SELKIRK'S THEORY OF VERBAL COMPOUNDING:

A CRITICAL APPRAISAL

Rudolf P. Botha

1   Introduction

This paper presents a critical appraisal of the theory of verbal com-
pounding proposed recently by Selkirk (1981).[1] On her (1981:246) view,
English verbal compounds are "endocentric adjective or noun compounds
whose head adjective or noun (respectively) is morphologically complex,
having been derived from a verb, and whose nonhead constituent is inter-
preted as an argument of the head adjective or noun".[2] To illustrate
this characterization of verbal compounds Selkirk (1981:247) furnishes
examples such as the following:

(1)   Nouns   Adjectives

        time saver   hand woven

        house cleaning   eye catching

        slum clearance   water repellent

        consumer protection   self-destructive

        troop deployment   hand washable

        property appraisal   disease inhibitory

Selkirk presents her theory of verbal compounding as part of a more
general theory of compounding. The latter theory, in turn, is presented
to illustrate basic assumptions of her still more comprehensive theory
of word structure.

The discussion below is structured as follows. In §2 the basic assump-
tions of Selkirk's theory of word structure are presented and illus-
trated with reference to her theory of compounding. Against this back-
ground, her theory of verbal compounding is outlined in §3. What appears
to be the more important questionable aspects of the latter theory are

discussed in some detail in §4. The concluding section, §5, contains a
brief summary of the major findings of the discussion in §4.

2   The theories of word structure and compounding

In content Selkirk's general theory of word structure has much in common
with other lexicalist theories of morphology/word formation. To begin
with, she (1981:231) ascribes to her theory the conventional lexicalist
aim of defining the well-formedness of morphological structures. And, in
typical lexicalist vein, words are assigned a dual status (Selkirk 1981:
230). On the one hand, they are introduced as basic units of phrase struc-
ture for the purpose of syntactic description. On the other hand, words
represent the maximal units for the internal structure of which a morpho-
logical theory must account. Word structure, however, is independent
from phrase structure and does not simply constitute the "lower" portion
of a single homogeneous syntactic representation. Like other lexicalist
morphologists, Selkirk (1981:231) provides for a lexical component which
incorporates, among other things, an extended dictionary listing the
unanalyzed morphemes --- bound or unbound --- and the words of the
language. In addition, the lexical component contains a set of word
structure rules characterizing the morphological structures of the lan-
guage.

The distinctive property of Selkirk's theory of word structure, which
sets it apart from other lexicalist morphological theories, is her basic
hypothesis concerning the nature of the word structure rules. These are
taken by Selkirk (1981:230, 233ff.) to be context free rewriting (or con-
stituent structure) rules which assign labelled trees to all words of the
language. In this way Selkirk attempts to account for (a) native speakers'
intuitions about the internal structure of the words and, (b) the recur-
siveness evidenced by morphological structure.

The rewriting rules that generate the formal structures of English com-
pounds are formulated as follows by Selkirk (1981:240):

(2)

$$N \longrightarrow \left\{ \begin{array}{c} N \\ A \\ P \\ V \end{array} \right\} \quad N$$

$$A \longrightarrow \left\{ \begin{array}{c} N \\ A \\ P \end{array} \right\} \quad A$$

$$V \longrightarrow \quad P \quad V$$

Items from the extended dictionary are inserted by a (morpho)lexical transformation into structures generated by rewriting rules such as (2), in accordance with the lexically specified conditions imposed by the particular items. The rewriting rules and the insertion transformation jointly assign to compounds such as <u>apron string</u>, <u>head strong</u> and <u>out live</u> the following morphological structures:

