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To Irene

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Preface

For every scientific discipline there are fruitful periods and periods of decline. Morphology was a very central field in the structuralist period, both in the European and in the American tradition. Unfortunately, the pendulum swung back with early generative grammar, mainly because of the priority assigned to syntax. A sign of this lack of interest in morphology during the sixties is the fact that morphology was not supposed to account for a specific set of problems: sometimes it was attached to the syntactic component (morphosyntax) and sometimes to the phonological component (morphophonology).

In the last ten years, on the contrary, morphology has received a great deal of attention. It has, in fact, become an entire subcomponent of the grammar (morphological component), which is now thought to operate in an autonomous way with respect to the other components of the grammar. Today, an explicit formal status is attributed to morphological rules, and the study of the properties of these rules has lead us to discover that in the lexicon there are many more regularities than we originally imagined. As has been pointed out, morphology today is a micro-system, with a dictionary of primitives (words, stems, affixes, etc.), formal rules (Word Formation Rules) and abstract principles that govern the form and the functioning of the rules (adjacency condition, unitary base hypothesis, etc.).

In this book, we will examine the historical context in which the "new" generative morphology has evolved (Chapter I), the work that "founded" the field, Halle's 1973 proposal (Chapter II) and the first theoretical, non episodic, proposal, that of Aronoff 1976 (Chapters III and IV). Following this, a model of the organization of the lexical component is given, along with some well formedness conditions (Chapter V), In addition, a model is proposed for the interplay among the various types of morphological rules, namely derivation, inflection and compounding rules (Chapter VI).

Next, a closer look is taken at word formation rules, and a number of constraints on these rules are examined (Chapter VII). Finally, it is argued that while morphology and syntax must be considered separate subcomponents of the grammar, they interact in interesting ways (Chapter VIII).

As is clear throughout the book, the works of Halle (1973), Siegel (1974), Aronoff (1976), Allen (1978) are seen as basic in the development of the relatively homogeneous theory of generative morphology as it is

understood today, and our debt to these works is great. Nevertheless, the morphological model proposed in this book differs from each of the models offered in the works cited above. Most differences derive from the facts that cross-linguistic evidence has been taken into account wherever possible, and that the final proposal also draws on more recent developments in morphology (e.g. Lieber 1980, Williams 1981a, Selkirk 1982) which have considerably improved our understanding of the field. Of course, much work remains to be done in the relatively new field of morphology.

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First, I would like to thank Pieter Muysken of the University of Amsterdam for having called my attention to the need for a book on morphology. In fact, this book was begun during my stay from 1979 to 1980 at the Institute of General Linguistics at the University of Amsterdam, a true "paradise" for a theoretical linguist, because of the richness of the debate, and the diversity of the points of view which it offered, as well as its excellent library. I am indebted to the CNR/ZWO for a scholarship which helped make this year in Amsterdam possible. While in Holland, I benefited greatly from lengthy discussions with members of the Linguistic Institute in Amsterdam, in particular Hans den Besten, Simon Dik, Pieter Muysken, Henk van Riemsdijk, Norval Smith and Irene Vogel. I also had very interesting discussions with other Dutch colleagues, in particular, Minne G. de Boer of the University of Utrecht, Geert Booij of the Free University of Amsterdam, and Harry van der Hulst and Michael Moortgat of the University of Leiden.

I would like to extend my warmest thanks to Mark Aronoff, Pieter Muysken and Irene Vogel for having read an earlier version of this book from beginning to end; their comments and insights have been most valuable. In particular, I thank Irene Vogel for her help throughout every phase of this book's preparation, especially for the irreplaceable combination of encouragment and constructive criticism she offered me. I also thank Enzo Lo Cascio and Marina Nespor of the University of Amsterdam, Maria Luisa Altieri Biagi, Andrea Fassó and Luigi Rosiello of the University of Bologna, Giorgio Graffi and Paolo Ramat of the University of Pavia, and Giulio Lepschy of the Reading University who read and commented on earlier versions of parts of the manuscript. Thanks also go to my students in the courses from 1981 to 1982 and from 1983 to 1984 at the University of Venice for their helpful criticism.

