one for English kin terms. They propose an alternative analysis.

It is not the purpose of the present paper to study these anthropological analyses. However, the fact that the kinship typology there are alternative methods presented by scholars leads us to cast some doubt on the validity of componential analysis and explains why there are not yet available a set of well-defined universal semantic components

to which a linguist can refer.

The second problem confronting the componential analysis is the domain of its applicability. What other domains are susceptible to this sort of analysis? There have been successful analyses of domains such as plant and animal taxonomies but the range of possibilities seems limited.

4.2. Lexicalist Position VS Transformationalist Position

TO the generative semanticists, the ASPECTS - theory of grammar was unsatisfactory in a number of respects. These scholars soon felt not only that the semantic notion involved (PROJECTION RULES, SEMANTIC REPRESENTATIONS, etc.) were too vague and cloudy to be satisfactory, but also, and more specifically, that the very detailed notions of the lexicon and lexical insertion developed in ASPECTS did not do justice to the facts. Two central claims are made, in ASPECTS, regarding lexical items, as it was mentioned in section II. First a lexical item is defined, in the lexicon, by a set of, presumably unordered, features of subcategorization and selection: each lexical item is given a positive or a negative value with regard to certain features. Secondly, insertion of lexical items is said to take place "in a block" at the end of the base, before any transformation can operate. All lexical items figure in syntactic

general element of meaning (called Component Markers) and the various possible combinations in different languages.

All approaches to the semantic analysis of natural languages are, as we recall from the previous sections of this paper, based on the insight that the meanings of lexical items are not unanalyzable or undefinable wholes. This insight has been made explicit in essentially two ways. The first is based on meaning postulates, the other on semantic components into which the lexical meanings are analyzed. Meaning postulate, formally introduced in Carnap (1956), might be illustrated by the following example

(1) (a) boy → male

(b) girl → female

A rule like (1a) says that BOY implies MALE or, what amounts to the same, the sentences like A BOY IS MALE are analytic. Meaning postulates might also involve logical constructs like "and", "or", "not", etc.:

(2) (a) man → male and adult

(b) woman → female and adult

(c) boy or girl → not adult

The meaning of a lexical element is therefore specified, roughly speaking, by the set of all the meaning postulates in which it occurs. More precisely: the meaning of a lexical element of L is defined implicitly by the set of all meaning postulates associated with L.

The second approach is that of compo-

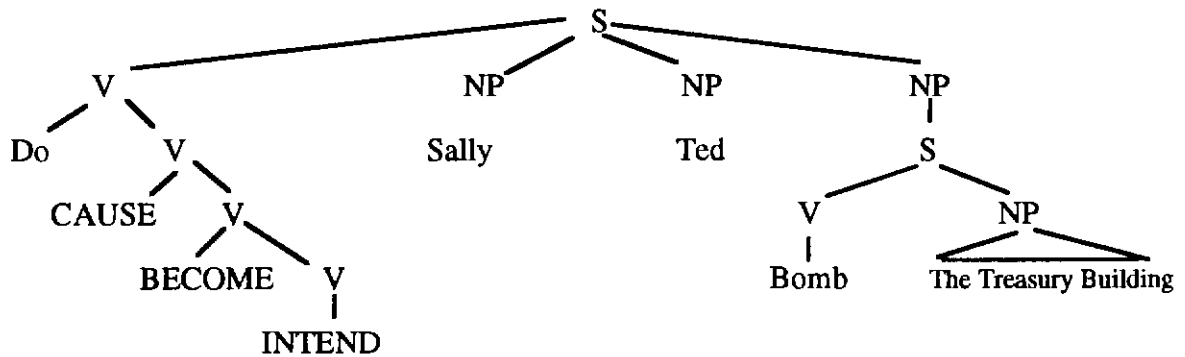
netial analysis, which underlies the linguistic theories developed by Katz and Fodor (1963), Weinreich (1966), Bierwisch (1969) and others. It defines the meaning of a lexical element explicitly in terms of semantic components. These components are not part of the Vocabulary of the language itself, but rather theoretical elements, such as the ones we saw on previous page proposed by McCawley, postulated in order to describe the semantic relations between the lexical elements of a given language. These components are connected again by logical constants. Thus we get the following example:

(3) (a) boy: ANIMATE and HUMAN and MALE and not ADULT

(b) girl: ANIMATE and HUMAN and FEMALE and not ADULT

The main evidence we have on the feasibility of analyzing word meaning into semantic components comes from work on kinship terminology of various peoples. The attempt is to find a few underlying dimensions -- reminiscent of distinctive features in phonology -- upon which all of the kinship terms of a cultural group can be placed. The task is, within anthropology, to discover the semantic components which distinguish between the meanings of English kin terms. Wallace and Atkins, the anthropologists, have isolated three dimensions which can be

(10)



which contains a constituent DO CAUSE BECOME INTEND which corresponds to the verb PERSUADE. This rule works on a structure whose ultimate elements are not morphemes but semantic unit, as it was suggested previously . It remains to be seen that all combining of elements of meaning into lexical items can be reduced to the interaction of a limited number of transformations of the types (Permutation, copying , adjunction ,deletion, insertion) which are normally recognized. Finding a system of transformations that yield combinations of semantic material which are exactly the possible lexical items of English is a program of research of which so far only fragments have been carried out.

Section III Note

I

Mc Cawley writes: "the base component is a set of node admissibility conditions, for