(3)
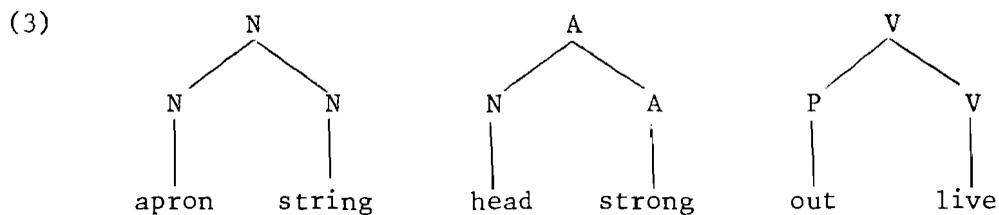
In addition to her "model" of the rule system for generating morphological structures, Selkirk (1981:235) requires two more theories for the further specification of the general properties of morphological structure. The first is a theory that has to specify the categories of morphological structure, stating among other things that morphological categories are formally identical to syntactic categories. The second is a theory of the possible relations between categories in morphological structure. This theory specifies among other things (a) that major constituents of the syntax do not appear within morphological structures generated by word structure rules, and (b) that a morphological category of a higher level does not appear in structures in which it is dominated by a category of a lower level. Crucial to this theory is the idea --- taken over from Williams (1981) --- that, like syntactic structures, morphological structures tend to be "headed". Selkirk (1981:237) assumes that a morphological constituent X^n with a particular complex of category features will contain a constituent X^m, its head, which bears

the same features but which is one level lower in the structural hierar-
chy. The other immediate constituent of X^n is the nonhead. For example,
in the adjectival compound head strong the adjective strong constitutes
the head and the noun head the nonhead.

3   The theory of verbal compounding

Central to Selkirk's (1981:252) theory of verbal compounding are the fol-
lowing two interrelated hypotheses.

(4)   (a)   Verbal and nonverbal compounds are formally nondistinct.

       (b)   Verbal and nonverbal compounds differ semantically in
              that argument structure plays a role in the interpreta-
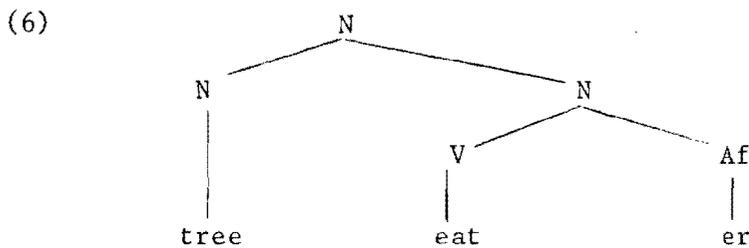   tion of the former but not of the latter compounds.

For Selkirk (1981:248), then, the term "verbal compound" "simply desig-
nates a group of compounds classified according to the type of semantic
relation that obtains between head and nonhead".[3]

Selkirk (1981:252) formalizes the hypothesis of formal nondistinctness
(4)(a) by assuming that both verbal and nonverbal compounds are generated
by the same set of rewriting rules, represented as (2) above. Thus, the
same formal structure --- i.e., $_N[_N \quad N]_N$ --- is assigned by the
rule $N \longrightarrow N \; N$ to both verbal compounds such as those of (5)(a) and
nonverbal compounds such as those of (5)(b).

(5)   (a)   elevator repair   (b)   elevator man

              church going   elevator napping

              music lover   fighter bomber

              tennis coach   tree snake

              tree eater   tree eater

Tree eater is assigned to both the (a) and the (b) set 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 charac-
teristic activity in trees", it is a nonverbal compound. On both inter-

pretations, however, <u>tree eater</u> would have the same formal structure:

(6)

```
                         N
                 ╱                 ╲
           N                         N
           │                   ╱            ╲
           │                 V                Af
           │                 │                │
         tree              eat                er
```

In having both an interpretation in which <u>tree</u> is interpreted as argument
(theme) and one in which it is interpreted as nonargument, <u>tree eater</u>
contrasts with <u>tree devourer</u>. Selkirk (1981:253) claims that in the
latter compound <u>tree</u> 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 <u>tree devourer</u>, which lack
a complement satisfying the theme argument, are ill-formed.

(7)   <u>an avid devourer of trees</u>
           <u>*?She's an avid devourer</u>

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

(8)   <u>Mary's an enthusiastic eater of pasta</u>
           <u>Mary's an enthusiastic eater</u>

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 descrip-
tion.[4)] 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 struc-
ture represents the thematic relations for the predicate and the gramma-
tical functions --- e.g. subject, object, <u>to</u>-object, etc. --- serve
as the links between syntactic structure and argument structure. Gram-
matical functions are assigned to surface phrase structure positions by

syntactic rules and to arguments of predicate argument structure by lexi-
cal rules.

