

MORPHOLOGICAL REPRESENTATION AND SEMANTIC INTERPRETATION

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1 Introduction

This paper deals with the tenability of the following general linguistic condition on morphological representation:

(1) The Compositionality Condition

The morphological representation assigned to a complex word must provide the formal structure required by an optimal specification of the semantic interpretation of the word.

This condition entails, on the one hand, that if the semantic interpretation (or meaning) of a complex word can be specified as a simple function of the meanings of its constituents, these constituents must be bracketed and labelled in such a way as to make such a specification possible. On the other hand, the condition disallows a bracketing and/or labelling which, for this specification, requires objectionable devices. A device is objectionable if it (a) has unacceptable empirical consequences --- either in the grammar or in the general linguistic theory, (b) is ad hoc in a specific sense, (c) represents or creates a conceptual redundancy within the total grammar or general linguistic theory, or (d) is insufficiently constrained in regard to descriptive power. The use of devices with one or more of these properties makes a specification of the semantic interpretation of a word non-optimal. And morphological representations necessitating the use of such devices are suspect. Condition (1) clearly attaches more value to morphological representations which maximize compositionality in the specification of the meaning of complex words, hence the name "Compositionality Condition". Of course, the condition cannot be enforced in the case of complex words which have idiosyncratic elements of meaning that cannot be predicted on the basis of the meanings of their constituents.¹⁾

Some or other version of the Compositionality Condition has been adopted, often implicitly, in morphological work such as that of Aronoff (1976), Allen (1978), Botha (1980) and McCarthy (1981) to motivate the assignment of specific morphological representations to complex words. In more

recent work, however, lexicalist morphologists such as Williams (1981a) and Selkirk (1981) have proposed theoretical constructs which seem to be incompatible with the Compositionality Condition as formulated above. The arguments in favour of these constructs thus appear, at the same time, to constitute arguments against the Compositionality Condition.

The present paper deals with the question of whether the Compositionality Condition can be upheld, given the proposals and implied criticisms by Williams and Selkirk. The greater part of the discussion will be devoted to a critical analysis of some of the consequences of adopting the above-mentioned theoretical constructs. §2 will focus on Williams's noncompositional notion "lexically related", while §3 will be concerned with Selkirk's rule for assigning grammatical functions to the nonhead of compounds. It will be argued that the adoption of either of these constructs has undesirable consequences and, consequently, that they do not undermine the Compositionality Condition. §4 examines the way in which Lieber's (1981) formulation of the thesis of the autonomy of lexical semantics bears on the Compositionality Condition. It will be argued that the former thesis is fully compatible with the latter condition. In essence, then, this paper argues that the work of Williams, Selkirk and Lieber does not provide good grounds for abandoning the Compositionality Condition.

2 Williams's notion "lexically related"

2.1 General

In a recent paper, Williams (1981a) argues that a certain notion "lexically related", that was used implicitly in work such as that by Aronoff (1976) and Selkirk (1982), should be replaced by a "different" theory of 'lexically related'. The problem with the former notion, according to Williams (1981a:258), is that in a certain range of cases "... this notion of relatedness is in conflict with the ordering hypothesis embodied in the root/stem distinction, the hypothesis that #affixes are always outside +affixes. For another range of cases, it is in conflict with the ordering of compounding after all affixation ...". The older "implicit" notion "lexically related" is compositional and compatible with the Compositionality Condition. Williams's new notion "lexically related" by contrast, is noncompositional and incompatible with

this condition. Let us consider these points in more detail.

2.2 The compositional notion "lexically related"

According to Williams's (1981a:245) explication of the compositional notion "lexically related", two lexical items, X and Y, are (lexically) related under the following conditions:

- (2) (a) X and Y share elements of form and meaning.
- (b) If X is related to Y by affixation, then X must equal Y af (or af Y).
- (c) In the morphological derivation of X, Y must appear as a constituent, i.e. a unit (which is to say that it must be possible to derive X from Y by the ordinary addition of an affix to Y).

A corollary of condition (2)(c), according to Williams (1981a:245), is "the strict compositionality of the semantics of morphologically complex words". "Strict compositionality", for Williams (1981a:245), entails that

- (3) "... the meaning of X above will be a simple function of the meanings of Y and the affix."

If the meaning of X as a whole is taken to include no idiosyncratic semantic elements, then this notion of strict compositionality is (exactly the same as) the one involved in the Compositionality Condition (1).

Having discussed various types of morphological rules,²⁾ Williams (1981a:247) restates "the common understanding of the notion 'lexically related'" as follows:

- (4) X and Y are lexically related if X is derived from Y by a morphological rule, or if

$$X = \hat{Y} \text{ af} \quad (\text{or, } X = \text{af } \hat{Y})$$

where Y is a unit (or stage) in the derivation of X.

2.3 Relatedness paradoxes

This brings us to the cases where, on Williams's (1981a:258) analysis, the compositional notion "lexically related" conflicts with the two hypotheses (5) and (6).

- (5) The Ordering Hypothesis
#affixes are always outside +affixes.³⁾
- (6) The Extended Ordering Hypothesis
Compounding takes place after affixation.⁴⁾

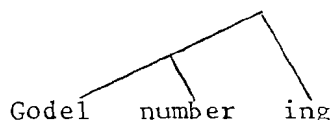
Williams's so-called relatedness paradoxes all follow the same pattern: in the case of certain complex words the compositional notion "lexically related" requires the assignment of a bracketing which conflicts with the bracketing required for these words by the Ordering Hypothesis or the Extended Ordering Hypothesis.

- (7) (a) hydroelectricity: The compositional notion "lexically related" requires a bracketing which causes a #affix to appear inside a +affix, thus violating the Ordering Hypothesis.
- (b) Godel numbering: The compositional notion "lexically related" requires a bracketing in which a #affix appears outside a compound, thus violating the Extended Ordering Hypothesis.

- (c) atomic scientist: The compositional notion "lexically related" requires a bracketing in which a +affix appears outside a compound, thus violating the Extended Ordering Hypothesis.
- (d) whitewashed: The compositional notion "lexically related" requires a bracketing in which an inflectional affix appears outside a compound, thus violating the Extended Ordering Hypothesis.

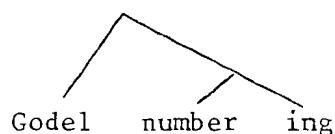
Let us consider one of these cases, (7)(b), in more detail to see how the requirements imposed by the compositional notion "lexically related" function. Williams (1981a:259) notes that Godel numbering has a quite specific range of uses (meanings) which it shares with the compound Godel number. To capture this relatedness --- or to "compose" the meaning of Godel numbering --- the compositional notion "lexically related" requires, in terms of (2)(c), that Godel number must be a constituent or unit in the derivation of Godel numbering. On this analysis the meaning of Godel numbering is strictly compositional, a simple function of the meaning of the compound Godel number and that of the affix -ing. This analysis requires that the bracketing (or rather branching) of (8) be assigned to Godel numbering.

(8)



The Extended Ordering Hypothesis, however, requires that the bracketing/branching of (9) be assigned to Godel numbering.

(9)

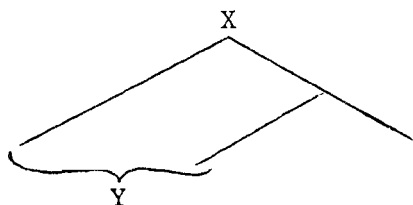


The other ordering paradoxes of (5) pose the same problem, described as follows by Williams (1981a:260): "... in all the cases we have examined, we have pairs of words that share not only certain morphemes, but also a 'specialized', 'unpredictable' element of meaning, but which [given the ordering hypotheses (5) and (6) --- R.P.B.] are unrelatable on the common understanding of the term".

2.4 A noncompositional notion "lexically related"

According to Williams (1981a:260) the "structure" of each of the paradoxes can be represented as follows:

(10)



"What we need", according to Williams (1981a:260), "is a definition of 'related' which will let X and Y be related in such a structure".

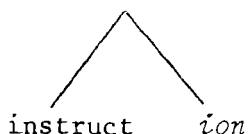
The definition of "related" ultimately proposed by Williams (1981a:261) reads as follows:

(11) X can be *related* to Y if X and Y differ only in a head position or in the nonhead position.⁵⁾

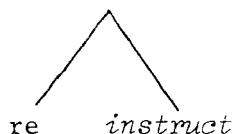
The head of a morphologically complex word is characterized by Williams (1981a:248) as "the righthand member of that word". In the following structures the head is italicized:

(12)

(a)



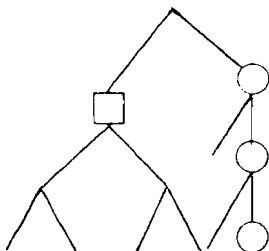
(b)



Williams (1981a:149-250) points out two types of exceptions to his definition of the notion "head": (i) forms derived by means of en- prefixation in which en- constitutes the head (e.g. enrage, endear, ennoble, encase), and (ii) nouns of the form V P which are headless (e.g. [push_V up_P]_N, [run_N down_P]_N).

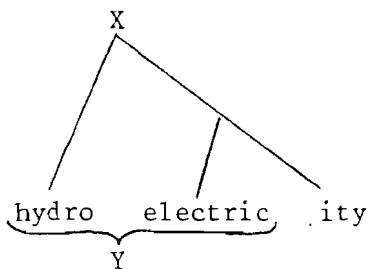
The nonhead is characterized by Williams (1981a:261) as "the highest left branch of a word". On Williams's (1981a:261) view a word will have only a single nonhead (boxed in (13)), but it may have more than one head (circled in (13)).