I am also greatly indebted to the person who taught me respect both for linguistics and for research in general, Luigi Heilmann of the University of Bologna, who has been a true "maestro" for me. Special thanks go to my son, Sandro, who helped me through critical periods, showing great patience and maturity. Finally, I would like to express my gratitute to the editor of Foris, Henk La Porte, for his infinite courtesy and to the directors of the series, Henk van Riemsdijk and Jan Koster, for their constant encouragement.

Chapter I

The transformationalist treatment of word formation

In this chapter, we will first show how the treatment of the lexicon has evolved from *Syntactic Structures* to the "Standard Theory". We will then discuss the only systematic proposal for word formation advanced in the prelexicalist framework, that of Lees (1960); first the fundamental aspects of the theory will be presented and then its inadequacies will be pointed out.

1. The lexicon: from marginal to central

The development of Transformational Generative Grammar from its beginning up to the present, can be seen, among other ways, as a progressive refinement of the structure of the lexical component[1]. This does not mean that the evolution within the theory was motivated by considerations having to do with the lexicon itself; in fact, the opposite is true. That is, the changes in the organization of the lexicon followed from changes proposed for the organization of the transformational component, the categorial component and even the phonological component. The fact remains, however, that the lexicon, in the beginning, was conceived of simply as a list of lexical formatives, while today it is thought of as having a complex internal structure which is capable of handling a wide variety of phenomena. It is for this reason that the organization of the lexicon has become an important part of the theory of grammar.

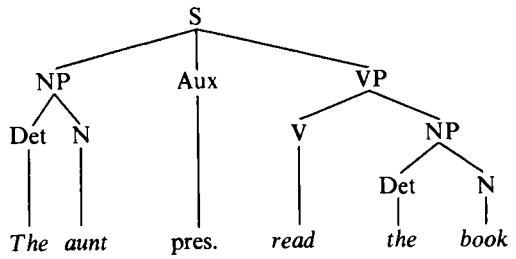
1.1. Syntactic Structures

In *Syntactic Structures*, the lexicon is not an autonomous component; the rules that introduce lexical items are the last rules of the categorial component. The categorial component thus includes two types of rewriting rules: phrase structure rules and rules that insert lexical items. The two sets of rules are not formally differentiated, as can be seen in (1):

(1)
(i) S → NP + Aux + VP
(ii) NP → Det + N
(iii) VP → V + NP
(iv) Aux → pres., past
(v) Det → *the* ...
(vi) N → *aunt, book* ...
(vii) V → *take, read, walk* ...

A phrase marker that can be constructed on the basis of the rules in (1) is given in (2):

(2)



The problems with this proposal, however, are obvious. That is, the grammar in (1) also generates ungrammatical sentences such as those in (3):

(3) (i) *the aunt walks the book
(ii) *the book reads the aunt

In (3i), the non grammaticality arises from the fact that an intransitive verb is followed by an object and in (3ii), it arises from the fact that *read* has an inanimate subject and an animate object.

As far as the goals of the then new theory were concerned, sentences such as those in (3) did not constitute a problem, and in *Syntactic Structures*, Chomsky already suggested some possible solutions to this problem. In relation to (3ii), Chomsky observed, in fact, that in order to develop not simply a fragment of a grammar but rather a complete grammar, it is necessary to impose many restrictions on the choice of the V(erb) in relation to the subject and object, such that sentences such as *John admires sincerity* are allowed but the inverse type of non-sentences such as *sincerity admires John* are excluded (Chomsky, 1957:42). As far as (3i) is concerned, on the other hand, the mechanisms presented in *Syntactic Structures* allowed for a solution of the type seen in (4), where (4iii) represents a modification of the original rule in (1iii) and (4vii) represents a modification of the rule in (1vii):

(4) (iii) $VP \rightarrow \left\{ \begin{matrix} V_{tr} + N \\ V_{intr} \end{matrix} \right\}$

(vii) $V_{tr} \rightarrow$ *take, eat ...*
$V_{intr} \rightarrow$ *walk, slip ...*

The modifications in (4) provide (a) a rewriting rule for VP with two possibilities: transitive verbs and intransitive verbs, and (b) two "lexical rewriting rules": one for transitive verbs and one for intransitive verbs. The solution proposed subsequently within the framework of the Standard

Theory, however, was quite different since Chomsky, in *Aspects*, rejected the "syntactic" solution in (4), in favor of a "lexical" solution, which will be outlined in the next section.