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

(9)   (a)   SUBJ/ϕ OBJ
                                     | |
          devouring$_N$:   (Agent ,   Theme)

      (b)   SUBJ/ϕ OBJ/ϕ
                                     | |
          eating$_N$:   (Agent ,   Theme)

These lexical forms are related to those of <u>devour</u> and <u>eat</u>, 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 possi-
ble 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):

(10)   <u>Grammatical functions in compounds</u>

         Optionally, in compounds, (i) a nonhead noun may be assigned
         any of the grammatical functions assigned to nominal consti-
         tuents 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 (10) with reference
to (11)(a) and (b): in (a) an object function has been assigned to the
nonhead, in (b) no function assignment has been made.

(11)   (a)   N   (b)   N

              N   N   N   N
               (= OBJ)   (no F)
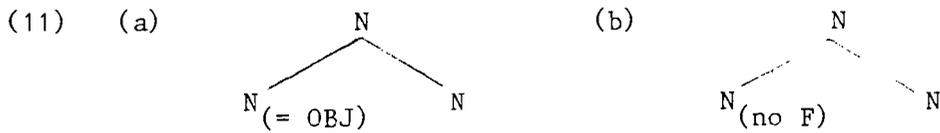
<u>Tree eater</u> (and <u>tree eating</u>) can appear in both the compound structures
(11)(a) and (b). In the (a) structure, the theme argument of <u>eater</u> is
satisfied, resulting in the theme interpretation "eater of trees". How-
ever, the specification "/∅" in the lexical form of <u>eater</u> signifies that
<u>eater</u> does not necessarily require satisfaction of its theme argument.
Consequently, <u>tree eater</u> can also appear in the (b) structure, resulting
in a nonargument interpretation such as "eater who might habitually per-
form its characteristic activity in trees".

The lexical form of <u>devourer</u> differs from that of <u>eater</u>, thus providing
a means of accounting for the fact that no nonverbal interpretation for
<u>tree devourer</u> is possible. If <u>tree devourer</u> occurs in the (a) structure,
there is a match in grammatical functions, the theme argument of
<u>devourer</u> is satisfied, and the compound is ruled well-formed on the
interpretation "devourer of trees". If, by contrast, <u>tree devourer</u>
occurs in the (b) structure, there is a mismatch in grammatical functions:
the argument structure of <u>devourer</u> requires an obligatory theme argument.
Since the (b) structure lacks an "OBJ" specification, this requirement
cannot be satisfied and <u>tree devourer</u> 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 (10), Selkirk
(1981:256) believes that she has "the makings of an account of the inter-
pretation 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:

(12)   (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 <u>must</u>
be satisfied within that compound immediately domina-
ting the head.

We will return to generalization (12)(a) in §4.4 below. Selkirk's theory
of verbal compounding has been outlined in sufficient detail to allow an
appraisal of its merits.

4   Appraisal

My appraisal of the merits of Selkirk's theory of verbal compounding will
concentrate, for obvious reasons, on what appear to be the problematic or
questionable aspects of the theory.

4.1   The distinction "verbal" vs. "nonverbal compound"

Selkirk's distinction between verbal and nonverbal compounds is based on
her contention that the range of interpretations of verbal compounds is
grammatically characterizable in a way in which that of nonverbal com-
pounds is not. Specifically, whereas the nonhead of a verbal compound
is interpreted as an argument of the head adjective or noun, the nonhead
of a nonverbal compound cannot be assigned an argument interpretation.
Two aspects of Selkirk's characterization of the distinction between
verbal and nonverbal compounds, however, have the effect of making it
extremely difficult, if not impossible, to refute her theory.

First, for Selkirk's distinction between verbal and nonverbal compounds
to have the required empirical import, the content of the notion "argu-
ment (type)" (or "thematic relation") must be sufficiently clear. How-
ever, Selkirk presents neither an explicit intensional definition of
this notion nor an exhaustive list of the various argument types. She
(1981:246) does no more than to state that: "By 'argument' I mean an
element bearing a thematic relation such as Agent, Theme, Goal, Source,
etc. to the head (cf. Jackendoff (1972), Gruber (1965) on thematic rela-
tions)". Notice the open-endedness of the list, an unfortunate state of
affairs since both Jackendoff (1972) and Gruber (1965, 1976) postulate
more thematic relations than the four included in Selkirk's list. Loca-