(13)

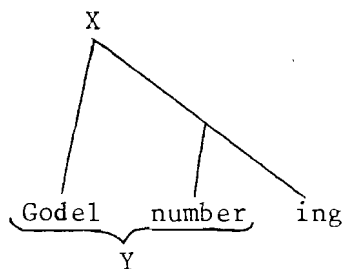


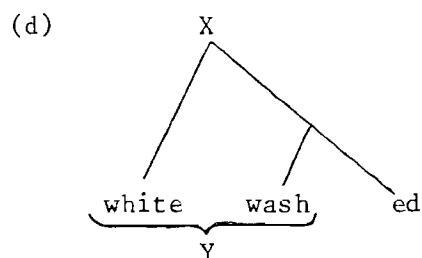
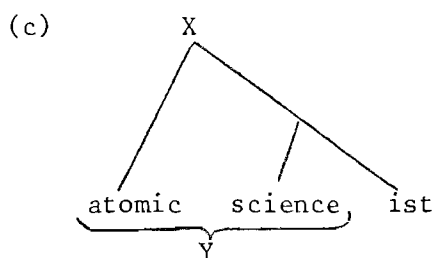
Williams's notion "(lexically) related" "solves" all the paradoxes of (7). Thus, it allows hydroelectricity and hydroelectric, Godel numbering and Godel number, atomic scientist and atomic science, whitewashed and whitewash to be related without requiring bracketings/branchings that violate the two ordering hypotheses (5) and (6):

(14) (a)



(b)

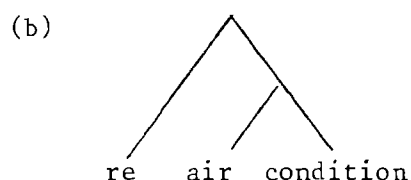
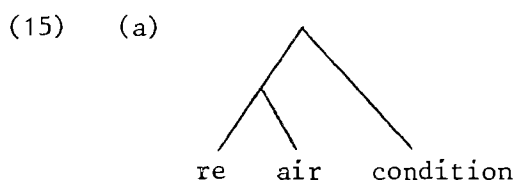




Consider, for example, Godel numbering: as X this form differs from Godel number (= Y) only in the head position, which is occupied by -ing. Hence, Godel numbering and Godel number are related in terms of Williams's notion "(lexically) related" (11). In terms of this notion, the semantic interpretation of a morphologically complex word does not depend on bracketing in the way specified in the Compositionality Condition (1).

2.5 A "marked leak"

Williams (1981a:263) concedes that his "revised notion of 'related' is not sufficient to explain all of the cases where a # affix appears to be outside of compounds". He illustrates this point with reference to re-air-condition which cannot have the structure (15)(a) required by the Extended Ordering Hypothesis (6), but which must be assigned the structure (15)(b).



Even under the revised notion "related" the structure (15)(a) cannot be related to the word air-condition, according to Williams (1981a:263). The representation of this relatedness requires the structure (15)(b): a structure in which an affix appears outside of a compound. "In order to maintain that there is no affixation after compounding" Williams (1981a:263) "must say in such cases that (for example) air-condition has been 'reanalyzed' as a stem. Thus, a special 'marked' leak in the theory must exist".

2.6 An appraisal of the "marked leak" strategy

2.6.1 General

Williams's strategy of invoking the notions "marked", "leak" and "re-analysis (as stems)" in defence of his notion "lexically related" has several problematic aspects. We first consider a number of conceptual problems posed by this strategy and then turn to what may be called empirical problems.

2.6.2 Conceptual problems

Firstly, Williams's use of the notion "marked" implies that he makes "markedness" claims such as the following:

- (16) (a) re-air-condition represents a "marked" form.
 (b) Godel numbering represents an "unmarked" form.

It has been argued in the literature that "markedness" claims such as (16)(a) and (b) are unacceptable unless they are assigned the status of empirical claims. Their empirical status, moreover, depends on the possibility of bringing external linguistic evidence to bear on them.⁶⁾ Williams does not reject these arguments. Neither does he take any steps to validate (16)(a) as an empirical claim.⁷⁾

Secondly, within the context of Williams's article on lexical relatedness, the notion "reanalyzed (as a stem)" is both unclear and ad hoc. That is, Williams uses this notion in the absence of a theory that specifies which units can be reanalyzed as which other units and under what general conditions such a reanalysis can(not) take place. Consequently, it is not clear how claims such as "air-condition has been 'reanalyzed' as a stem" can be tested.

Thirdly, the content of the notion "leak" (of Sapirean origin?) as well as the unmotivated introduction of this notion by Williams is equally problematic. Williams does not use this notion within the context of

an explicit theory of "leaks". It is therefore impossible to argue that a putative "leak" represents a substantive feature of a given language rather than a real counterexample to a particular linguistic theory, such as his new theory of lexical relatedness.⁸⁾ The way in which Williams uses the notion "leak" raises the question of what would count as a counterexample to his theory.⁹⁾

2.6.3 Empirical problems

In regard to the types of word formation processes that they use --- or, equivalently, the types of word structure that they manifest --- English and Afrikaans clearly belong to the same general typological class.¹⁰⁾ The question thus arises how data from Afrikaans bear on Williams's noncompositional notion or "theory" of lexical relatedness (as used in conjunction with the Extended Ordering Hypothesis).¹¹⁾ This is an interesting question since it has been argued that Afrikaans has various affixes that may appear outside compounds.¹²⁾

Firstly, consider the case of an inflectional prefix that attaches to compounds, viz. the past participle forming ge-. This prefix can attach to various types of compound verbs. A first type of compound verb is illustrated by the following examples.

- | | | |
|------|--------------------------|---------------------|
| (17) | <u>hand-groet</u> | <u>brein-spoel</u> |
| | hand greet | brain rinse |
| | "greet with a handshake" | "brain-wash" |
| | <u>padda-spring</u> | <u>rug - steun</u> |
| | frog jump | back support |
| | "jump like a frog" | "back/support" |
| | <u>kop - speel</u> | <u>stoom-reinig</u> |
| | head play | steam clean |
| | "prance" | "steam-clean" |

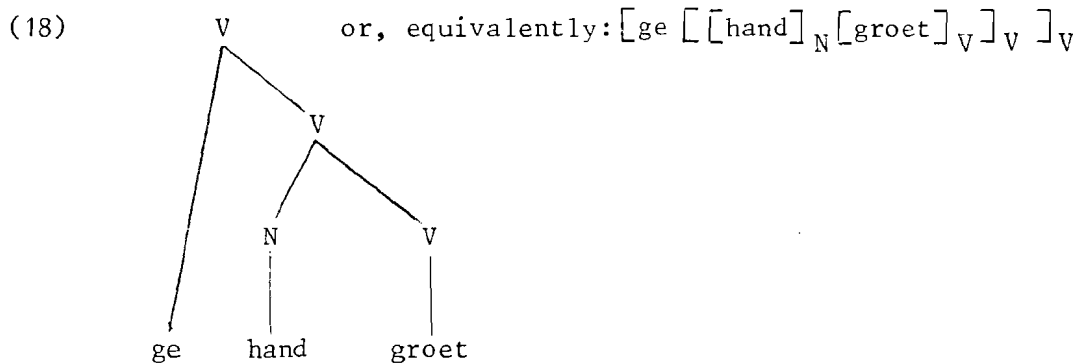
lip - lees
 lip read
 "lip-read"

bok - spring
 buck jump
 "caper"

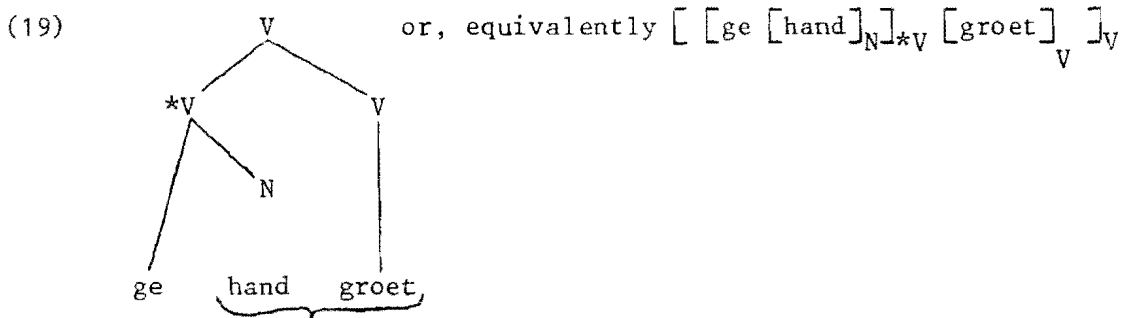
volstruis - skop
 ostrich kick
 "kick like an ostrich"

konyn - kap
 rabbit chop
 "hit with a chop-stroke"

(In presenting lists of Afrikaans data such as (17), I use hyphens to indicate relevant morpheme boundaries; relevant affixes will be presented in capitals.) The lefthand or nonhead constituent of these compounds is a noun, the righthand or head constituent a verb. The past participle form of handgroet, a representative example of this type of compound verb, is gehandgroet.¹³⁾ Assuming the compositional notion "lexically related", gehandgroet must be assigned the following morphological representation:



This morphological representation violates the Extended Ordering Hypothesis and, assuming Williams's noncompositional notion "lexically related", should be replaced by the following representation:



The morphological representation (19), however, must be rejected for empirical reasons. It makes the false prediction that gehand constitutes a possible word/morphological unit of Afrikaans. Moreover, for the formation of gehand and other similar impossible forms --- e.g. gepad, gekop, gelip, gevolstruis, gebok, gebrein, etc. --- the postulation of an ad hoc rule would be required:

(20) *V \longrightarrow ge N

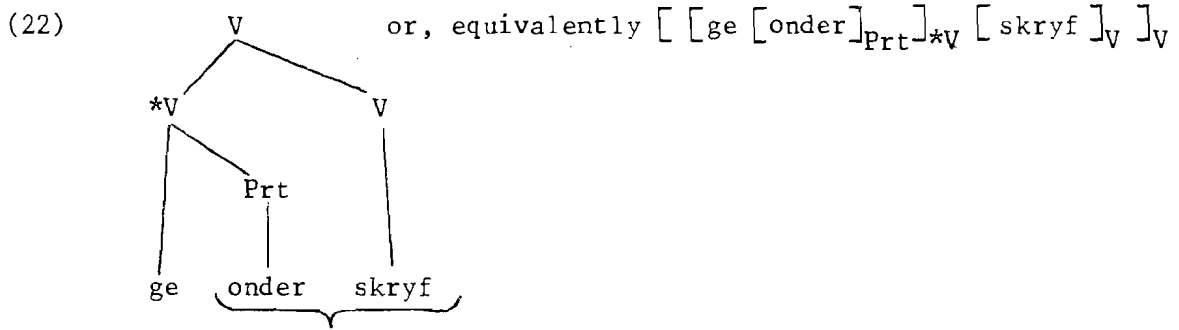
This rule is not only ad hoc; it also expresses the false claim that the participle forming ge- can attach to nouns. Moreover, the claim that the units formed in this way are verbs, is incoherent. For this reason the (relevant) V in (19) and (20) is starred. Henceforth, the device of starring will be used consistently to indicate such incoherent category claims.¹⁴⁾

There is a second type of compound verb to which ge- can attach: viz. so-called "onskeibaar saamgestelde werkwoorde"¹⁵⁾ such as:

- | | | |
|------|--|--|
| (21) | <u>deur - dink</u>
through think
"think over thoroughly" | <u>agter - haal</u>
after fetch
"overtake" |
| | <u>deur - kruis</u>
through cross
"traverse" | <u>agter - volg</u>
after follow
"pursue" |

<u>om - árm</u>	<u>vol - dóen</u>
around arm	full do
"embrace"	"satisfy"
<u>om - lín</u>	<u>vol - trék</u>
around line	full pull
"outline, define"	"execute, perform"
<u>onder-bréek</u>	<u>voor - sien</u>
under break	before see
"interrupt"	"foresee"
<u>onder-skrýf</u>	<u>voor - spél</u>
under write	before spell
"agree"	"predict"
<u>oor - drýf</u>	<u>weer- gálm</u>
over drive	again sound
"exaggerate"	"echo"
<u>oor - trée</u>	<u>weer- spréek</u>
over step	against say
"trespass, violate"	"contradict"

The normativist view is that the past participle forms of compounds such as (21) are formed without ge-.¹⁶⁾ For example, the past participle form of onderskryf would be onderskryf. At least in spoken Afrikaans, however, a past participle form with ge- is used commonly in the case of many such compounds, including those of (21): geagterhaal, geomarm, geonderskryf, geweerspreek, etc. Past participle forms such as these pose the same problems for Williams's noncompositional theory of lexical relatedness as gehandgroet, gepaddaspring, etc. Thus, on this theory, the past participle form geonderskryf has to be assigned the following morphological representation:



This representation makes the false claim that geonder --- and by implication all other, similar forms, e.g. geagter, geoor, geweer, etc. --- constitute possible words in Afrikaans. Moreover, to generate these forms the following rule is required:

(23) $*V \xrightarrow{\quad} \underline{ge} \text{ Prt}$

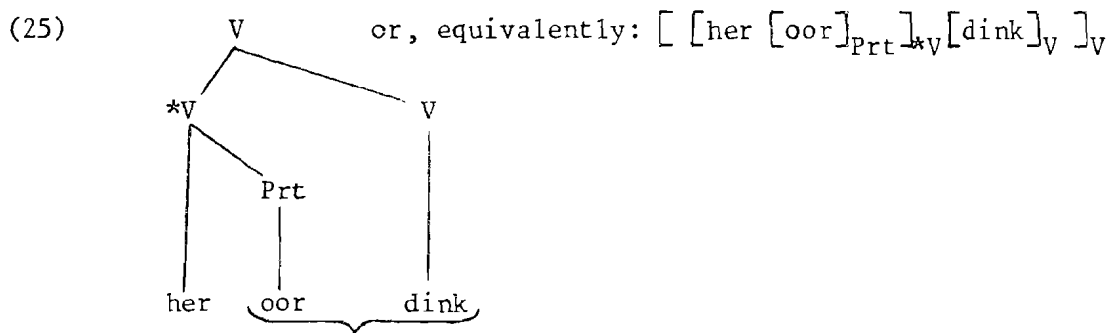
(Whether agter, oor, weer, onder, etc. constitute particles or adverbs is immaterial to our discussion.) The defects of this rule parallel those exhibited by rule (20) above.¹⁷⁾

Secondly, consider a case of a derivational prefix that attaches to Afrikaans compounds: viz. the prefix her- (= "re-") which attaches to verbs to form morphologically more complex verbs. This prefix can occur outside compound verbs such as the following "onskeibaar saamgestelde werkwoorde":¹⁸⁾

(24)	<u>om - krīng</u> around circle "encircle"	<u>om - árm</u> around arm "embrace"
	<u>om - sóom</u> around seam "(to) border"	<u>om - vórm</u> around shape "convert"
	<u>onder-drúk</u> under press "suppress"	<u>onder-vrá</u> under ask "interrogate"

<u>onder-wérp</u>	<u>onder-sóek</u>
under cast	under search
"(to) subject"	"investigate"
<u>oor - trée</u>	<u>oor - wéeg</u>
over step	over weigh
"tresspass, violate"	"consider"
<u>oor - dīnk</u>	<u>oor - péins</u>
over think	over ponder
"think over"	"ponder"

Given the Extended Ordering Hypothesis and Williams's noncompositional notion "lexically related", heroordink --- to take a typical example of (24) --- has to be assigned the following morphological representation:



This morphological representation, once again, exhibits the types of defects considered above in connection with (19) and (22). It expresses the false claim that heroor is a possible word/morphological unit in Afrikaans. To generate this unit --- of which the categorial status is unclear --- the following ad hoc rule is required:

(26)
$$*V \longrightarrow \underline{her} \quad Prt$$

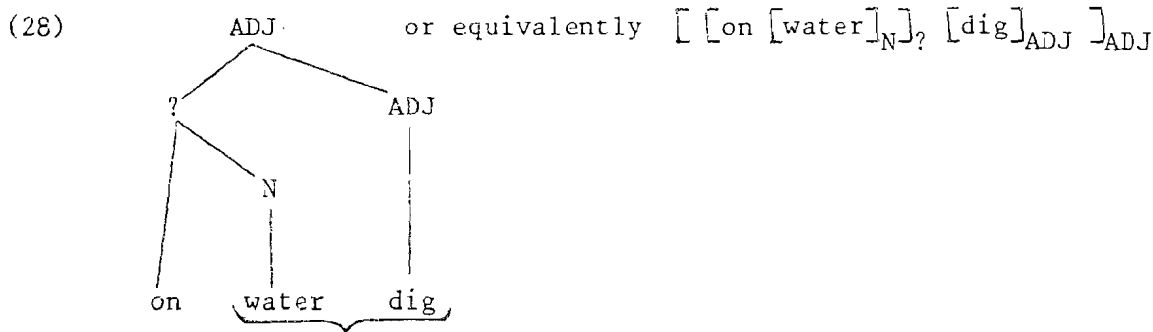
The Compositionality Condition (1), by contrast, requires a morphological representation for heroordink which has none of these undesirable

aspects. In terms of the latter representation heroordink is formed by the normal rule which attaches her- to verbs --- including the compound verbs of (24) --- to form other verbs.

her- is not the only prefix that can attach to compounds in Afrikaans and which requires the postulation of morphological representations that exhibit the shortcomings considered above. The prefix on- (= "un") creates the same problems for Williams's noncompositional notion "lexically related". on- attaches to adjectives --- including the compound adjectives of (27) --- to form other adjectives with the meaning 'not Adj'.