1.2. The Standard Theory

As far as morphology is concerned, the most important modification in the development of the Standard Theory in *Aspects* is the separation of the lexicon from the rewriting rules. It is worth noting that Chomsky considered this separation a substantial revision of the theory, one that affects its generative power and offers considerable advantages. Let us now briefly consider these changes. First of all, as Chomsky points out, many of the properties of the formatives can, with the revisions, be specified directly in the lexicon. This permits us to simplify the grammar significantly since many of the properties of lexical formatives are, in fact, irrelevant to the functioning of the base rules and, furthermore, are often idiosyncratic. For example, the fact that there are two classes of transitive verbs, those that allow deletion of the object and those that do not, no longer has to be handled by rewriting rules. Instead, verbs such as *read* and *eat*, that allow the deletion of the object, and verbs such as *frighten* and *put*, that do not allow deletion, are specified in different ways in the lexicon with respect to the syntactic feature for the deletion of the object. The transformational rule that deletes the object thus applies only to those words specified positively for this feature[2]. A second point is the fact that in the Standard Theory, the lexicon forms part of the subcomponent of the base, but it is a (sub-sub) component separate from the rewriting rules; it consists of an unordered list of lexical items and a set of redundancy rules. Each lexical entry contains information about the syntactic, semantic and phonological properties of the specific lexical item, as well as any possible idiosyncratic information[3]. This information, together with redundant information, is specified in ordered sets of syntactic, semantic and phonological features, respectively.

Limiting ourselves here to their syntactic properties,[4] we can represent the lexical entries of a small sample of lexical items as in (5), where anim = animate, hum = human, com = common, abstr = abstract, str = strong and prog = progressive. The symbol "+" before a feature or a category indicates that the item in question has that feature or is of that category; "−" indicates that the item does not have that feature or is not of that category; and "—" indicates the position in which the lexical item in question can occur in a given context.

(5)

	lexical category	*inherent features*	*strict sub-categorization*	*selectional restrictions*
John	[+N]	[+anim][+hum][−com] [+count][−abstr]	[−Det___]$_{NP}$	

	lexical category	*inherent features*	*strict subcategorization*	*selectional restrictions*
boy	[+N]	[+anim][+hum][+com] [+count][−abstr]	[+Det___]$_{NP}$	
rabbit	[+N]	[+anim][−hum][+com] [+count][−abstr]	[+Det___]$_{NP}$	
book	[+N]	[−anim][−hum][+com] [+count][−abstr]	[+Det___]$_{NP}$	
patience	[+N]	[−anim][−hum][+com] [−count][+abstr]	[+Det___]$_{NP}$	
water	[+N]	[−anim][−hum][+com] [−count][−abstr]	[+Det___]$_{NP}$	
frighten	[+V]	[−str][+prog]	[+___NP]$_{VP}$	___ NP [+anim]
climb	[+V]	[−str][+prog]	[+___NP]$_{VP}$	___NP [+anim]
chase	[+V]	[−str][+prog]	[+___NP]$_{VP}$	NP___NP [+anim][+anim]
read	[+V]	[+str][+prog]	[+___$(\{^{NP}_{S}\})$]$_{VP}$	NP___ [+hum]
know	[+V]	[+str][−prog]	[+___$\{^{NP}_{S}\}$]$_{VP}$	NP___ [+anim]

(5) is an approximation of how lexical items would be represented in the Standard Theory Lexicon. Summarizing, we can say that each lexical entry contains the following information:

(6) (a) lexical category
(b) inherent features
(c) contextual features
(i) strict subcategorization
(ii) selectional restrictions

The redundant phonological semantic and syntactic properties are specified in terms of redundancy rules (cf. Chomsky, 1965). For example, the syntactic regularity by which the feature [+human] implies the feature [+animate] is not specified for each lexical item, but is established by a general rule. Consider now two specific cases: *boy* and *frighten*. As we see in (5), *boy* is a noun that can appear in the context Det___, and together with a Det, forms a NP (as distinct from the proper noun *John*, which does not appear after a determiner, cf. **the John*). It is, furthermore, a noun that has the features animate (cf. *the boy chases the rabbit* vs. **the book chases the rabbit*), human (cf. *the boy reads a book* vs. **the rabbit reads a book*), count (cf. *did you see those six boys?* vs. **did you see those six waters?*), non abstract (cf. **the boy is a virtue* vs. *patience is a virtue*), etc. *Frighten*, on the other hand, is a verb, one that is obligatorily transitive (cf. *John frightens the boys* vs. **John frightens*), and requires an

animate object (cf. *John frightens the rabbit* vs. **John frightens the book*). The inherent features of this verb include [−strong] (cf. *frighten/frightened/frightened*) and [+progressive] (cf. *John is frightening the boy* vs. **John is knowing the answer*).