tion is an example of a thematic relation provided for by both Gruber
(1976:69ff.) and Jackendoff (1972:31), but explicitly denied the status
of argument type by Selkirk (1981:248). Jackendoff (1972:31) states
that: "Besides the Theme, Gruber works with several other thematic
relations. I will discuss only four more here. The first three of
these are the expression of Location, Source and Goal. Location is
defined as the thematic relation associated with the NP expressing the
location, in a sentence with a verb of location".[5)] Referring to the
compounds party drinker, spring cleaning, concert singer, home grown,
long suffering, hard working, Selkirk (1981:248), by contrast, claims:
"The nonheads of these examples add a locative, manner or temporal speci-
fication to the head, but would not be said to bear a thematic relation
to, or satisfy the argument structure of the head".[6)]

Selkirk presents no justification for her claim that Location is not an
argument type. To take over Gruber's and Jackendoff's notion "argument
type" (or, rather, "thematic relation"), while at the same time denying,
without argument, one of their thematic relations the status of an argu-
ment type, is to create an obscure notion "argument type". Assignment
of the predicate "is an argument of" (or "bears a thematic relation to")
to nonheads in compounds within the framework of Selkirk's theory of
verbal compounding, must therefore be regarded as an essentially arbi-
trary step. As a result, Selkirk's theory of verbal compounding is hard
to refute, if not irrefutable. Suppose, for instance, that a class of
compounds were to be presented in which the relation between the nonhead
and the head was a thematic relation in terms of Gruber's and Jackendoff's
views, whereas it did not appear on Selkirk's short and incomplete list
of argument types. Given her treatment of Location, Selkirk could then,
without argument, simply deny this relation the status of a thematic
relation, thus protecting her theory from the impact of the putative
counterexamples. This kind of protection is more harmful to a theory
than any number of real counterexamples.[7)]

Second, the empirical content of Selkirk's notion "argument structure"
is further eroded by a certain distinction which she invokes
in her analysis of compounds such as hover craft and scrub woman. She
(1981:248-249) contends that, even in the case of compounds such as these,
the head noun does not satisfy the argument structure of the nonhead verb.
Specifically, hover craft and scrub woman should not be assigned an analy-

sis in which the head noun is the "subject" --- in particular, agent
or theme --- of the verb. In support of this view, she seems to argue
that hover craft and scrub woman "are simply cases where a general inter-
pretation of $_N[V \quad N]_N$ as something like 'N which has some relation
to V-ing' can, pragmatically, be made somewhat more specific, and approach
an argument-like interpretation for the noun".

However, Selkirk omits to explain how a principled distinction is to be
drawn between "an argument-like interpretation for a noun" and "an argu-
ment interpretation for a noun".[8] This is a serious omission, as the
very same distinction can, by virtue of its vagueness, be invoked to argue
that putative counterexamples to her theory of verbal compounding do not
constitute real counterexamples because they are in fact nonverbal com-
pounds with a nonhead whose interpretation merely "approaches an argument-
like interpretation". It should be noted that Selkirk has nothing to say
about the content of the theory of pragmatics in terms of which pragmatic
considerations can play the role which she seems to assign to them.

4.2   Formal nondistinctness

We now turn to the first of the hypotheses central to Selkirk's theory
of verbal compounding: verbal and nonverbal compounds are formally non-
distinct. On this hypothesis, the formal structure of both the former
and the latter compounds is generated by the same rewriting rules, viz.
those in (2) above. Selkirk's hypothesis of formal nondistinctness, of
course, yields the prediction that as far as categorial composition is
concerned, verbal and nonverbal compounds will exhibit the same range
of structural possibilities. But the data presented in Selkirk's paper
do not bear out this prediction. Thus, she (1981:239) considers the
forms of (14) to be compounds of the V N type and formulates the word
structure rule (15) to account for their formal or categorial structure.

(14)   swear word

            whet stone

            scrub woman

            rattle snake

(15)   N   ——>   V   N

Quite remarkably, Selkirk does not consider --- at least not in this context --- the fact noted, for example, by Roeper and Siegel (1978: 209) that English does not have verbal compounds of the form $_N[_V \quad N]_N$.[9] Nor does she present examples of such compounds when she lists typical examples of verbal compounds. To illustrate the structural type $_N[_V \quad N]_N$, she (1981:239) lists four compounds, viz. those of (14), none of which, on her own analysis (p. 248), is a verbal compound.