(27)	<u>water-dig</u> water tight "waterproof"	<u>invloed - ryk</u> influence rich "influential"
	<u>stof-dig</u> dust tight "dust-proof"	<u>vak - kundig</u> subject knowledgeable "skilled"
	<u>rook - dig</u> smoke tight "smoke-proof"	<u>deug - saam</u> virtue some "virtuous"
	<u>gas - vry</u> guest free "hospitable"	<u>boet - vaardig</u> repent ready "repentant"

The compound adjectives of (27) consist of a nominal nonhead and a verbal head. Consequently, Williams's theory of lexical relatedness requires that a form such as onwaterdig should be assigned the following representation:

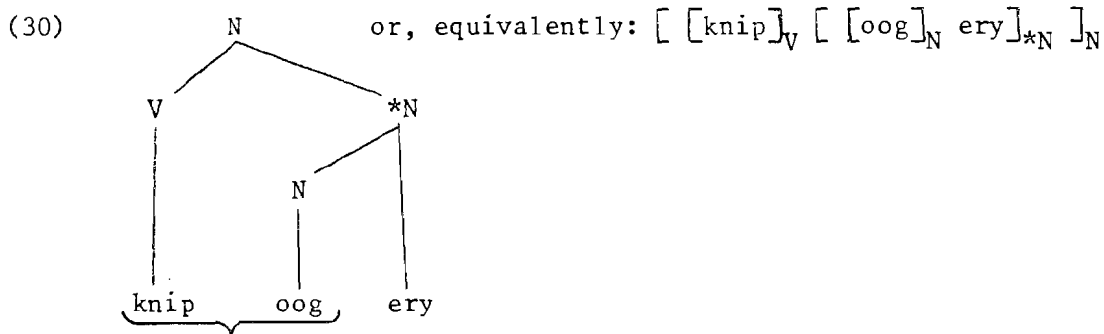


But counter to what is predicted by (28), onwater --- and other similar forms such as onstof, onrook, ongas, oninvloed, onvak and onboet --- are not possible words/morphological units of Afrikaans.¹⁹⁾

Thirdly, there are various derivational suffixes that have to be bracketed outside of Afrikaans compounds in a way which causes empirical problems for Williams's theory of lexical relatedness. Consider the case of -ery (related to English -ing) which productively attaches to verbs to form abstract nouns with the meaning "the repeated/continual act of Ving (pejorative)".²⁰⁾ -ery can attach also to compound verbs such as the following:

(29)	<u>knip-oog</u>	<u>water-tand</u>
	bat eye	water tooth
	"wink"	"to have a mouth that waters (for something)"
	<u>stamp-voet</u>	<u>sleep-voet</u>
	stamp foot	drag foot
	"stamp (one's) feet"	"drag (one's) feet"

On Williams's theory of lexical relatedness knipoogery --- to take a typical example of (29) --- has to be assigned a morphological representation such as the following:



This representation falsely claims that oogery is a possible word/morphological unit of Afrikaans. Moreover, to generate oogery --- and other similar forms, e.g. tandery, voetery, etc. --- the following ad hoc rule is required.

(31) *N → N ery

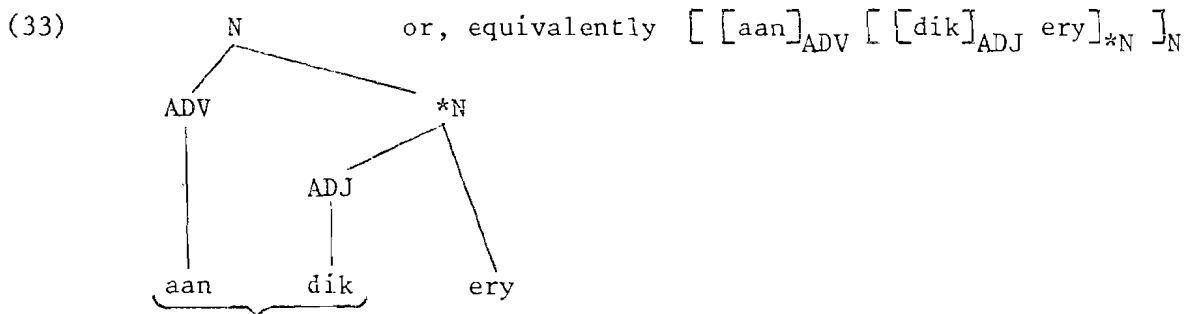
An analysis of knipoogery, etc. which assumes the compositional notion "lexically related" avoids these problems.

The suffix -ery can attach to a second type of complex form, illustrated in (32). Forms such as those of (32) have traditionally been analyzed as compound verbs consisting of an adverbial nonhead and an adjectival head:²¹⁾

<p>(32) <u>aan-dik</u> on thick "exaggerate"</p>	<p><u>uit-vars</u> out fresh "freshen, desalt"</p>
<p><u>aan-klam</u> on moist "moisten"</p>	<p><u>op-fris</u> up fresh "refresh"</p>
<p><u>af - rond</u> off round "finish off"</p>	<p><u>af - koel</u> off cool "chill"</p>

<u>in-kort</u>	<u>op-klaar</u>
in short	up clear
"reduce"	"clear up/solve"
<u>uit-diep</u>	<u>uit-dun</u>
out deep	out thin
"excavate"	"eliminate"

If a form such as aandik is viewed as a compound, then, on the basis of Williams's notion "lexically related", aandikkery should be assigned the following morphological representation:



This representation has the same kinds of objectionable aspects as (30): it expresses the false claim that dikkery is a possible word/morphological unit in Afrikaans; it falsely implies that -ery attaches to adjectives in Afrikaans; and to generate aandikkery --- and other similar forms, e.g. aanklammery, afrondery, inkortery, uitdieperery, etc. --- an ad hoc rule such as (34) is required.

(34) *N \longrightarrow ADJ ery

There is an analysis of forms such as aandikkery, aanklammery, afrondery, etc. in terms of which they do not bear on the adequacy of the Extended Ordering Hypothesis and Williams's noncompositional notion "lexically related". On this analysis, these forms are verbal compounds derived by ordinary affixation rules that apply to a certain type of syntactic phrase.²²⁾ This analysis, however, is not available to orthodox lexicologist morphologists who still believe that word formation rules cannot

take syntactic phrases as bases.²³⁾

To return to the main theme: in Afrikaans inflectional suffixes also attach to forms which have conventionally been analyzed as compounds. For example, the superlative suffix -ste attaches to forms such as the following:

- | | | |
|------|--------------------|----------------------------|
| (35) | <u>plat-neus</u> | <u>kort - asem</u> |
| | flat nose | short breath |
| | "flat-nosed" | "short-winded" |
| | <u>kaal-kop</u> | <u>dik - bek</u> |
| | bald head | thick mouth |
| | "bald" | "sulky" |
| | <u>groot-bek</u> | <u>hol - rug</u> |
| | big mouth | hollow back |
| | "loud-mouthed" | "hollow-backed, hackneyed" |
| | <u>stomp-stert</u> | <u>bak - been</u> |
| | short tail | cupped leg |
| | "short-tailed" | "bandy-legged" |

The words that are derived by attaching -ste to these forms are italicized in the sentences of (36).

- (36) Ali se linkerhaakhou het Joe die platneusste
 Ali poss. left hook past Joe the flat-nosed-superl.
swaargewig in die wêreld gemaak.
 heavy-weight in the world made
 "Ali's left hook made Joe the most flat-nosed heavy-weight in the world."
Yul was die kaalkopste ster van sy tyd.
 Yul was the bald-headed-superl. star of his time
 "Yul was the baldest star of his time."

Die grootbekste bokkers wen altyd.

The big-mouthed-superl. boxers win always.

"The boxers with the biggest mouths always win."

Dit is die stompstertste hond in die buurt.

It is the short-tailed-superl. dog in the neighbourhood.

"It's the dog with the shortest tail in the neighbourhood."

Van al die deelnemers was hy die kortasemste.

Of all the competitors was he the short-winded-superl.

"He was the most short-winded of all the competitors."

Van al die verloorders is hy die dikbekste.

Of all the losers is he the sulky-superl.

"He is the sulkiest loser of them all."

Die holrugste perd het waaragtig gewen.

The hollow-backed-superl. horse past actually won

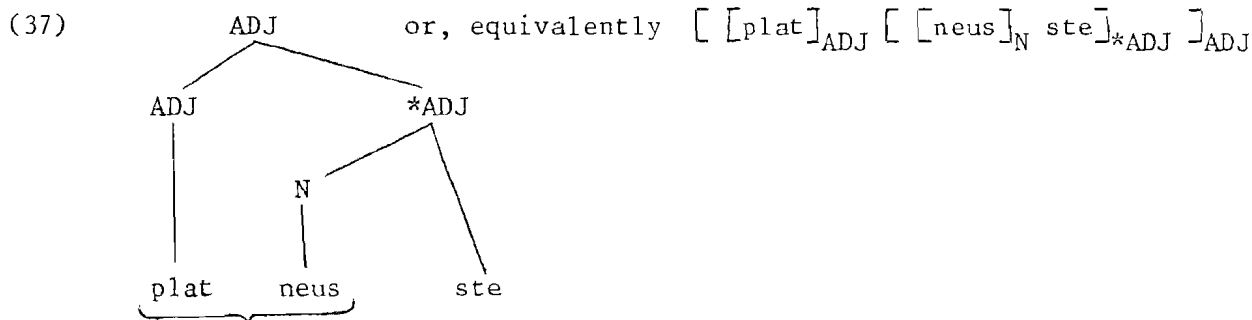
"The most saddle-backed horse actually won."

Die bakbeenste jokkies is die beste ruiters.

The bandy-legged-superl. jockeys are the best riders

"The most bandy-legged jockeys are the best riders."