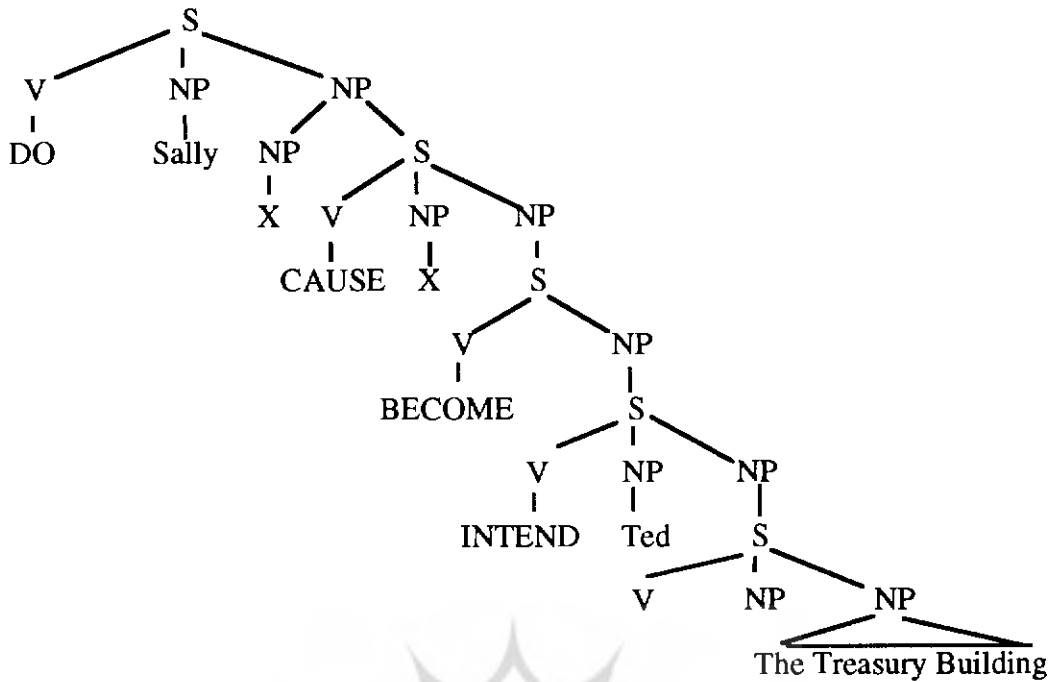
example, the condition that a node is admissible if it is labeled A and directly dominates two nodes, the first labeled B and the second labeled C. I will formulate a node admissibility condition thus: <A; BC>." (P 247)

Section IV: Conclusions

4.1 Meaning Postulates VS Componential Analysis

There has been a very noticeable renewal of interest in semantic theory among linguists in the last few years, one of the main reasons for this being the development of generative grammar with its emphasis upon distinction between deep structure and surface structure. In the area of lexicon much of the work published by linguists has been influenced by the "componential approach" to the analysis of meaning: that to say, by the attempt to describe the structure of vocabulary in terms of a relatively small set of very

(9)



The relationship between PERSUADE and (9) is far from arbitrary and has much in common with the relationship between other verbs and the semantic structures of clause of which they are the main verb. The elements of meaning that are encoded in PERSUADE are DO, CAUSE, BECOME, and INTEND, each of which is the main predicate of the complement of the preceding one in (9). There are many other verbs which encode two or more predicates, each of which is the main predicate of the complement of the preceding one. For example, KILL encodes DO CAUSE BECOME NOT ALIVE and APOLOGIZE encodes REQUEST FORGIVE. The common characteristic in the relationship of each these verbs to the semantic structures which it is used in

expressing can be captured in the form of a rule which relates stages in a derivation that leads in steps from semantic structure to surface structure, specifically, rule that allows the predicate of a clause to be adjoined to the predicate of the next higher clause: this rule McCawley calls predicate Raising. Successive application of this rule to (9) would convert it to (10):

speaker intended and that it, moreover, does not hold any privileged position among the various criteria for deciding what someone meant.

Mc cawley (1968 b) observes that the term "lexical Item" does not mean that every lexical item of a language must appear in the lexicon of that language. On the contrary, probably all languages have implicational relationships among their lexical items, whereby the existence of one lexical item implies the existence of another lexical item, which then need not be listed in the lexicon. For example, in many languages the words for the temperature ranges (WARM, COOL, etc.) may be used not only to represent those temperature ranges but also to represent the temperature sensation produced by wearing an article of clothing. Thus, the English sentence:

7- This coat is warm

is ambiguous between the meaning that the coat has a relatively high temperature and the meaning that it makes the wearer feel warm.

It can be concluded that English has two lexical items WARM, of which only one appears in the lexicon, the other being predictable on the basis of a principle that for each lexical item which is an adjective denoting a temperature range there is lexical item identical to it save for the fact that it is restricted to articles or clothing and means

"producing the sensation corresponding to the temperature range denoted by the original adjective."

Mc Cawley (1971) contends that the ultimate units of a semantic structure will not be morphemes but rather some kinds of semantic units. The semantic units which are encoded in a lexical item need not be all together in semantic structure. For example, the elements of meaning encoded by the word PERSUADE in (8):

(8) Sally persuaded Ted to bomb the Treasury Building.

are combined semantically with different constituents of semantic structure. Mc CAWLY assumes that PERSUADE contributes notions of DOING, CAUSING, and INTENDING to the context of sentence (8). These elements of content are not features of the sentence but are relations between items of content that figure in the sentence, and to specify semantic structure of a sentence, it is necessary to not merely indicate which such elements are present but also indicate what items those relations relate. A tree diagram such as (9) accomplishes that:

applying the projection rules to successively larger constituents in the deep structure, one eventually ends up with a set of readings for the whole sentence. Disambiguation in KF's theory is effected solely by means of the discarding of combinations of readings which violate a selectional restriction. If KF's notion of lexical item is replaced by Weinreich's, disambiguation will consist in eliminating a certain subset of a deep structure which terminate in homophonous Weinreich's lexical items; the projection rules would apply separately to each of these deep structures, each application of rule consisting in attaching to a node a reading which is obtained by combining in some way the single readings attached to the nodes it directly dominates, and the entire deep structure would be judged anomalous or non-anomalous rather than combinations of readings discarded whenever a selectional violation is encountered.

There are several advantages of McCawley's approach over KF's. First of all, certain sentences are non-anomalous even though they have a selectional violation in an embedded sentence, for example,

3- It is nonsense to speak of a rock having diabetes.

4- Rocks cannot have diabetes.

5- John said that the rock had diabetes.

This means that the procedure given in KF (1963) whereby a pair of readings for two

constituents is discarded if one violates a selectional restriction in the other must be refined so that a decision as to the anomalousness of a deep structure will require examination of the semantic representation of the whole deep structure. An assertion that something anomalous is anomalous is a tautology and thus semantically impeccable, and there is nothing anomalous about reporting that someone has said something anomalous.