A third revision introduced in the Standard Theory is the fact that lexical items are inserted into deep structures (or more correctly, in the place of dummy symbols in the deep structure) by the rule of lexical insertion (LI). This rule must take into account both the dummy symbol (whose place is filled by the lexical item) and the nature of the context. For example, LI inserts the verb *frighten* in the place of a dummy symbol dominated by V and followed by a NP (object) that has the feature [+animate]. It should be emphasized that the representations in (5) are not complete, and, as they stand, generate a large number of ungrammatical sentences. An exhaustive proposal (which goes beyond the scope of this section) would have to enrich the framework with many additional specifications in order to avoid the creation of such sentences. That is, while the representations in (5) correctly generate the grammatical sentences in (7i) but not the ungrammatical ones in (7ii), they also incorrectly generate the ungrammatical sentences in (7iii):

(7)
(i) *generated, grammatical*
John knows the boy
the boy frightens the rabbit
the boy reads the book
etc.

(ii) *not generated, ungrammatical*
*John is knowing the boy
*the rabbit frightens the patience
*the book chases the rabbit
etc.

(iii) *generated, ungrammatical*
*the boy reads the patience
*the rabbit climbs the water
*John reads the rabbit
etc.

It is clear that the proposal put forth in the Standard Theory represents an interesting step in the direction of a richer hypothesis about the organization of the lexicon. In particular, lexical entries are attributed with more grammatical information than in the *Syntactic Structures* model. This grammatical information (categorial labels, features, subcategorization frames) results in a more organized view of the lexicon; it allows a cross-classification of all lexical items and it determines certain aspects of their syntactic behavior. The information associated with the lexical items is also crucial for the operation of the Lexical Insertion Rule, whose properties will be examined briefly in the next section.

1.2.1. Lexical Insertion

The rule of Lexical Insertion inserts a lexical item in the position indicated by the dummy symbol Δ in the abstract phrase marker. The status of this rule, however, is not totally clear. It is often called the "first transformational rule", although it is obviously different in nature from the transformational rules. That is, while transformations move categories, LI introduces lexical material into certain positions. LI must, furthermore, apply more than once for each sentence. Finally, it should be noted that LI is also different from the phrase structure rules. That is, while phrase structure rules rewrite a symbol (e.g. NP) as a string of other symbols (e.g. Det+N) independently of the symbol that dominates the one that is rewritten (i.e. S or VP), LI, on the other hand, must take into account both the node that dominates Δ and the nature of the context of Δ. In other words, LI is a contextual rule.

The following is a proposal for the formulation of the rule of Lexical Insertion made by Bach (1974:108–9):

(8) For every lexical entry E containing a phonological matrix P, a set of inherent features $[+A_1, \alpha_1 A_2, \ldots \alpha_{n-1} A_n]$, and contextual features $[+X_1-Y_1, +X_2-Y_2, \ldots, +X_m-Y_m]$, we define a substitution transformation:

$$\begin{array}{l} \text{SA: } 1\text{: } W, X_1, [_{A_1} \Delta] Y_1, Z \\ \quad\ \ 2\text{: } W, X_2, [_{A_1} \Delta] Y_2, Z \\ \qquad\qquad \vdots \\ \quad\ \ m\text{: } W, X_m, [_{A_1} \Delta] Y_m, Z \\ \quad\ \ 1\ 2 \qquad 3\ 4\ \ 5 \Rightarrow \\ \quad\ \ 1\ 2 \qquad E\ 4\ \ 5 \end{array}$$

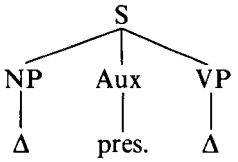
According to this formulation, the contextual features provide the set of structural conditions for the transformation that replaces the dummy symbol (Δ) when this symbol is dominated by the lexical category of the entry in question. A concrete example of Lexical Insertion is given below, where the items to be inserted are *John* and *read*.