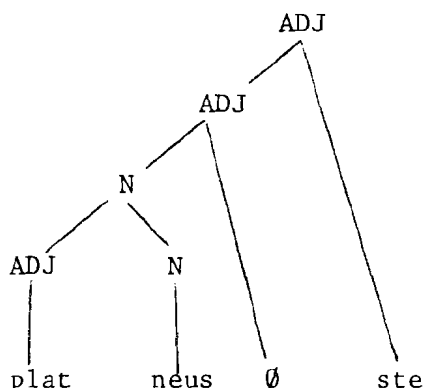
On the conventional analysis the forms of (35) are assigned the status of compound adjectives consisting of an adjectival nonhead and a substantive head.²⁴⁾ Given this analysis and Williams's noncompositional notion "lexically related", the -ste derivative platneusste must be assigned the following morphological representation:



This morphological representation has questionable aspects similar to those of (30), (33), etc.

It may be argued that the forms of (35) should be analyzed as adjectives derived by means of zero affixation from compound nouns. And it may be contended that, on such an analysis, forms such as platneusste, kaalkopste, grootbekste would cease to bear on Williams's theory of lexical relatedness. On a zero affixation analysis a form such as platneusste would presumably be assigned a morphological representation such as the following:

(38)



In terms of (38) platneusste is the inflected form of a complex derivative, not of a compound. This analysis, and specifically the morphological representation (38), gives rise to a number of problems. First, observe that the \emptyset affix is bracketed outside of a compound, thus violating the Extended Ordering Hypothesis and conflicting with Williams's noncompositional theory of "lexically related"²⁵⁾. Secondly, there is the question of whether the rule of zero-affixation involved in the derivation of platneusste is permissible in terms of the constraints that have to be imposed on rules of zero affixation in general.²⁶⁾ Thirdly, a zero-affixation analysis raises the question why complex adjectives such as platneus, kaalkop, grootbek, etc. can be derived from corresponding complex nouns by means of zero affixation, whereas it is (unexpectedly) impossible to derive the noncomplex putative adjectives neus, kop, bek, etc. from the corresponding noncomplex nouns by means of (the same rule of) zero affixation. In sum, then, Afrikaans has various types of affixes whose behaviour pose a threat to Williams's noncompositional theory of lexical relatedness. If this theory is to

have the status of a general linguistic theory, the English prefix re- does not constitute the only "leak" in the theory.

2.7 Retrospect

1. The compositional notion "lexically related" requires the assignment of morphological representations that conflict with the Extended Ordering Hypothesis (6).
2. Williams attempts to resolve this conflict by retaining the Extended Ordering Hypothesis and replacing the compositional notion "lexically related" by one that is noncompositional.
3. Williams's noncompositional notion or theory of lexical relatedness, however, is incompatible with the Compositionality Condition (1).
4. If the noncompositional notion "lexically related" is adopted, the Compositionality Condition, therefore, has to be rejected.
5. However, the behaviour of different kinds of Afrikaans affixes, which attach to compounds, indicates that the noncompositional notion "lexically related" has empirical shortcomings:
 - (a) it requires the postulation of morphological representations that express false claims about what are and what are not possible words/morphological units in Afrikaans;
 - (b) it requires the postulation of ad hoc word formation rules (or functionally equivalent devices).
6. The empirical shortcomings of the noncompositional notion "lexically related" cannot be remedied --- as Williams seems to suggest --- by
 - (a) making nonempirical markedness claims,
 - (b) invoking the notion "reanalyzed as stems" in an essentially arbitrary manner,

(c) introducing the notion "leak" in such a way that the distinction between a "leak" in a theory and a real counterexample to the theory remains unclear.

7. In view of the foregoing, the wisdom of adopting the noncompositional notion "lexically related" in order to be able to retain the Extended Ordering Hypothesis can be questioned.
8. Consequently, the case for abandoning the compositional notion "lexically related" and the concomitant Compositionality Condition is extremely weak.
9. A more reasonable conclusion is that the basic claim expressed by the Extended Ordering Hypothesis, if construed as a claim about Afrikaans too, is false.

3 Selkirk's lexical rule of function assignment

3.1 General

To illustrate the basic assumptions of her theory of word structure, Selkirk presents a theory of English compounding. The latter theory includes a (sub-)theory of verbal compounding which has to account for similarities and differences between verbal compounds such as (39) on the one hand, and nonverbal compounds such as (40) on the other hand.

- | | | | |
|------|--|------|--|
| (39) | <u>time saver</u>
<u>house cleaning</u>
<u>slum clearance</u>
<u>consumer protection</u>
<u>hand woven</u>
<u>water repellent</u>
<u>hand washable</u> | (40) | <u>apron string</u>
<u>high school</u>
<u>overdose</u>
<u>head strong</u>
<u>icy cold</u>
<u>over wide</u>
<u>out live</u> |
|------|--|------|--|

Central to Selkirk's (1981:252-253) theory of verbal compounding are the following two hypotheses:

- (41) (a) Verbal and nonverbal compounds are formally nondistinct.
 (b) Verbal and nonverbal compounds differ semantically in that argument structure plays a role in the interpretation of the former but not of the latter type of compound.

For Selkirk (1981:248), then, the term verbal compound "simply designates a group of compounds classified according to the type of semantic relation that obtains between head and nonhead".²⁷⁾

If bracketing is taken to be involved in the specification of argument structure, the hypotheses (41)(a) and (b), taken together, are difficult to reconcile with the Compositionality Condition (1) on morphological representation. Assuming this condition, one would expect two different interpretations --- one involving arguments, the other not --- to be based on two different formal structures. It is therefore of some interest to take a closer look at the hypotheses (41)(a) and (b) and some of their implications.²⁸⁾

3.2 Formal nondistinctness

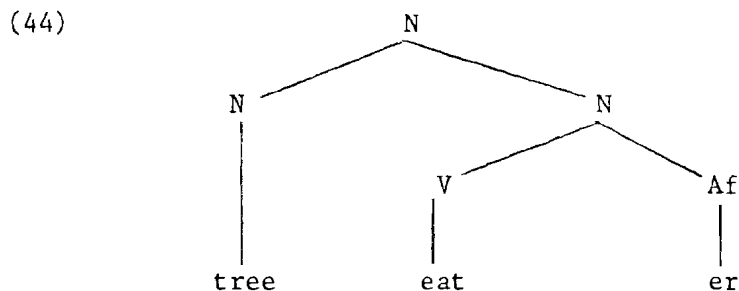
Selkirk (1981:252) formalizes the hypothesis of formal nondistinctness (41)(a) by assuming that both verbal and nonverbal compounds are generated by the same set of rewriting rules.²⁹⁾ Thus, the same formal structure --- i.e., $N [N N] N$ --- is assigned by the rule $N \longrightarrow N N$ to both verbal compounds such as those of (42) and nonverbal compounds such as those of (43).

(42) elevator repair
church going
music lover
tennis coach
tree eater

(43) elevator man
elevator napping
fighter bomber
tree snake
tree eater

Tree eater is assigned to both the set (42) and the set (43) by Selkirk

(1981:252). On the interpretation "an eater of trees", it is a verbal compound; on the interpretation "an eater who might habitually perform its characteristic activity in trees", it is a nonverbal compound. On both interpretations, however, tree eater would have the same formal structure:



In having both an interpretation in which tree is interpreted as argument (theme) and one in which it is interpreted as nonargument, tree eater contrasts with tree devourer. Selkirk (1981:253) claims that in the latter compound tree must be interpreted as the theme argument; it may not be assigned a locative or any other nonargument interpretation. She notes that syntactic phrases corresponding to tree devourer, which lack a complement satisfying the theme argument, are ill-formed.

- (45) an avid devourer of trees
 *?She's an avid devourer.

In the case of the ambiguous tree eater, however, both corresponding phrasal configurations are possible:

- (46) Mary's an enthusiastic eater of pasta.
Mary's an enthusiastic eater.

3.3 Semantic distinctness

To account for the interpretation of verbal compounds, Selkirk (1981: 253ff.) adopts the theoretical framework of lexical-functional grammar (LFG), as presented in (Bresnan ed. 1981). A central feature of LFG is the crucial role attributed to argument structure in grammatical description.³⁰⁾ Within the framework of LFG a word is assigned a lexical form which consists of a predicate argument structure and a designation of the grammatical function associated with each argument. The argument structure represents the thematic relations for the predicate and the grammatical functions --- e.g. subject, object, to-object, etc. --- serve as the links between syntactic structure and argument structure. Grammatical functions are assigned to surface phrase structure positions by syntactic rules and to arguments of predicate argument structure by lexical rules.

The lexical forms associated with devouring and eating are represented as follows by Selkirk (1981:256):

- (47) (a)
- | | | |
|--------------------------|--------------|--------|
| | SUBJ/ ϕ | OBJ |
| | | |
| devouring _N : | (Agent , | Theme) |
- (b)
- | | | |
|----------|--------------|-------------|
| | SUBJ/ ϕ | OBJ/ ϕ |
| | | |
| eating : | (Agent , | Theme) |

These lexical forms are related to those of devour and eat, respectively, by means of a lexical rule and a principle of inheritance, the details of which are irrelevant here.