These omissions on Selkirk's part are all the more puzzling considering her (1981:267-268) criticism of Roeper and Siegel's theory of verbal compounding on similar grounds. According to Selkirk the latter theory fails to predict that "the category verb should be impossible on the left-hand position of a verbal compound adjective, e.g. *go starting (cf. starts to go), or that an adverb should be impossible in the lefthand position of a verbal compound noun, e.g. *beautifully dancing, or *beautifully dancer (cf. dances beautifully)". Selkirk (1981:268), more-over, commends her own theory for being successful where Roeper and Siegel's theory failed: that is, assuming that verbal and nonverbal com-pounds are generated by the same system of rewriting rules, and given the absence from this system of the rule A ——> V A , Selkirk's theory correctly predicts the impossibility of verbs as the first element of adjectival compounds, verbal and nonverbal. But shouldn't Selkirk's theory, by the same token, be criticized for incorrectly predicting --- assuming the hypothesis of formal nondistinctness and the rule N ——> V N --- that English has verbal compounds of the form $_N[_V \quad N]_N$?

The fact that English does not have verbal compounds of the form $_N[_V \quad N]_N$ may not be the only source of embarassment for Selkirk's hypothesis of formal nondistinctness: there may be two additional ones.

First, there is Selkirk's category of A N compound nouns. To account for forms such as (16), she (1981:239) sets up a category of A N com-pound nouns to be generated by the rule (17).[10]

(16)   high school

          small pox

          sharp shooter

          well wisher

(17)   N ——> A   N

In specifying the categorial structure of the compounds of (16), however, Selkirk (1981:239-240), fails to take into account the categorial distinction between Adjective and Adverb in English: a distinction argued for quite lengthily by Jackendoff (1977:23ff.). In other parts of her discussion, she does implicitly adopt this distinction, e.g. where she (1981:268) states that "an adverb should be impossible in the lefthand position of a verbal compound noun ...".

Given an explicit and well-motivated distinction between Adjective and Adverb, it may be argued that Selkirk's A N compounds of (16) in fact belong to two different structural types. On the one hand, there are the "true" $_N[\text{Adj}\quad N]_N$ compounds high school and small pox which are also nonverbal compounds. On the other hand, there are sharp shooter and well wisher which are verbal compounds of the form $_N[\text{Adv}\;_N[V + er]_N]_N$. This distinction ties in with Roeper and Siegel's (1978:206) analysis of forms such as (18) as verbal compounds that incorporate an adverb in the nonhead position.

(18)   fast mover

          slow worker

          late bloomer

The point, then, is that we may have a structural dissimilarity between verbal and nonverbal compounds: whereas there are no nonverbal compounds of the form $_N[\text{Adv}\quad N]_N$ there are verbal compounds of this form. If this were indeed the case, Selkirk would have to argue that the formal nondistinctness embodied in her $_N[A\quad N]_N$ structural type is not a mere artefact that reflects her failure to take into account the distinction between Adjective and Adverb.[11]

Second, Selkirk's category of P N compound nouns raises a problem
similar to the one we considered in connection with A N compound nouns.
Selkirk (1981:239) analyzes forms such as (19) as compounds of the form
$_N[P \quad N]_N$ to be generated by the rule (20).

(19)   overdose   onlooker

          underdog   afterthought

          outbuilding   uptown

          uprising   inland

(20)   N $\longrightarrow$ P   N

Roeper and Siegel (1978:233) analyze onlooker and other similar forms
--- e.g. those of (21) --- as verbal compounds having a particle as
nonhead.