Secondly, there are many situations in which a sentence which Katz and Fodor's theory will disambiguate in favor of a certain reading will be understood as meaning something which their disambiguation procedure will reject as a possible reading. For example, KF's theory would mark BACHELOR in

6- My aunt is a bachelor.

as unambiguously meaning "holder of the bachelor's degree", since the other three readings of BACHELOR would require a male subject. However, one can easily imagine situations in which this sentence would immediately be interpreted as meaning that the aunt is a spinster rather than that she holds an academic degree. McCawley concludes from these considerations that the violation of selectional restrictions is only one of many grounds on which one could reject a reading as not being what the

Through a transformation which deletes in the embedded sentence an adjective identical to that of the main sentence, the obvious place to look for the source of the anomaly is the identity condition on the adjectives. If different readings associated with the same phonological shape are considered to be different lexical items the problem is immediately solved. There are, then, two different lexical items: SAD meaning "experiencing sadness, said of a living being", and SAD₂, meaning "evoking sadness, said of an esthetic object". This means that the above diagram could represent any of four conceivable deep structures, depending on whether the two items labeled SAD are occurrences of SAD₁ or SAD₂. Of these four deep structures, the one having SAD₁ in both places would be anomalous because of a selectional violation in the embedded sentence, in which SAD₁, which requires a living being as subject, is predicated of THAT BOOK; the structure having SAD₁ in the main sentence and SAD₂ in the embedded sentence could not undergo the comparative transformation because the two adjectives are not identical; for exactly the same reason the structure having SAD₂ in the main sentence and SAD₁ in the embedded sentence could not undergo the comparative transformation and thus could not yield "John is as sad as that book;" and finally, the structure which

has SAD₂ in both places would be anomalous because of a selectional violation in the main sentence, in which SAD₂, which requires an "esthetic object" as subject, is predicated of John. However, this solution to the problem of why sentence (I) is anomalous is not available to a linguist who, like Chomsky (1965), considers the terminal nodes in deep structures to correspond to single polysemous items such as Chomsky's undifferentiated SAD. McCawley assumes that each terminal node in a deep structure has exactly one semantic reading attached to it.

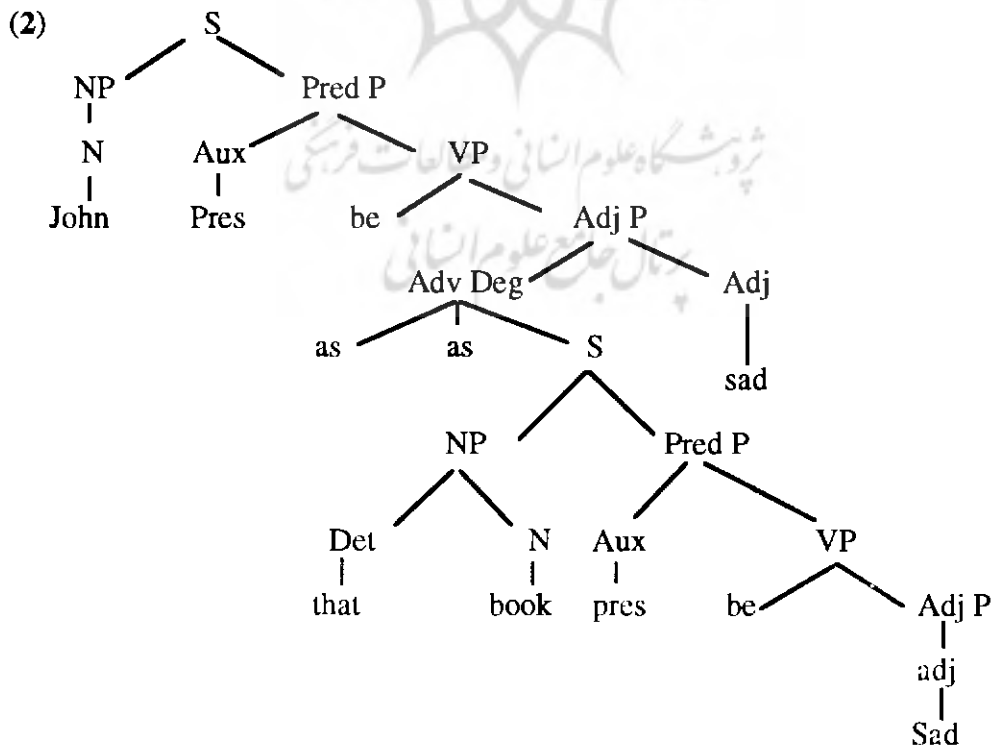
Another place where Weinreich's influence is obvious on McCawley is where McCawley (1968) talks about the relation of the disambiguation of polysemous lexical items in Katz and Fodor's theory and compares it with Weinreich's notion of lexical item. KF's semantic projection rules are of the following type: if an item consists of two constituents, one which has a set of M readings attached to it and one which has a set of N readings attached to it, the MN combinations of one reading of each constituent are formed, those combinations in which a reading for one constituent violates a selectional restriction in the reading of the other constituent are discarded, and from each of the remaining combinations a reading for the whole item is constructed in a manner specified by the projection rule. By

phonological shape and belong to a single syntactic class. There is no a priori reason for grouping items together in a dictionary at all: one could perfectly well take the notion LEXICAL ITEM to mean the combination of a single semantic reading with a single underlying phonological shape, a single syntactic category, and a single set of specifications of exceptional behavior with respect to rule under this conception of LEXICAL ITEM, which was proposed by Weinreich (1966), there would simply be four lexical items pronounced BACHELOR rather than a single four - ways ambiguous lexical item. There are a number of compelling reasons for believing that language operates in terms of weineich items rather than

katz- Fooder lexical items, the chief reason being that transformations which demand the identity of a pair of lexical items demand not merely the identity of their Katz- Fodor dictionary entries but indeed the identity of the specific readings involved . An instructive example of these is the following problem, which is discussed inconclusively in Chomsky (1965). What is the source of the anomaly of the following sentences (Chomsky 1965: 183)?

1.* John is as sad as the book he read yesterday.