To give an account of the semantic interpretation of verbal compounds within an LFG framework, Selkirk (1981:255) has to assume, moreover, that the grammar assigns grammatical functions to the nonheads of compounds. According to Selkirk (1981:255), such function assignment makes it possible to invoke the general LFG assumption that "...a particular syntactic (or morphological) structure containing a lexical item with a particular argument structure is ruled as well-formed only

if there is, in essence, a 'match' between the grammatical functions assigned to the syntactic structure and the grammatical functions associated with the lexical item's arguments". The required rule of function assignment is formulated as follows by Selkirk (1981:255):

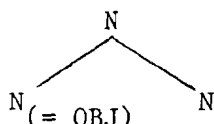
(48) Grammatical functions in compounds

Optionally, in compounds, (i) a nonhead noun may be assigned any of the grammatical functions assigned to nominal constituents in syntactic structure, and (ii) a nonhead adjective may be assigned any of the grammatical functions assigned to adjectival constituents in syntactic structure.

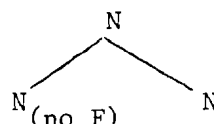
This rule has to be optional because of the existence of compounds whose nonhead has no argument interpretation.

Selkirk (1981:255) illustrates the function of rule (48) with reference to (49)(a) and (b): in (a) an object function has been assigned to the nonhead, in (b) no function assignment has been made.

(49) (a)



(b)



Tree eater (and tree eating) can appear in both the compound structures (49)(a) and (b). In the (a) structure, the theme argument of eater is satisfied, resulting in the theme interpretation "eater of trees". However, the specification "/ \emptyset " in the lexical form of eater signifies that eater does not necessarily require satisfaction of its theme argument. Consequently, tree eater can also appear in the (b) structure, resulting in a nonargument interpretation such as "eater who might habitually perform its characteristic activity in trees".

The lexical form of devourer differs from that of eater, thus providing a means of accounting for the fact that no nonverbal interpretation for tree devourer is possible. If tree devourer occurs in the (a) structure, there is a match in grammatical functions, the theme argument of

devourer is satisfied, and the compound is ruled well-formed on the interpretation "devourer of trees". If, by contrast, tree devourer occurs in the (b) structure, there is a mismatch in grammatical functions: the argument structure of devourer requires an obligatory theme argument. Since the (b) structure lacks an "OBJ" specification, this requirement cannot be satisfied and tree devourer is ruled ill-formed on a nonverbal interpretation. Given the different lexical forms of the deverbal heads of compounds, and given the options made available by rule (48), Selkirk (1981:256) believes that she has "the makings of an account of the interpretation of compounds with deverbal heads".

However, Selkirk herself (1981:256) judges this account to be incomplete. It has to be extended to explain two "important" generalizations about verbal compounds:

- (50) (a) The SUBJ argument of a lexical item may not be satisfied in compound structure.
- (b) All nonSUBJ arguments of the head of a compound must be satisfied within that compound immediately dominating the head.

3.4 An appraisal of function assignment to nonheads

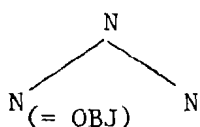
Consider again Selkirk's claim that verbal and corresponding nonverbal compounds receive different semantic interpretations despite their having identical formal structures (or, in our terminology, morphological representations). This claim obviously conflicts with the Compositionality Condition as formulated in §1 above. In terms of this condition, the kind of difference in semantic interpretation under consideration presupposes a difference in formal structure, specifically labelled bracketing. We have seen that it is Selkirk's rule of function assignment (48) that allows her theory to assign different semantic interpretations to formally identical pairs of verbal compounds, thereby apparently undermining the Compositionality Condition. [Notice that the Compositionality Condition ties in with the standard Chomskyan view of grammatical functions: in a configurational language such as English (or Afrikaans) a difference in grammatical functions presupposes a difference in formal structure, specifically labelled bracketing.]

Selkirk's rule of function assignment, therefore, deserves a closer examination. Such an examination reveals that the rule has a number of undesirable aspects.

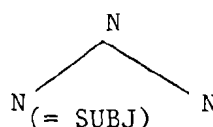
Firstly, Selkirk's rule of function assignment has to be the lexical counterpart of the syntactic rules that assign grammatical functions to surface phrase structure positions. However, it is not clear that, at a conceptual level, the functions assigned by the lexical rule (45) are significantly similar to the terminologically related functions assigned by the syntactic rules. The grammatical functions assigned by the latter rules are defined configurationally. Thus, Selkirk (1981: 254) claims that "the NP daughter of S is specified as SUBJ". She does not present such a definition of OBJ, but such a definition, clearly, would have to invoke dominance (and presumably also order) relations in a similar manner. In a simplified form the definition of OBJ would be something like "the leftmost NP daughter of VP functions as OBJ".³¹⁾

The question that arises, however, is what the definitions of the functions of SUBJ and OBJ would be as these are assigned by the lexical rule (48) to the nonhead in the following compound structures?

(51) (a)

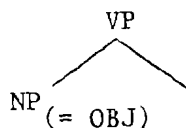


(b)

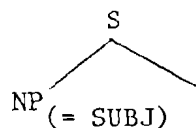


The grammatical functions of OBJ and SUBJ as assigned by the lexical rule (48) to the structures of (51) should be compared with the "corresponding" functions assigned by syntactic rules to (presumably) such surface structure positions as those of (52).

(52) (a)



(b)



Two points emerge from such a comparison. The first is that there is no real difference between the functions of OBJ and SUBJ as assigned by the lexical rule (48) to the structures of (51). The only difference

exists at the level of terminology. The second point is that it is not at all clear what significant similarity exists between the lexically assigned OBJ in (51)(a) and the syntactically assigned OBJ in (52)(a) on the one hand, and between the lexically assigned SUBJ in (51)(b) and the syntactically assigned SUBJ in (52)(b) on the other hand. The only similarity, once again, appears to be at the level of terminology. Thus, it is hard to resist the conclusion that OBJ and SUBJ, as assigned by the lexical rule (48), are empty labels adopted for the sole purpose of making Selkirk's theory of (verbal) compounding work. This conclusion is strengthened by the fact that Selkirk does not seem to provide for the possibility that the adoption of the lexical rule of function assignment may have other, independent empirical consequences.

Secondly, suppose that it were possible to show that the lexically assigned functions OBJ and SUBJ are substantively similar to the syntactically assigned functions OBJ and SUBJ to such an extent that it is justified to use the same labels for denoting them. This would undoubtedly result in loss of generalization and conceptual redundancy. To see this, consider the verbal compound (50)(a) and the sentence (53)(b).

- (53) (a) tree eater
 (b) An elephant eats trees.

In the case of the verbal compound, the lexical rule (48) assigns the function OBJ to the nonhead position into which tree is to be inserted. A distinct syntactic rule, however, assigns the function OBJ to the surface structure position of tree in the sentence (53)(b). The fact that the two rules are distinct indicates a loss of generalization: on this account, the fact that tree in tree eater and trees in An elephant eats trees have the same function is purely accidental. Moreover, the ill-formedness of both the verbal compound (54)(a), whose nonhead has been assigned the function OBJ, and the sentence (54)(b) is, similarly, accidental.

- (54) (a) *tree sleeper
 (b) *An elephant sleeps the tree.

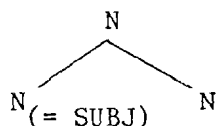
The use of distinct devices for assigning functions in verbal compounds and related sentences (or syntactic phrases) precludes the possibility of formally expressing the (linguistically significant) similarities between such compounds and sentences. Viewed from a different angle, it may be said that to include a lexical rule for assigning grammatical functions in a system that already incorporates syntactic rules for assigning the same functions is to create a conceptual redundancy in the system.

Thirdly, the formulation of Selkirk's lexical rule of function assignment appears to be problematic. Notice that, in terms of case (i) of the rule, a nonhead may be assigned ANY of the grammatical functions assigned to nominal constituents in syntactic structure. "Any" obviously includes SUBJ. But in a later section of her discussion, Selkirk (1981:256) formulates (50)(a) --- repeated here as (55) --- as an important generalization about English verbal compounds.

- (55) The SUBJ argument of a lexical item may not be satisfied in compound structure.

The question, of course, is how case (i) of the function assignment rule (48) is to be reconciled with the generalization (55). What would be the point of allowing the assignment of SUBJ to nonheads by means of one device only to absolutely forbid its realization by means of another device? That is, what would be the point of generating structures such as (56) if verbal compounds whose nonhead functions as SUBJ cannot be formed in English under any circumstances?

(56)



There seems to be no reason for not considering the use of "any" in case (i) of (48) to express a false generalization.

The rule of function assignment (48), thus, appears to have rather unattractive properties.

3.5 Retrospect

1. Selkirk's theory of verbal compounding expresses the claim that morphologically complex words with the same formal structure receive different semantic interpretations.
2. Given the nature of the difference in interpretation between verbal and nonverbal compounds, the latter claim conflicts with the Compositionality Condition.
3. To uphold this claim Selkirk requires a rule which assigns grammatical functions to the nonheads of compounds.
4. This lexical rule of function assignment, however, has various undesirable properties:
 - (a) the functions assigned by it do not appear to be significantly similar, at a conceptual level, to the terminologically related functions assigned by syntactic rules to surface structure positions;
 - (b) if the required similarity between the two sets of functions does (in some sense) exist, the lexical rule of function assignment represents a conceptual redundancy and causes a loss of generalization;
 - (c) the "any" formulation of the rule appears to conflict with the generalization that the SUBJ of a lexical item may not be satisfied in compound structure.
5. To justify the conception of grammatical functions implicit in the rule of function assignment, Selkirk minimally requires a new theory of grammatical functions: a theory not presented in her discussion of the rule.
6. Given the undesirable aspects of the rule of function assignment, the conflict between Selkirk's claim of 1. above and the Compositionality Condition reflects negatively on the former claim rather than on the latter condition.