(21)   onlooker   ongoing   bygone

          bystander   oncoming

          outsettler   incoming

Given a well-motivated distinction between the categories Preposition
and Particle --- e.g. along the lines of Jackendoff (1977:32ff.) ---
what we have here may be yet another formal dissimilarity between verbal
and nonverbal compounds: nonverbal compounds have the formal structure
$_N[\text{Prep} \quad N]_N$, whereas verbal compounds have the formal structure
$_N[\text{Prt} \quad _N[V + Af]_N]_N$.   Selkirk will have to exclude such an analy-
sis, showing that the formal nondistinctness represented by her type
$_N[P \quad N]_N$ is more than the reflection of a failure to make an appro-
priate distinction between the categories Preposition and Particle.[12]

As noted by Roeper and Siegel (1978:233), the rule for incorporating
particles in verbal compounds is not productive. In Afrikaans, however,
the formation of morphologically complex words consisting of a particle
nonhead and a deverbal head is an extremely productive process.[13] Con-
sider the typical examples of (22) (in which the affixes are presented
in capitals):

(22)   (i)   <u>uit - sak   -   ER</u>

                out   drop   -er

                "dropout"

        (ii)   <u>weg   -   sak   -   ER</u>

                away   sink   -er

                "someone/thing that sinks away"

        (iii) <u>af   -   sak   -   ER</u>

                down   sink   -er

                "someone/thing that sinks down"

        (iv)   <u>in   -   sak   -   ER</u>

                in   sink   -er

                "someone/thing that sinks in"

Forms such as (22) cannot be analyzed as complex derivatives formed by
means of affixation on the basis of compound verbs of the type $_N[\text{Prt V}]_V$:
<u>uit + sak</u>, <u>weg + sak</u>, <u>af + sak</u>, <u>in + sak</u> lack the internal cohesion of
compounds. As shown elsewhere (Botha 1980:131-132), the constituents of
such combinations can be separated by intervening material and the order
of these constituents is not fixed.[14]   Rather, the forms of (22) are
compounds, specifically verbal compounds, the particle expressing Goal
or Direction. But Afrikaans has no productive rule for forming nonverbal
compounds of the type $_N[\text{Prt + N}]_N$. Thus, if Selkirk's hypothesis of
formal nondistinctness were to be extended to Afrikaans, compounds such
as those of (22) would pose a serious threat to it.[15]

4.3   Categorial status of the head

Before discussing Selkirk's hypothesis of semantic distinctness (4)(b),
let us dwell a little longer on the nature of the formal structure
assigned by her theory to verbal compounds. Selkirk's (1981:261) theory
"takes the deverbal noun or adjective head of the verbal compound as the
entity whose lexical form determines the range of interpretations of the
verbal compound. Specifically, it is denied that it is the lexical form
(i.e. predicate argument structure and associated grammatical functions)

of the verb which is the base of the deverbal noun or adjective that
determines the range of interpretations of the verbal compounds".[16]

Should one wish to extend Selkirk's deverbal head hypothesis to the
analysis of Afrikaans verbal compounds, this hypothesis is apparently
contradicted by forms such as those of (22) above as well as those of
(25) below. Consider first the forms of (22). On the deverbal head
hypothesis, it is the deverbal head (and not the verb) that will deter-
mine the interpretations of these forms. Thus, on this hypothesis, the
forms of (22) will have the interpretations of (23)(a). This predic-
tion is incorrect, however: the forms of (22) in fact have the inter-
pretations of (23)(b).

(23)(a) (i)   "sakker wat uit is"   (b) (i)   "iemand wat uitsak"
              dropper who out is   someone who out drops
              (= lit. sinker)   (= lit. sinks)

     (ii)   "sakker wat weg is"   (ii)   "iemand/iets wat weg sak"
            sinker which away is   someone/thing that away sinks

     (iii) "sakker wat af is"   (iii) "iemand/iets wat af sak"
            sinker which down is   someone/thing that down sinks

     (iv)   "sakker wat in is"   (iv)   "iemand/iets wat in sak"
            sinker which in is   someone/thing that in sinks

Two points emerge from a comparison of (23)(a) and (23)(b). First, the
incorrect --- and largely incoherent --- interpretations of (23)(a)
are determined by (the lexical form of) the deverbal noun. Second, the
correct interpretations of (23)(b) are determined by (the lexical form
of) the verb.

The same general point can be illustrated with reference to English forms
such as (21). Thus, the interpretation of onlooker is not determined by
the deverbal noun looker, as in (24)(a), but in fact by the verb look, or
the verb + particle combination look on, as in (24)(b).

(24)   (a)   "looker who is (habitually) on"

        (b)   "one who (habitually) looks on"

Recall, that an analysis in terms of which the forms of (22) have as
their base a compound verb is impossible. Nor, as we have seen, can an
argument against the verbal compound status of these forms be based on
the arbitrary assumption that particles cannot bear thematic relations.