This sentence is a comparative construction arising from a deep structure which Chomsky would represent as (2):



add "inherent features" to a complex symbol. The following are taken from ASPECTS (P.83) for clarification:

- (2) (i) $N \rightarrow (+N, \pm \text{Animate}, \pm \text{common})$
- (ii) $(+ \text{Common}) \rightarrow (\pm \text{Count})$
- (iii) $(- \text{count}) \rightarrow (\pm \text{Abstract}, - \text{Animate})$
- (iv) $(+ \text{Animate}) \rightarrow (\pm \text{Human})$

Mac Cawley regards these rules as suspect, since they duplicate information about the language which is already present in the lexicon.

Mc cawley (1968 a) then considers the two types of features presented by Chomsky in ASPECTS (PP 94 + 97)

- (3) $V \rightarrow Cs \text{ in env. } \left[\begin{array}{l} NP \\ \# \\ Adj \\ \text{Predicate-nominal} \\ \text{Prepositional phrase} \\ \text{that } S \end{array} \right.$

- (4) $v \rightarrow Cs \text{ in env. } \left[\begin{array}{l} \alpha \text{ AUX} \\ \text{, where } \alpha \text{ is a N} \\ \text{Det } _ \end{array} \right.$

Rule (3) adds the feature (+-----NP) to an occurrence of the symbol V which is in the environment ----- NP, etc. rule (4) adds the feature (+ (+Animate) -) to a V complex symbol which is in the environment

$\left[\begin{array}{l} N \\ +\text{Animate} \end{array} \right] \text{ Aux } \text{----}, \text{ etc. Mc Cawley}$

regards these rules also suspect since the information which these rules mark in the

evolving structure is completely redundant.

Finding the above problems with Chomsk's approach, Mc Cawley (1968 a) proposes the following alternative for the base component:

(a) The base component is a set of unordered rules of two types, constituent structure and lexicon.

(b) Both types of rules have a set of NODE ADMISSIBILITY ^I, the former being contextfree and the latter context - sensitive.

(c) The form of the rule is $\langle A; W \rangle$ (W being a non -zero string of non - terminal symbols) for constituent structure rules and $\langle A; x \text{ in env. } .y \rangle$ (where x a complex of phonological and semantic information and y is expressed in terms of selectional and strict sub-categorization features) for lexical rules.

In Mc cawley's paper "The role of semantics in grammar" (1968 b) the influence of Uriel Weinreich is apparent at many places. Mc cawley first takes up one aspect of the notion " dictionary entry" and " lexical item" . Katz and foodor 1968 treat a polysemous item such as BACHELOR as a single lexical item with a single dictionary entry containing four sub - entries , one for each of the four meanings of BACHELOR which they recognize. KF's position, like that of most lexicographers, is to group together in a single dictionary entry all the readings which can be associated with a given

right half is a complex entity consisting of a matrix of phonological features and a semantic representation. Alternatively, such a dictionary entry could be viewed simply as a single complex of three types of information (syntactic, semantic, phonological) which characterise the way the lexical items behave, subject to the constraint that the syntactic information be in the form of a single unanalyzable category symbol.

A large part of ASPECTS is devoted to showing that this last constraint is responsible for several inadequacies in the earlier theory and to exploring the questions of what syntactic information each dictionary entry must contain and what is an appropriate formalism for representing that information. The earlier theory allowed a category to be subdivided only through creating a proliferation of category symbols via constitu-

structure rules such as in (I)

Mc Cawley (1968 a) notes that even with this proliferation of category symbols, there is often no symbol available for a category implicit in the rules, as will prove the case any time subclassifications crosscut each other, as in (I), where the rules have no symbols for the category "human noun". What is needed to avoid this defect is a mode of representation involving "complex symbols" such as

$$\left[\begin{array}{l} N \\ + \text{Human} \\ - \text{Common} \end{array} \right]$$

represent a syntactic category by a set of simultaneous components rather than by a single unanalyzable symbol. In ASPECTS Chomsky explores such componential representations in detail.

Chomsky's conception of the base component of a grammar is criticized by Mc Cawley. He notices first the rules which

$$(I) \quad N \rightarrow \left[\begin{array}{l} N_{\text{common}} \\ N_{\text{proper}} \end{array} \right]$$

$$N_{\text{common}} \rightarrow \left[\begin{array}{l} N_{\text{com-human}} \\ N_{\text{com-proper}} \end{array} \right]$$

$$N_{\text{proper}} \rightarrow \left[\begin{array}{l} N_{\text{prop-human}} \\ N_{\text{prop-nonhuman}} \end{array} \right]$$

conception of the base component which is free from these inadequacies and which in addition involves neither ordering nor re-writing rules.

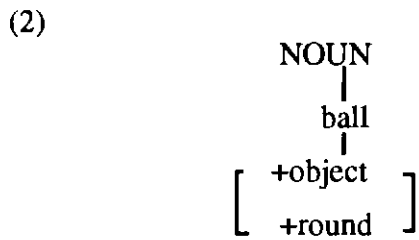
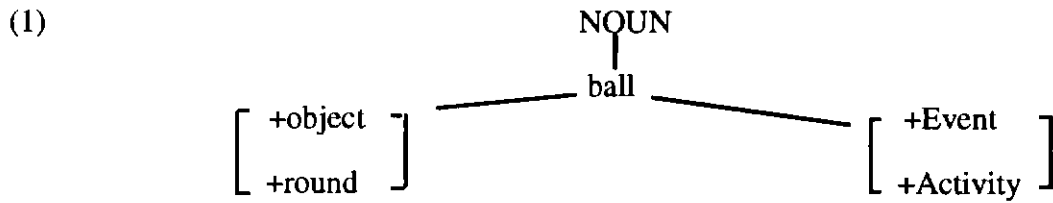
Chomsky's conception of constituent structure component involves rewriting rules of a special type called phrase Structure Rules. Chomsky treats these rules as ordered. one fact which casts some doubt on the hypothesis of ordered constituent structure rule is the fact that no examples have been found of dialects differing merely in the ordering of their constituent structure rules, whereas there are numerous examples of adjacent dialects in which the same phonological rules or the same transformational rules apply but in a different order (Klima 1964).

In ASPECTS, Chomsky introduces a use of ordering of constituent structure rules which had not been discussed in grammars written in the earlier framework, a use which relates to the rules creating "complex symbols". Mc cawley (1968 a) argues that there is no real reason for having such rules in the grammar at all. If this conclusion is accepted, it will mean that here there is likewise no particular reason for imposing an ordering on constituent structure rules.