4 Lieber's autonomy thesis

4.1 General

We come now to the question of how Lieber's (1981:65) autonomy thesis (57) bears on the Compositionality Condition (1).

- (57) The "syntactic" or structural aspects of word formation should be autonomous from lexical semantics.

For Lieber (1981:64), lexical semantics concerns the manner in which the semantic representations of morphemes are "put together" to derive complete semantic representations of morphologically complex words. At a first reading, Lieber's autonomy thesis (57) appears to conflict with the Compositionality Condition (1). To ascertain whether this is really the case, we have to consider the way in which she attempts to justify her thesis.

4.2 Non-isomorphism and autonomy

Lieber develops her case for the autonomy thesis (57) by way of a critique of Aronoff's theory of word formation. To begin with, she notes that an autonomy thesis such as (57) was not assumed in the earliest works on generative morphology. Thus, according to Lieber (1981:65), Aronoff's (1976) conception of word formation rules is not compatible with the autonomy thesis (57):

"... for Aronoff, a word formation rule was an operation which added a fixed segmental string to a base of a specified structural and semantic sort, and at the same time specified the structural and semantic properties of its outputs. The semantic representations of derived words were thus built up step by step with the structure of those words. That is, the semantics of words derived by WFRs was always compositional."

And, consequently, according to Lieber (1981:65)

"... the major claim about lexical semantics within a theory like Aronoff's was that lexical structure and lexical semantics were isomorphic."

This "major claim" of the Aronovian approach constitutes the main (but not only) target of Lieber's criticisms. In essence Lieber's criticisms take the form of a recounting of three "examples" that have appeared in the recent literature "which suggest that lexical semantics is not necessarily isomorphic with lexical structure".³²⁾

The first example Lieber (1981:65-67) derives from Williams's (1981a) ordering paradoxes considered in §2.3 above: cases --- such as, for example, hydroelectricity, macroeconomic, ungrammatical, nuclear physicist, transformational grammarian --- where the "lexical semantics" cannot be compositional because this would lead to a violation of either the Ordering Hypothesis (5) or the Extended Ordering Hypothesis (6).

The second example is taken by Lieber (1981:67) from Pesetsky's (1979) work. In essence this example concerns the fact that in certain Russian forms with two suffixes the attachment of the second suffix has wiped out the meaning of the first suffix. For example, on the basis of mučit' ("to torture") the derived word mučitel' ("torturer") can be formed by attaching the agentive suffix -el. Attachment of the suffix -in to mučitel gives the form mučitel'niĭ ("excruciating, agonizing") in which the meaning of the agentive suffix has been wiped out, a noncompositional result.

The third example involves compounds such as paleface and redcap which, according to Lieber (1981:67-68), have "idiosyncratic meanings". As Lieber (1981:67-68) puts it "a paleface is not someone whose face is pasty, but rather a white man in the lingo of Hollywood Westerns". Structurally, however, these compounds are "compositional" or regular: on the basis of the category status of the head it is possible to explain why the compound as a whole is a noun and not an adjective or verb.

Lieber (1981:68) now argues that the autonomy of lexical semantics follows from a theory of word formation such as the one proposed by her:

"The autonomy of lexical semantics is, in fact, implied by a theory of word formation which chooses a lexical structure subcomponent over a system of word formation rules. Obviously, since a theory which subsumes a lexical structure system does away with Aronovian word formation rules entirely, semantic representations cannot be put together via these WFRs. Semantic interpretation therefore requires a separate set of devices within such a theory. So far, we have argued that part of the lexical entries for terminal elements in the permanent lexicon is their semantic representation. Lexical terminals are inserted into structural trees which are labeled according to our Feature Percolation conventions. The meanings of these terminal elements must then be put together in some way.

We might start out, as an initial hypothesis, with a set of Katz and Fodor type (1964) projection rules. Such semantic rules work up a lexical tree from smaller constituents to larger constituents amalgamating semantic representations."

Lieber (1981:69) is of the opinion that once an autonomous set of semantic projection rules has been postulated for compositional lexical semantics, it would not be "a major step to postulate other autonomous semantic rules to account for non-compositional lexical semantics". She does not, however, attempt to develop such a theory of autonomous lexical semantics.

4.3 Autonomy and the Compositionality Condition

Let us assume for the sake of argument (a) that Lieber's criticisms of the non-autonomous Aronovian approach are correct,³³⁾ and (b) that it is possible to work out an autonomous lexical semantics along the lines envisaged by her.³⁴⁾ Two related questions then arise:

- (i) How do her criticisms bear on the Compositionality Condition (1)?
- (ii) Is this condition compatible with an autonomous lexical semantics?

Firstly, the kind of compositionality embodied in the Compositionality Condition is distinct from that involved in Lieber's criticisms of the Aronovian approach. Recall that on the conventional view of compositionality, as presented by Williams (1981a:245) for example, the meaning of a complex word X consisting of a base form Y and an affix is strictly compositional if the meaning of X is a simple function of the

meanings of Y and the affix. On this view, compositionality is independent of the nature and mode of operation of the formal device which "composes" the meaning of X on the basis of that of Y and the affix. In her criticisms of the Aronovian approach, however, Lieber (1981:65) appears to link compositionality to the nature and mode of application of (the device of) word formation rules. These she considers to be rules that, at one and the same time, "compose" both the structure and the meaning of morphologically complex words in essentially the same step-by-step fashion. Thus, since the kind of compositionality involved in Lieber's criticisms of the Aronovian approach is distinct from that embodied in the Compositionality Condition, the former criticisms fail to bear on the latter condition.

Secondly, since the Compositionality Condition does not specify the properties of the rules required for the semantic interpretation of morphologically complex words, it is perfectly compatible with an autonomous lexical semantics. That is, this condition clearly allows for the existence of rules of semantic interpretation that do not apply parallel to the rules specifying the form or structure of morphologically complex words, and which are autonomous from the latter rules. What this condition does is to place a restriction on morphological forms or structures in order to demystify the manner in which they are semantically interpreted. Notice that Lieber's own autonomous and regular rules of lexical semantics cannot apply to structures that fail to conform to the Compositionality Condition. If these rules must be fairly straightforward devices that have to "work up a lexical tree from smaller constituents to larger constituents amalgamating semantic representations", they obviously presuppose the kind of semantically interpretable constituent structure provided for by the Compositionality Condition.

4.4 Retrospect

1. On Lieber's analysis Aronovian word formation rules express the incorrect assumption that lexical structure and lexical semantics are isomorphic and non-autonomous.

2. The Compositionality Condition does not entail that the rules composing the semantic interpretation of a morphologically complex word are the same as those specifying the morphological representation of the word.
3. Hence, Lieber's criticisms of the Aronovian approach do not apply to the notion of compositionality embodied in the Compositionality Condition.
4. In fact, if the lexical semantic rules required by Lieber for specifying non-idiosyncratic semantic representations are to be fairly straightforward devices, these rules have to apply to lexical structures that meet the Compositionality Condition.

5 Conclusion

The Compositionality Condition (1), then, is undermined neither by Williams's noncompositional theory of lexical relatedness nor by Selkirk's theory of function assignment. This condition, moreover, is fully compatible with Lieber's thesis of the autonomy of lexical semantics. This outcome is a welcome one: to give up the Compositionality Condition would create rather embarrassing problems of a general nature.

Firstly, in terms of the Compositionality Condition the relationship between the morphological representation and the semantic interpretation of a complex word is a natural one: the morphological representation provides the formal structure on the basis of which the semantic interpretation may be composed in a simple manner. Suppose one were to give up the Compositionality Condition. It would then be a puzzling accident that, in general, the formal structure required by the rules composing the semantic interpretation of a complex word is the same as the one already embodied in the independently generated morphological representation of this word. The Compositionality Condition, thus, rules out the costly, and therefore unwanted, situation in which essentially the same formal structure is generated twice by two distinct sets of rules.

Secondly, the Compositionality Condition manifests, in the domain of word formation/morphology, what Katz has called the fundamental principle of compositionality. According to Katz (1981:230), this principle says that "the meaning of all the infinitely many sentences and other syntactically complex constituents of a natural language except for a finite subset of them is a function of the meanings of their constituents and their syntactic structure".³⁵⁾ Katz (1981:230) considers this principle to be a linguistic universal:

"For suppose that a natural language is not compositional. Then there are infinitely many sentences whose meaning is not a function of the meanings of their constituents and their syntactic structure."

Applied to the domain of word formation/morphology, Katz's views³⁶⁾ entail that someone who rejected the Compositionality Condition (1) would have to explain how it is possible to retain, in a natural form, "the fundamental principle of compositionality" in the domain of word formation. Unless such an explanation can be given, one would have to allow for infinitely many (new) words whose meaning is not a function of the meanings of their constituents and their morphological structure.