(9) (i) lexical entries:

John, ([+N], [−Det____]$_{NP}$, [+human], [−common] ...)

read, ([+V], $[+ \_\_\_\_ \begin{Bmatrix} NP \\ S \end{Bmatrix}]_{VP}$, [NP____], [+strong] ...) [+hum]

(ii) deep structure (or abstract phrase marker):



(iii) lexical insertion of *John*[5]:

SA: X, $[[\Delta]_N]_{NP}$, Y

SC: 1 2 3 ⇒

$$1\begin{bmatrix}\text{John}\\ +\text{N}\\ [-\text{Det}\_\_\_]_{NP}\\ +\text{human}\\ -\text{common}\\ \vdots\end{bmatrix}\ 3$$

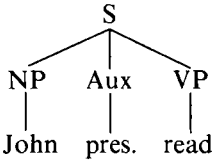
(iv) lexical insertion of *read*:

SA: X, $[[\Delta]_V]_{VP}$, Y

SC: 1 2 3 ⇒

$$1\begin{bmatrix}\text{read}\\ +\text{V}\\ \\ +[\_\_\_\begin{Bmatrix}\text{NP}\\ \text{S}\end{Bmatrix}]_{VP}\\ \\ \text{NP}\_\_\_\\ [+\text{hum}]\\ +\text{strong}\\ \vdots\end{bmatrix}\ 3$$

(v) resulting initial phrase marker:



The whole procedure can be summarized in the following way: in (9i) we begin with two lexical items as they are represented in the lexicon, in (9ii) the deep structure is generated by the rewriting rules, in (9iii) and (9iv) the rules of Lexical Insertion replace the dummy symbols with the appropriate lexical items, and in (9v) the result is what is usually called the "initial phrase marker", that is, the structure which enters the transformational component.

The rule of Lexical Insertion just seen must conform to the following principle proposed by Keyser and Postal (1976:182):

(10) Lexical Insertion Principle
- (a) Every occurrence of Δ must be replaced by an item from the lexicon.
- (b) An occurrence of the symbol Δ may be replaced by a lexical item only if the lexical item is marked as a member of the lexical category which immediately dominates that particular occurrence of Δ.
- (c) Otherwise, replacement of Δ by lexical elements from the lexicon is *syntactically* constrained only by contextual restrictions built into particular entries [...].

This principle ensures that each dummy symbol is replaced by a lexical item (10a), that a lexical item such as *read* is inserted under the node V(10b), and that the insertion takes place in accordance with the contextual restrictions, so that, for example, an intransitive verb is not inserted before a noun object.

In the rest of this book, we will not be concerned further with the Lexical Insertion rule. It should be born in mind, however, that LI is an important rule because it inserts into the initial phrase markers only those units that are defined as "words of the language", that is, no "more" (i.e. phrases) and no "less" (i.e. bound forms)[6].

Finally, it should be noted, that there are several important analogies (which we will not, however, explore further here) between LI and the rules of the lexical component. It suffices here to mention the following two points: (a) the type of information necessary for the operation of LI is the same that which is needed for the operation of morphological rules (cf. Chapters III and IV), and (b) it is possible that a rule of lexical insertion operates within the lexical component as well (that is, an operation that inserts "words" into the "word structures") similar to the one we have just seen (cf. also Lieber 1980).

2. Word formation as transformations

Within the framework briefly outlined above, the only items in the lexicon were simple words; neither compounds nor derived words had a

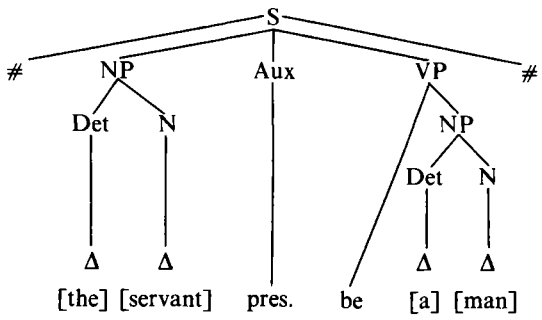
place there. Complex words, therefore, had to be formed by "rules". The only place where they could be constructed was the transformational component, the only device capable, at that time, of expressing relations. This was true for both compounds and derived words, as will be illustrated below.