The grammatical theory of SYNTACTIC STRUCTURES (Chomsky 1957) treated the lexicon as consisting simply of those

constituent structure rules which rewrite a non terminal symbol as a specific morpheme or string of morphemes. Next to nothing was said in the above text about the mode of representation of those morphemes; a morpheme appears in the rules either in ordinary orthography or written as a sequence phonological segments or in the form of a special symbol such as PAST which is given its phonological shape by later rules of the grammar. Soon after the appearance of SYNTACTIC STRUCTURES, Chomsky adopted Halle's proposal (Halle 1959) that a morpheme should appear in the constituent structure rules in the form of a matrix of +'s, and -'s, and blanks.

Mc Cawley (1968 a) observes that in the above conception of the base component, each dictionary entry provides exactly two pieces of information about each lexical items: its underlying phonological shape and the syntactic category to which it belongs, the category being denoted by the symbol which appears to the left of the arrow in rule which introduces the lexical item in question. With the advent of Kats and Fodor's (1963) sketch of a semantic theory, the dictionary entry was enlarged to include also a semantic representation. After this revision of the theory, the dictionary of transformational grammar was regarded as consisting of rewriting rules whose left half is the name of a syntactic category and whose



The grammar with which the present semantic theory is to be compatible contains a categorial component and a lexicon. Both have been postulated as subcomponent of the base. The categorial component generates preterminal strings: lexical entries from the lexicon are then inserted into appropriate positions of a preterminal string, yielding a generalized phrase- marker. A G.P.M. which meets the conditions for the obligatory transformations is the deep structure of a sentence. Some semantic features must appear in the derivation of a sentence prior to the insertion of lexical entries.

3.2.J.D.Mc CAWLEY

The base component of a transformational grammar has hitherto been regarded by Chomsky and others as rewriting rules, as was mentioned above. In Chomsky 1965, as has already been discussed above, the base component consists of two sub-components: a constituent structure sub-component, consisting of rewriting rules and rules which create complex symbols, and a lexicon.

Mc Cawley (1968 a) discusses certain inadequacies of the position that the base component of a grammar should involve rewriting rules and proposes an alternative

specifies the context in which the entry may legitimately appear. The theoretical status, Weinreich says, of the syntactic markers in KF is not clear. It is fair to understand that the function of the syntactic marker ($Sx M_i$) is to assure that all entries having that marker can be introduced onto the points of a syntactic frame identified by the category symbol $Sx M_i$. In that sense the set of syntactic markers of a dictionary would be just the set of terminal category symbols, or lexical categories (in the sense of Chomsky 1965), of a given grammar.

The presence of syntactic and semantic markers with identical names (Male, Female, Abstract, etc.) shows that the distinction between semantic and syntactic markers - a distinction theoretically crucial for KF - is ill-founded.

Weinreich (1966) has presented a new semantic theory, some aspects of which will be discussed below. According to him, the goal of a semantic theory of a language is to explicate the way in which the meaning of a sentence is derivable from the full, specified meanings of its parts.

The grammar which specifies the syntactic structure of sentences must be of a particular form. The form of grammar with which the semantic theory developed by Weinreich is meant to be compatible is that of Chomsky 1965. A grammar of this form contains a base and a transformational com-

ponent. The base generates deep structures of sentences, upon which the transformations -all obligatory- operate to produce surface structures of sentences. The base in turn consists of a categorial component, which generates preterminal strings, and a dictionary (called LEXICON by Chomsky), which contains lexical entries. A lexical entry may be considered as a triplet (P,G,H), in which P is a set of phonological features, G is a set of syntactic features and, M is a set of semantic features. Weinreich has followed Chomsky on the important principle that the transformational processing contributes nothing meaningful to a sentence, and that the operations of the semantic component, leading to the semantic interpretation of a sentence, should be defined entirely on the deep structure of the sentence. Weinreich wants to insure that a deep structure as a whole is free of ambiguities. To do so, he must present lexical entries from contributing ambiguities, and so he stipulates that a lexical entry be so defined that its component M is free from disjunctions. A polysemous or homonymous word (such as BALL_i "galla affair", BALL_{ii} "spherical object"). will be represented by the theory by as many entries as it has meanings. Suppose there is a preterminal string with a node NOUN. A "lexical rule" rewrites NOUN not as a disjunctive set of features, exemplified by (1), but as either (2) or (3).

full sentence has received a semantic interpretation. If any pair of elements violate the selectional restrictions, their combinations will be blocked.

We can conclude this section by observing that meaning is now an official part of a linguistic description, syntax is independent and divided into deep and surface structures with the former providing the exclusive basis for semantic interpretation. Thus, the general goal of a linguistic description is to state the relationships between sound and meaning.

Section III: The Generative Semantics Approach To Lexicon

3.1.WEINREICH

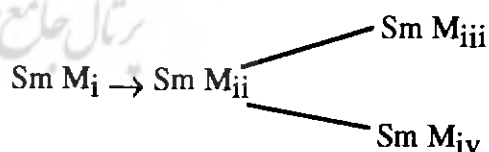
Weinreich (1966) criticizes Kats and Fodor (1963) (hereinafter KF) by observing that the subject matter of KF turns out to be far less broad than they have claimed. KF, Weinreich observes, are concerned with an extremely limited part of semantic competence: the detection of semantic anomalies and the determination of the number or readings of a sentence. To carry out this goal, KF visualize a semantic description of a language as consisting of two types of components: a dictionary and a set of projection rules. The dictionary contains statements of meanings of words, each entry being polysemous. The projection rules specify how the meanings of words are combined when the

words are grammatically constructed, and, how the ambiguity of the individual words is reduced in context.