FOOTNOTES

1. The Compositionality Condition represents but one of the conditions that may be imposed on morphological representations. Among the other conditions are those that state that the morphological representation assigned to a complex word must
 - (a) provide a basis for explaining why the word is a well-formed/permissible/possible or ill-formed/nonpermissible/impossible word;
 - (b) provide a basis for explaining certain phonological/phonetic properties of the word;
 - (c) provide a basis for (giving) an account of the way in which the word is related to other words of the same morphological type, to other words of different morphological types, or to other non-word-like linguistic units such as syntactic phrases.

2. These rules include the following:
 - a. root \longrightarrow af root (root af)
 - b. stem \longrightarrow root
 - c. stem \longrightarrow af stem (stem af)
 as well as headless rules such as the one that relates the following pairs of words:

<u>breath</u>	<u>breathe</u>	
<u>life</u>	<u>live</u>	
<u>bath</u>	<u>bathe</u>	(Williams 1981a:247).

3. This hypotheses was first formulated by Siegel (1974) and has been adopted by many lexicalist morphologists, including Allen (1978), Selkirk (forthcoming) and Williams (1981a). Williams does not call it "The Ordering Hypothesis".

4. This condition represents Allen's (1978) "extension" of the Ordering Hypothesis. It is accepted by Williams (1981a) --- although he does not use Allen's term "The Extended Ordering Hypothesis" --- but not by Selkirk (forthcoming).

5. Williams (1981a:261, n. 1) appends the following note to "differ" in this definition: "This is meant to include the case where X may have a head where Y has nothing, as in *hydroelectric(ity)*. Although [(50)] [i.e. the definition (11) --- R.P.B.] pertains only to headed words, clearly items related by headless (nonbranching) rules should also be able to be 'semantically related'".
6. For these points cf. Botha 1980:77ff.
7. In his paper on language acquisition, markedness, and phrase structure, Williams (1981b) does not consider the question of how markedness claims such as (16)(a) and (b) are to be properly validated within a principled framework.
8. For a more general discussion of the problem of drawing a distinction between "leaks", "fuzzy edges", and "dead ends" of a language on the one hand, and counterexamples to a theory about this language on the other hand, cf. Botha 1968:111ff.
9. Observe that Williams's expression "a 'marked' leak" may be a tautology in the sense that "leaks" represent "marked" features of a language and that "marked" features of a language constitute "leaks". He does not indicate whether he would allow for "unmarked leaks" and "marked nonleaks" as well.
10. This is clear from a comparison of Kempen's (1969) and Marchand's (1969) studies of Afrikaans and English word formation respectively. The claim that is made here is not that Afrikaans and English are identical as regards their word formation processes: well-known differences exist. For example, it is a well-known fact that Afrikaans makes less use of inflection and more use of reduplication than English does.
11. Neither the Extended Ordering Hypothesis nor the noncompositional notion "lexically related" is presented as expressing a language-independent claim. However, Allen (1978:196) does call the former hypothesis "general" and Williams (1981a:265) does apply the latter concept to languages other than English. Notice, incidentally, that

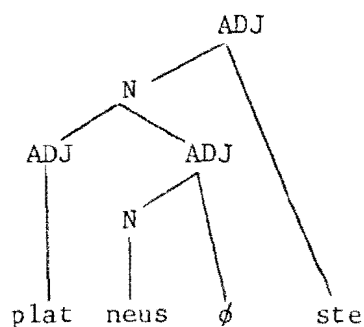
for many of the hypotheses constituting lexicalist morphology, it is not clear how large the class of languages is to which they are intended to apply.

12. Cf. R.P. Botha 1980:128ff.; 1981:62ff. and T.C. Botha 1982: 91ff.
13. As noted by De Villiers (1968:66), gehandgroet and gesoengroet are used by Eitemal in Skaduwees teen die muur, p. 47.
14. There is an alternative analysis --- pointed out by Cecile le Roux --- of gehandgroet in terms of which the problems discussed above may be avoided. This analysis entails that in gehandgroet hand is analyzed as a verb derived from a noun by means of the rule $N \rightarrow V$. On this analysis, gehandgroet will be bracketed as follows:
 $[ge \ [\ [\ [hand]_N]_V]_V \ [groet]_V]_V$. This analysis, however, is unattractive in at least two respects. First, the verb hand is not used as an independent lexical item in Afrikaans, a fact reflecting the restricted productivity of the rule $N \rightarrow V$. Second, to specify the meaning of handgroet, hand must be interpreted as a noun; it is difficult to conceive of a coherent interpretation to which hand contributes a verbal meaning.
15. Called "feste Zusammensetzungen" (Henzen 1957:86) or "untrennbaren Zusammensetzungen" in German.
16. For this view cf. e.g. Scholtz 1963:31-32.
17. Forms such as agter, oor, weer, onder differ from prefixes such as ge-, be-, and her- in (at least) the following respect: whereas prefixes cannot be used as independent lexical items, the former forms can be used independently with the meanings which they have in "onskeibaar saamgestelde werkwoorde" such as (21).
18. In German such forms are known as "trennbaren Zusammensetzungen" or "Vorgangsgefüge" (cf. Glinz 1962:389ff.).
19. Other Afrikaans prefixes that attach to compounds and cause this problem for Williams's noncompositional notion "lexically related"

include be-, ver-, nominalizing ge-, mis-, wan-.

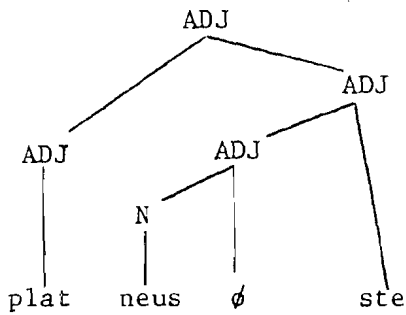
20. On an analysis such as Kempen's (1969:464ff.) -ery has the same function and meaning as the nominalizing prefix ge-. This is not a proper place for exploring the precise nature of the relationship between these affixes.
21. For an example of such an analysis cf. Kempen 1969:143ff.
22. For this analysis cf. Botha 1980:§4, 1981.
23. For criticisms of this belief cf. e.g. the references in note 20 as well as those in Dressler 1981:§4. In addition, Carroll (1979) presents experimental evidence against Roeper and Siegel's (1978) claim "that lexical structures never embed phrasal constituents".
24. For such an analysis cf., e.g., Kempen 1969:191ff.
25. Of course, the representation (38) could be modified in accordance with Williams's theory, yielding:

A.



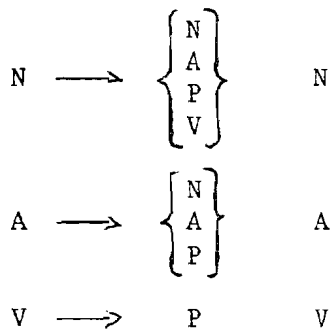
This representation, however, would create more problems than it would solve: (a) an affix, viz. -ste, is still bracketed outside of a compound; (b) this compound noun --- consisting of two adjectives --- is not a possible word in Afrikaans and the rule that would have to specify its structure is ad hoc, and finally (c) the representation makes the false claim that neus is a possible adjective in Afrikaans. One could attempt to circumvent the difficulties (a) and (b) by assigning B rather than A to platneusste.

B.



B, however, would still express the false claim that the putative adjective neus(ste) is a possible word/morphological unit of Afrikaans.

- 26. For such constraints cf., e.g., Lieber 1981:chap. 3.
- 27. She adopts Williams's notions "head" and "nonhead".
- 28. For a more detailed critical discussion of Selkirk's theory of verbal compounding cf. Botha 1982 from which the core of the argument presented here is taken.
- 29. Selkirk (1981:240) formulates these rules as follows:



- 30. Williams (1981a) has his own variant of this view but Selkirk (1981: 255) argues that Bresnan's variant provides for a better analysis of verbal compounds.
- 31. For the standard kind of (configurational) definition of OBJ cf., e.g., Jackendoff 1977:71-72, Chomsky 1981:42.
- 32. She constructs a number of "examples" of the same sort in her own work, e.g. one involving the (non)directionality of conversion (1981:119).

33. The three "examples" that Lieber adduces as evidence against the Aronovian approach are not all that convincing. As regards the first example, I pointed out some of the considerations which weaken arguments based on Williams's ordering paradoxes in §2.6 above. As far as the second "example" is concerned, it is possible, within Lieber's own approach, to conceive of an alternative analysis of a form such as mučit'n+j which makes it nonproblematic with respect to the thesis of compositionality: an analysis on which mučitel' is a morpholexical variant of mučit'. This analysis is not considered by Lieber. Turning to the third example, Lieber does not present an independent and principled theory of the formation of exocentric compounds. Consequently, paleface, redcap, etc. are presented as unanalyzed grammatical forms in her argument against a general linguistic principle, a fact which considerably weakens the force of the argument. Notice incidentally that the early literature on generative morphology --- e.g. Botha 1968:225ff. --- contains arguments to the effect that the different linguistic aspects --- morphological/syntactic, semantic, phonological --- are non-isomorphic in a specific sense. Lieber does not indicate that she is familiar with this literature.
34. A puzzling aspect of Lieber's general conception of such a lexical semantics is her (1981:70) willingness to allow for "autonomous projection rules and mapping rules of the sort needed for semantically idiosyncratic words and phrases". She does not explain in which sense a rule may be involved in specifying an idiosyncratic (element of) meaning of a complex form.
35. Katz uses the italicized qualification to allow for idioms.
36. The argument within the context of which Katz makes these remarks is not relevant to the present discussion.

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