2.1. The Sentence as the Source of Compounds

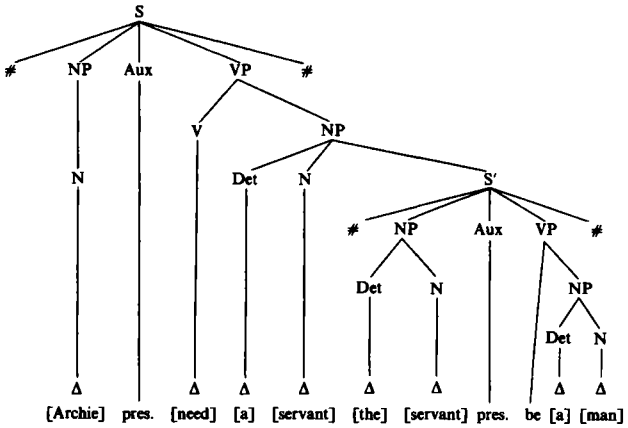
The most exhaustive treatment of nominal compounds within a transformational framework is that of Lees (1960). Lees takes his lead from the following assumption: "English nominal compounds incorporate the grammatical forms of different sentence types, and of many internal grammatical relationships within sentences, such as subject-predicate, subject-verb, subject-object, verb-object, etc." (p. 119). In other words, Lees proposes that compounds are generated by transformations from underlying sentence structures in which the grammatical relations that hold, implicitly, between the two formatives of the compound are expressed explicitly.

Consider the sentence *Archie needs a manservant*. The compound *manservant*, according to the proposal made by Lees, would have the structure seen below in (11); the deep structure of the entire sentence is given in (12) (cf. Botha, 1968:44).

(11)



(12)



In order to pass from the deep structure in (12) to the surface structure, according to the model proposed by Lees, the following procedure must be carried out[7]: (i) Apply a relative transformation to the embedded S′, replacing its leftmost NP (*the servant*) with *who* and erasing the boundaries "# #" between *who* and the rightmost NP of the highest S (*the servant*). The result is # *Archie* pres. *need a servant who* pres. be *a man* #. (ii) Apply the Wh-deletion transformation to the result of (i), to give # *Archie* pres. *need a servant a man* #. (iii) Apply to the result of (ii) the Noun Shift transformation that deletes the DET (*a*) to the left of *man* and then shifts the N (i.e. *man*) to the position immediately to the left of the rightmost N of the highest S, in this case *servant*. The result is # *Archie* pres. *need a man servant* #. (iv) Apply a transformation to shift Aux (i.e. *pres.*) to the position to the right of the verb (*need*), yielding # *Archie need* pres. *a man servant* #. (v) Apply two transformations that introduce boundaries in the appropriate places: first, insert inter-word boundaries to give # *Archie* # *need* pres. # *a* # *man servant* #; second, insert intra-word boundaries "–" to give # *Archie* # *need-* pres. # *a* # *man-servant* #.

As can be seen from this procedure for arriving at the compound *man-servant*, the entire operation is extremely complicated, and it is difficult to imagine the set of operations that would be necessary to derive more complex compounds such as *a wh movement rule applicability condition*, or the Dutch compound *landbouwmachineonderdelententoonstellingsgebouw* "lit. agricultural machine parts exposition building" (cf. Booij, 1977). Before examining other criticisms, however, let us first consider the arguments Lees offers in favor of his transformational approach.

Lees's arguments are essentially of a semantic and syntactic nature, and can be summarized in the following three points:

(i) "Nominal compounds are understood on the basis of certain fixed syntactic relations (subject, object, etc.) which are specifiable only in terms of relations among constituents of underlying sentences" (Lees, 1960: xxxix); thus, in the derivation seen above it is understood that *man* and *servant* are in the relation "subject-predicate".
(ii) The transformational treatment can explain the "multiple ambiguity" of compounds. That is, if the meaning of a compound is ambiguous, it is possible to make this ambiguity result from different deep structures corresponding to the different meanings. Thus, for example, the ambiguity of the compound *snake poison* can be accounted for in "grammatical" terms, without resorting to extralinguistic knowledge, by deriving the different meanings from the deep structures that underlie the following three sentences:

(13) X extracts poison from the snake
The snake has the poison
The poison is for the snake

(iii) The transformational treatment of compounds can account for the

intuition that *windmill* and *flour mill* represent different "grammatical" structures despite the fact that in surface structure this difference is lost and both compounds are of the form Noun+Noun. That is, the two compounds are derived from different deep structures, corresponding to the two sentences below:

(14) Wind powers the mill
The mill grinds the flour

Such arguments are not very convincing, however, as has been observed, for example, by Booij (1977) and Allen (1978). The sentential origin of compounds is intended to account for the meaning of a given compound on the basis of the grammatical relations between the two (or more) constituents involved, but the observed regularities can, in fact, also be expressed by other types of rules, such as lexical rules. A more serious problem that arises from Lees's proposal, however, is a formal problem that concerns the deletion of lexical material and the excessive power of the transformations required by such an approach. This problem will be examined in some detail in the following section.