As to the dictionary entry, KF propose the following normal form: every entry contains:

- (i) a syntactic categorization
- (ii) a semantic description
- (iii) a statement of restrictions on its occurrences

The syntactic categorization (i) consists of a sequence of one or more syntactic markers such as Noun, Verb ↔ Verb Transitive, etc. The semantic description (ii) consists of a sequence of semantic markers and, in some cases, a semantic distinguisher. The semantic markers constitute those elements of a meaning upon which the projection rules act to reduce ambiguity. Polysemy of an entry appears in the normal form as a branching in the path of semantic markers (Sm M), e.g.:



Reduction of ambiguity is represented as the selection of a particular path (e.g. Sm Mi → Sm Mji → Sm Mjiv) out of a set of alternatives. The distinguisher contains all the remaining aspects of the meaning of an entry - those which do not figure in the calculation of ambiguity reduction. The selection restriction (iii) at the end of an entry

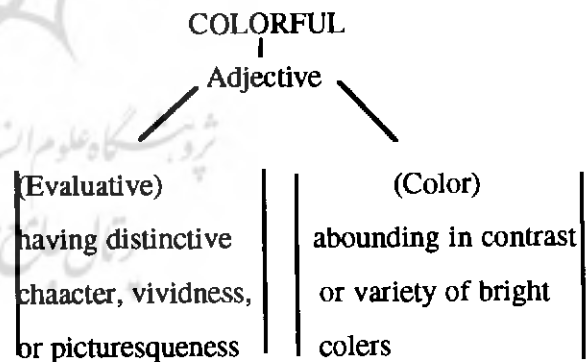
minuses be replaced by U's and M's in underlying (lexical) representations dose not solve problems. Feature counting does not always lead to the establishing of clear natural class. To remedy this situation, Chomsky and Halle(1968) introduce marking conventions which are designed to evaluate the "intrinsic content" of the features(SPE: 403-408). Thus, the standard theory with the help of the marking conventions has simplified the structure of the lexicon.

2.3.Kats and Fodor 1963

The important paper by Kats and Fodor, "The structure of semantic theory" represented the first attempt to make semantics a systematic part of linguistic description. This move provided the impetus for a number of significant changes in syntax as semantic requirements were imposed on the syntactic component. Intially, Kats and Fodor argued that linguistic knowledge could be separated from the rest of a speaker's knowledge about the world and that the syntactic machinery could provide a basis for a semantic component which would assign a semantic interpretation consisting of one or more readings to each sentence and in addition, would mark those strings which has no readings as semantically anomalous.

This attempt to present a principled basis for the definition of the linguistic meaning is obviously crucial to the incorporation

of semantics into grammar. It represents a cautious expansion of the domain of linguistic theories which regard and treat semantics as a completely secondary and subservient component of grammars. In operation, the semantic component takes as input a structural description of some sentence(S). It has available a dictionary entry for each word in S which states not only the syntactic classification of the word but also provides by the use of semantic markers, distinguishers and selection restrictions the information necessary for the operation of the PROJECTION RULES which combine the meanings of individual words into the meanings possible for the whole sentence. For example, the dictionary entry for "colorful" will include, according to Kats and Fodor:



<(Aesthetic object) or (social activity)>
 <(physical object) or (social Activity)>
 Where markers are enclosed in (), distinguishers in [] and selection restrictions in < >. The projection rules, beginning at the bottom of a labeled tree, proceed to amalgamate elements at each higher level until the

the last complex symbol of (3), and to insert FRIGHTEN for Q.

In ASPECTS, the base component consists of two sub-components: a constituent structure subcomponent, consisting of rewriting rules. $A \rightarrow Z / X \rightarrow W$, and a lexicon. In earlier treatments by Chomsky (1957, 1962), the lexicon is considered to consist of rewriting rules rather than something consisting of two sub-components.

2.2. Sound Pattern of English (Chomsky 1968): The Implications of Markedness Theory for Lexicon

There are two places where features have been counted to assess the simplicity of a phonological system: the lexicon and the phonological rules. There are numerous phonological constraints characterizing any language. Thus, there are often redundancies created in the phonological representations by constraints on sequence of phonemes. An example is: if the second of two word-initial consonants is a stop, then the first consonant is /s/.

Because of sequential constraints, certain features of one segment can be predicted on the basis of certain features of another segment. That is, certain feature specifications are rendered redundant by segmental constraints. According to the theory of Morpheme structure Rules proposed by Halle (1959:30) redundant feature specifica-

tions are to be left blank in the underlying representations of morphemes. This device simplifies the lexicon to a great extent.

Because of inherent problems with the feature-counting simplicity metric, which will not be treated here, linguists turned to the notion of NATURAL SEGMENTS, which are the subject of Markedness Theory. Segments differ in their frequency of their appearance, the theory tells us.

The theory of markedness as developed within Praguean phonology (Troubetzkoy (1939), and by Chomsky and Halle (1968) within generative phonology, allows phonological segments to be differentiated by means of the presence or absence of a particular phonological feature.

In the lexicon, instead of matrices with pluses and minuses, we can have matrices containing M's and U's, for Marked and Unmarked, respectively. An example from German follows:

	bunt	Bund
Voiced	U	M

The final obstruent of underlying / bunt / is unmarked for voicing, whereas the final obstruent of underlying / bund / is marked for voicing. The marked segment is phonologically more complex. In the binary system, on the other hand, segment, such as voiceless and voiced, are treated as binary and as being of equal complexity.

However, the proposal that pluses and

phonetic distinctive features taken together with the full set of conditions on phonological representation makes it possible for the lexical formatives to be selected from a fixed "Universal" set. The grammatical formatives, too, are selected from a fixed "universal" vocabulary (Chomsky 1965:66).

The source for the lexical categories (lexical items and grammatical items) is the rewriting rules, such as (2) (Chomsky 1965: 82):

- (2) a) $N \rightarrow (+N, \pm Common)$
 b) $(+Common) \rightarrow (\pm Count)$
 c) $(+Count) \rightarrow (\pm Animate)$
 d) $(-Common) \rightarrow (\pm Animate)$
 e) $(+Animate) \rightarrow (\pm Human)$
 etc.

Chomsky interprets (2a) as an assertion that the symbol N in a line of derivation is to be replaced by one of the two complex symbols $(+N, +Common)$ or $(+N, -Common)$. So the base of the grammar will contain a lexicon, which is simply an unordered list of all lexical formatives. More precisely, the lexicon is a set of lexical entries being a pair (D,C), where D is a phonological distinctive feature matrix "spelling" a certain formative and C is a collection of specified syntactic features (a complex symbol). (Chomsky 1965:85).

To generate the sentence (3):

(3) Sincerity may frighten the boy.