Now consider a second class of forms whose semantic interpretation ap-
pears to contradict the predictions of the deverbal head hypothesis.

(25)   (i)   <u>fyn -   maal - ER</u>
                fine   grind   -er

        (ii)   <u>hoog - spring - ER</u>
                high   spring   -er

        (iii)   <u>kort - knip - ER</u>
                short   cut   -er

        (iv)   <u>laat - slaap - ER</u>
                late   sleep   -er

The deverbal head hypothesis incorrectly predicts that these forms will
have the interpretations of (26)(a), whereas they in fact have the inter-
pretations of (26)(b). The latter interpretations are determined by the
verb.

(26)(a) (i)   "maler wat fyn is"   (b) (i)   "iemand/iets wat iets fyn maal"
              grinder that fine is   someone/thing that something
                                              fine grinds

     (ii)   "springer wat hoog is"   (ii)   "iemand wat hoog spring"
            jumper that high is   someone who high jumps

     (iii) "knipper wat kort is"   (iii)   "iemand/iets wat iemand/iets
                                              kort knip"
            cutter that short is   someone/thing that someone/thing
                                             short cuts

     (iv)   "slaper wat laat is"   (iv)   "iemand wat laat slaap"
            sleeper that late is   someone who late sleeps

Whilst the deverbal interpretations of (26)(a) are not incoherent ---
as is the case with those of (23)(a) --- they are clearly incorrect.
The same general point may be illustrated with reference to English forms
such as fast mover, slow worker, late bloomer, etc.

There are two obvious ways of attempting to defuse the threat which forms
such as those of (25) pose to the deverbal head hypothesis. Both entail
that these forms be denied the status of verbal compounds. On the one
hand, it could be argued that these forms do not represent compounds at
all: that they are complex derivatives formed on the basis of compound
verbs by means of -er Affixation. This argument, however, would not hold:
fyn maal, hoog spring, kort knip, and laat slaap cannot be analyzed as
compounds. As shown elsewhere (Botha 1980:131-132), such forms lack the
internal cohesion of compounds.[17]

On the other hand, it could be contended that the forms of (25) are not
verbal compounds in Selkirk's restricted sense of the term.[18] In support
of this contention it could be claimed that the nonheads do not represent
arguments of the head. An argument along these lines, however, would fail
unless Selkirk's notion "argument (structure)" were to be replaced by one
which is both nonobscure and nonarbitrary. Even if forms such as (25)
could be shown to be nonverbal compounds, they would still pose a problem
for Selkirk's theory of compounding. They would constitute a unique kind
of nonverbal compound: nonverbal compounds whose meaning is not deter-
mined by the deverbal head, but by the verb underlying this head.

4.4   Semantic distinctness and function assignment

The second basic hypothesis of Selkirk's theory of verbal compounding,
viz. (4)(b), is that of semantic distinctness: verbal and nonverbal com-
pounds differ semantically in that argument structure plays a role in the
interpretation of the former but not of the latter compounds. Recall that
to account for this difference in semantic interpretation between verbal
and nonverbal compounds Selkirk (1981:255) has to assume, among other
things, that grammatical functions are assigned to the nonheads of com-
pounds. The device which she adopts for this purpose is the rule of
function assignment (10). It will be argued below that this rule has a
number of undesirable properties.

First, Selkirk's rule of function assignment has to be the lexical coun-
terpart 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 (10) 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 man-
ner.[19]   In a simplified form the definition of OBJ would be something
like "the leftmost NP daughter of VP functions as OBJ".

The question, however, is how the functions of SUBJ and OBJ, as assigned
by the lexical rule (10) to the nonhead in the following compound struc-
tures, are to be defined.

(27)   (a)   N   (b)   N
                     / \   / \
                   N   N   N   N
                   (= OBJ)   (= SUBJ)
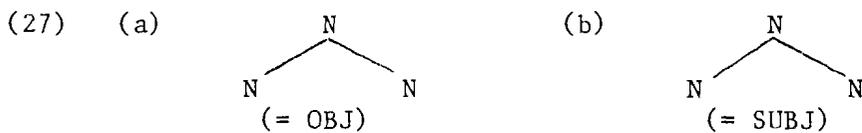
The grammatical functions of OBJ and SUBJ as assigned by the lexical rule
(10) to the structures of (27) should be compared with the "corresponding"
functions assigned by syntactic rules to (presumably) such surface struc-
ture positions as those of (28).