2.2. Deletion of Lexical Material

In the series of transformations seen above in the derivation of *manservant*, nothing was said about the verb *be* in the embedded sentence, and it must be assumed that it was deleted. Similarly, to derive *wind mill* it is necessary to delete the verb *power* (cf. the first sentence in 14), and to derive the compound *car thief*, it is necessary to delete the verb *steal*, assuming that the deep structure of the compound is a sentence like *the thief steals the car*. Such deletion transformations, made necessary by the sentential origin of compounds, were also proposed by Meys (1975) to derive the word *sea breeze*, for example, from an expression such as *breeze from the sea*.

It was already clear, however, by the mid 1960's, with *Aspects*, that this type of unrestricted transformations could not possibly bring us closer to an adequate characterization of the notion of "natural language", and that, furthermore, a grammar that incorporated such rules would lose any possibility of being "explanatory". In Katz and Fodor (1964) and Chomsky (1965), in fact, a principle was proposed to exclude from the grammar the type of unrestricted deletion operations proposed by Lees. This principle, called "recoverability of transformations", restricted deletions in the following way:

(15) [...] a deletion operation can eliminate only a dummy element, or a formative explicitly mentioned in the structure index (for example, *you* in imperatives), or the designated representative of a category [...], or an element that is otherwise represented in the sentence in a fixed position (Chomsky, 1965:144–5).

It should be noted, however, that even if it were possible to formulate the transformations involved in the derivation of compounds in such a way as to satisfy the recoverability principle, it would nevertheless be necessary to postulate at least as many transformations as the number of verbs that could be deleted, assuming, of course, that we want to maintain the sentential origin of compounds. It would be necessary, for example, in the cases seen above to make reference explicitly to transformations of "*power* deletion", "*grind* deletion", "*steal* deletion", etc.

The deletion of lexical material is the most serious theoretical problem with Lees's proposal, especially in light of subsequent developments in Generative Grammar, where an effort was made to exclude unconstrained types of rules from the grammar. Constraining the rules of the grammar in syntax is a way of bringing us closer to the definition of "possible sentence"; similarly, in morphology, it is a way of bringing us closer to the definition of "possible word". In this respect, it is clear that Lees's proposal is not adequate.

2.3. Variability in the Meaning of Compounds

In addition to the problem just discussed, there is another problem with Lees's proposal that makes it quite implausible. The paraphrasis given above for the compound *wind mill* "The wind powers the mill". Nothing, however, excludes other possible paraphrases such as "The wind activates the mill", "The wind makes the mill function", etc., or even a "passive" paraphrasis such as "The mill is activated by the wind". The answers of speakers asked what a compound such as *information office* means are, in fact, quite diversified. Instead of there being a single type of response, the answers seem to cluster around a range of possible paraphrases, as opposed to a range of impossible paraphrases (cf. Allen, 1978). Thus, *information office* might mean an office "that gives information", "(that is) for information", etc.; it can never mean an office "without information", "that destroys information", etc. It should be noted that the notion "range of possible meanings" renders the formulation of a transformation that deletes a specific verb or a preposition impossible.

It is often the case, furthermore, that the meaning of a compound is somewhat different from the meaning that would be expected solely on the basis of the deep structure relations. For example, "a green black-board" is perfectly acceptable, while its supposed sentential source, "*a green board which is black", is not acceptable.

There are, in addition, other types of idiosyncrasies, for example, the word *pale face*, that are problematic for any theory, but that are particularly problematic for a theory that postulates a sentential source for compounds. Specifically, a transformational treatment of compounds cannot account for the idiosyncrasies found in this area since there is no way in which a compound derived transformationally can acquire idiosyncratic features. Transformations are regular processes and therefore must not be bound by "lexical exceptions". In the lexicon, however, lexical exceptions