An ASPECTS - model contains the branching rules (4), along with the sub-

categorization rules (2), and a lexicon with the entries (5) (Chomsky 1965:85):

- (4) $S \rightarrow NP \quad AUX \quad VP$
 $VP \rightarrow V \quad NP$
 $NP \rightarrow DET \quad N$
 $NP \rightarrow N$
 $DET \rightarrow The$
 $AUX \rightarrow M$

(5) LEXICON

- (SINCERITY, $(+N, -count, +Abstract)$)
 (Boy, $(+N, +Count, +Common, +Animate, +Human)$)
 (MAY, $(+M)$)

These rules allow Chomsky to generate the preterminal string:

- (6) $(+N, -Count, +Abstract) M Q the (+N, +Count, +Animate, +Human)$

A terminal string is formed from a preterminal string by insertion of a lexical formative in accordance with the lexical rule (7) (Chomsky 1965:84):

- (7) If Q is a complex symbol of a preterminal string and (D,C) is a lexical entry, where C is not distinct from Q, then Q can be replaced by D.

Taken literally, this tells us to replace all the syntactic features of the node concerned by the phonological information contained in the lexical entry.

The Q in rule (6) is a complex symbol into which V is analyzed. The lexical rule now allows Chomsky to insert SINCERITY for the first complex symbol and BOY for

a) The "KILL: CAUSE TO DIE argument: Fodor (1970) criticizes an analysis developed by Mc Cawley (1968 C) which derived some transitive verb phrases from embeded causative complements with intransitive verbs. he opposes the syntactic decomposition of verbs like KILL into an abstract CAUSE ... DIE.

b)The "REMIND AS SIMILAR" Argument Chomsky 1969 devotes some discussion to the verb REMIND in the context of analysis developed by Postal (1969) which postulates lexical decomposition into an abstack PERCEIVE... SIMILAR. Chomsky presents some data, which according to him, support the level of deep structure.

c)The Argument From Grammatical Relations

Chomsky (1969) considers some examples given by fillmore (1968) in support of his" case Grammar" hypothesis, as follows:

I. a. Bees are swarming in the garden.

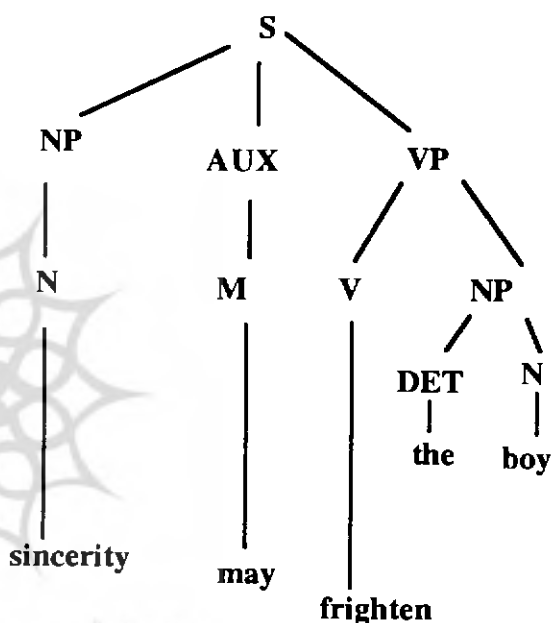
b. The garden is swarming with bees.

Fillmore argues that (I.a-b) should haved single astract structure, on the ground that the semanitic (or"case") relations between verb and noun phrases ("The garden": LOCATIVE, and "BEES": OBJECTIVE are the same in both. Chomsky maintains that such examples show the existence of the level of deep structure

Section II: The Standard Theory Approach To Lexiccon

2.1. CHOMSKY 1957, 1962, 1965

Chomsky (1965) starts the discussion of the lexicon by referring to the following phrase - marker:



(I)

A grammar, according to chomsky (1965: 65), that generates simple phrase-markers such as (I) may be based on a vocabulary of symbols that includes both formatives (the, boy etc.)and category symbols(s,Np,V, etc.). The formatives, furthermore,can be subdivided into lexical items (SINCERITY, BOY) and grammatical items (PERFECT, Possessive OSSESSive). The theory of

concepts that represent the "building bricks" out of which meaning are constituted, the formal relations into which these concepts can enter in semantic representations, and the character of the rules that assign semantic representations to sentences, compositionally, on the basis of the semantic representations of their syntactic part, and grammatical relations.

Second, semantic theory is also a theory of linguistic universals that are determined by semantic representations. Thus, it seeks to discover definitions of semantic properties and relations, e.g. definitions of such notions as "synonymous with"; "entails" semantically anomalous; "analytic", etc, where the definitions are framed exclusively in terms of formal features of semantic representation.

1.4. The Extended Standard Theory

There is a third theory involved in the controversy between interpretive and generative semantics. This is the theory that Chomsky calls "The Extended Standard Theory". (Chomsky 1970, Jackendoff 1972).

The extended standard theory rejects the condition that underlying phrase marker contain all the syntactic information required. Without denying anything further, it claims that the semantic interpretation of a sentence is not solely determined by its underlying phrase-markers but by both its underlying

phrase marker(s) and its surface phrase-marker .. Thus, the revision constitutes more of an extension of the standard theory than an extended standard theory.

The reasons behind the attempts to extend the scope of the semantic interpretation beyond underlying phrase-markers are, so far, purely empirical. Those who are making this attempt, i.e. Chomsky, Jackendoff, and others, believe they have found evidence of regularities connecting certain aspects of semantic interpretation to certain features of surface structure.

1.5. The Scope of the Present Paper

For ease of exposition, the above schools are characterized in this paper as two broad schools of thoughts: The Standard Theory (or syntacticism) and The Generative Semantics (or semanticists). The present paper studies the structure of lexicon as put forward by these schools. Section II presents the approach of the standard theory to lexicon. In Section III, the views of generative semanticists on lexicon are dealt with.

Footnote to section I

I

It is not the purpose of the present paper to study the deep structure. However, some of the arguments in support of the level of deep structure will be mentioned briefly in passing. In this way, we will be exposed to the differing notions toward deep structures.

1965) was the first major step beyond Chomsky's initial systematic statement of transformational theory in *SYNTACTIC STRUCTURES* (Chomsky 1975). The work of McCawley, Lakoff, Postal, and their followers, which has been appearing recently under the title "Generative Semantics", claims to be the second major advance in transformational theory and to supersede the first.

The proposals which disagreed with the standard theory have often been referred to under the broad term generative semantics (See, e.g. Lakoff 1971; McCawley 1971 a,b, 1973). The older standard theory of Chomsky paid little attention to the semantics; this was its weakest point. Furthermore, the generative semanticists claimed that a Chomskyan analysis was inadequate to deal with many sentences, and that this inadequacy was traceable to the lack of consideration given to meaning in the generation of sentence structures. Both the extended standard theory and the theory of generative semantics were reactions to the inadequacies of the earlier view. However, those adhering to the extended standard theory still emphasize the autonomy of the syntactic component. Although they have given more attention to the semantic component and its interaction with syntax, this semantic component is conceived of as a set of interpretation rules which act on or applied to the syntax. The

followers of that theory have come to be called "Interpretive Semanticists". (See 1.3). By contrast the generative semanticists claim that the meaning component plays an essential part in the generation of the structures themselves, and cannot be separated from them. They claim that the two components (semantics and syntax) are inextricably entwined and that sentences are generated from a syntactic/semantic base.

1.3. Interpretive Semantics

The theory of interpretive semantics is part of the standard theory. It presents the standard theory's conception of the semantic component of a grammar. The basic thesis of interpretive semantics is that the semantic component provides semantic representations of sentences as interpretations of the formal structures which are generated elsewhere in the grammar as an account of the syntactic organization of sentences. These representations are intended to reflect what linguists call the literal meaning of sentences and what philosophers call logical form, i.e. the grammatical features of sentences that determine their role in inferences.

Semantic theory, from the viewpoint of the interpretive semantics, has two general aims. First, it is a theory of the linguistic universals that determine the form and substance of semantic representations; thus, it seeks to discover an abstract system of

grammar. One generalization captured by deep structures so characterized is that they contain all the information necessary to specify the meaning of the sentences they represent. In addition to the general definition just formulated, ASPECTS contains a set of proposals as to what the deep structures of large sets of English sentences look like, presented in the form of a phrase-structure grammar which generates the representations in question.

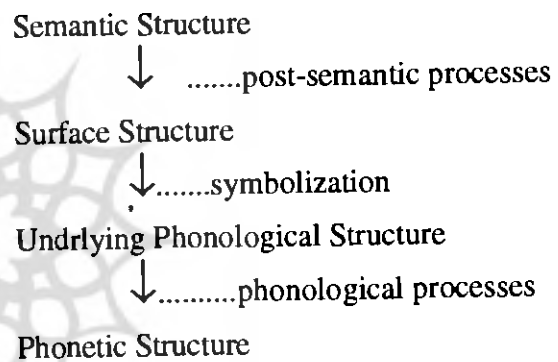
The beginning of the deep structure controversy came in the realization that deep structure as exemplified in ASPECTS failed to do what it was intended to do; in particular, it failed as a direct and comprehensive basis for semantic interpretation. There was nothing in ASPECTS to suggest a strategy for the resolution of such failure, and two alternatives were eventually developed; (i) We might retain the generalization embodied in the relation of deep structure to meaning, and the corresponding restriction on transformations that they do not affect semantic properties but give up the formal characteristics of deep structures that they be generated by a context-free phrase-structure grammar and/or that they be the insertion point for lexical material (i.e. Generative Semantics). Or, (ii) We might retain the formal characteristics, but give up the generalization -- allowing some aspects of meaning to depend on structures derived by transformation

(This is the "The Extended Standard Theory").

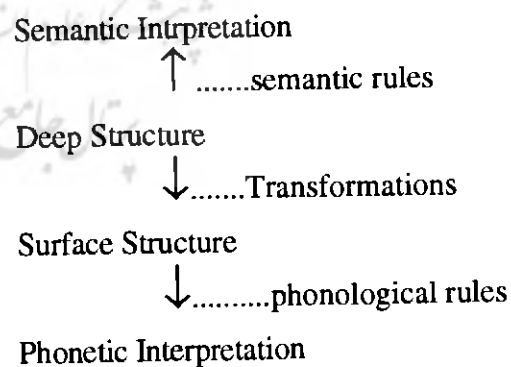
Both of these alternatives constitute abandonment of the notion of deep structure as defined and elaborated in ASPECTS^I.

The differences of the two schools of thought: generative semantics (Semanticism) and the standard theory (Standard theory (Syntacticism)) can be shown schematically as the following:

GENERATIVE SEMANTICS



SYNTACTICISM



1.2. Generative Semantics

The theory of transformational grammar put forth in *AN INTEGRATED THEORY OF LINGUISTIC DESCRIPTIONS* (Katz and Postal 1964) and *ASPECTS* (Chomsky

A SEMANTIC STUDY OF LEXICON

Mahmoud Farrokhpey

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چکیده: در دهه گذشته زبان‌شناسان علاقه وافری به تئوری معناشناسی از خود نشان داده اند. یکی از دلائل این گرایش پیدایش دستور زبان گشتاوی بوده است که تفاوت بین روساخت و ژرف ساخت را الزامی دانسته است. در زمینه ساختار واژگان اکثر زبان‌شناسان تحت تأثیر روش اجزائی قرار گرفته و آنرا برای تجزیه و تحلیل معنی برگزیده اند. این دسته از زبان‌شناسان ساختار واژگانی را به کمک دسته محدودی از عناصر معنایی (اجزاء) و ترکیبات گوناگون آنها به انجام رسانیده اند.

Section 1: Theoretical Background

1.1. The Deep Structure Controversy

For several years, there has been an on-going controversy in syntactic theory involving two schools of thought known variously as "abstract syntax" or "generative semantics" on the one hand, and "autonomous syntax", "interpretive semantics", or "the extended standard theory" on the other. A key issue in the controversy is the notion of "deep structure". Various scholars have presented arguments against the existence

of deep structures, some purported refutations of these arguments, and several arguments in support of deep structures.

An attempt will be made here to present some of the definitions given in the literature for the deep structure. As one of these definitions, we could propose that of Chomsky's ASPECTS (1965) in which deep structure is a level formally distinguished as being (i) generated by a context-free phrase structure grammar, (ii) the point at which lexical material is inserted, and (iii) the input to the transformational component of the