(28)   (a)   VP   (b)   S
                     / \   / \
                   NP   NP
                   (= OBJ)   (= SUBJ
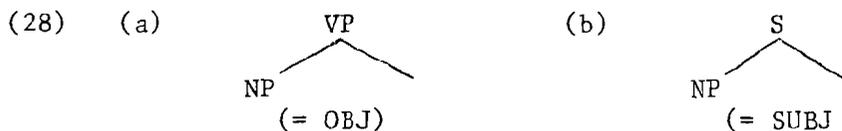
Two points emerge from such a comparison. First, there is no real diffe-
rence between the functions of OBJ and SUBJ as assigned by the lexical
rule (10) to the structures of (27). The only difference exists at the
level of terminology. Second, it is not at all clear what significant
similarity exists between the lexically assigned OBJ in (27)(a) and the
syntactically assigned OBJ in (28)(a), on the one hand, and between the
lexically assigned SUBJ in (27)(b) and the syntactically assigned SUBJ

in (28)(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 con-
clusion that OBJ and SUBJ, as assigned by the lexical rule (10), 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 adop-
tion of the lexical rule of function assignment may have other, indepen-
dent empirical consequences.

Second, 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, con-
sider the verbal compound (29)(a) and the sentence (29)(b).

(29)   (a)   tree eater
        (b)   An elephant eats trees.

In the case of the verbal compound, the lexical rule (10) 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 sur-
face structure position of tree in the sentence (29)(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 (30)(a), whose nonhead has been
assigned the function OBJ, and the sentence (30)(b) is, similarly, acci-
dental.

(30)   (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.

Third, 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) for-
mulates (12)(a) --- repeated here as (31) --- as an important genera-
lization about English verbal compounds.

(31)   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
(10) is to be reconciled with the generalization (31). What would be
the point of allowing the assignment of SUBJ to nonheads by means of one
device only to forbid its realization by means of another device? That
is, what would be the point of generating structures such as (32) if ver-
bal compounds whose nonhead functions as SUBJ cannot be formed in English
under any circumstances?
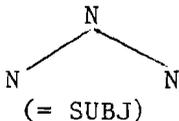
(32)   N
           /   \
          N   N
        (= SUBJ)

There seems to be no reason for not considering the use of "any" in case
(i) of (10) to express a false generalization.

4.5   Semantic interpretation and formal structure

We now turn to two properties of the semantic interpretation of verbal
compounds not dealt with by Selkirk. The first concerns the way in which
the semantic interpretation of a verbal compound is composed on the basis
of the meanings of its constituents. Consider the examples (33), where

(b) represents the semantic interpretation of the verbal compound <u>crowd thriller</u> in (a), whereas (d) represents the semantic interpretation of the nonverbal compound <u>J.G. Benson thriller</u> in (c).

(33)   (a)   <u>Borg is a real crowd thriller.</u>

      (b)   "someone who thrills the crowds"

      (c)   <u>Borg is reading a J.G. Benson thriller.</u>

      (d)   "a thriller written by J.G. Benson"

The semantic interpretation (33)(b) of the verbal compound <u>crowd thriller</u> is predicted by a configuration such as (34) in which <u>crowd</u> and <u>thrill</u> together form an immediate constituent of the category X of which the affix <u>-er</u> is the other immediate constituent:

(34)

```
                  X
                 / \
                /   \
               /\    \
              /  \    \
          crowd  thrill  er
```
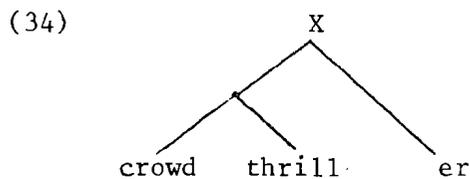
Given an analysis such as (34), the semantic interpretation of the verbal compound <u>crowd thriller</u> is composed as follows: the meaning of the affix <u>-er</u> is brought to bear on the meaning of the nonsurface phrase <u>crowd thrill</u> (or the meaning that the combination <u>crowd thrill</u> has when realized in a surface phrase such as <u>thrills the crowds</u>).
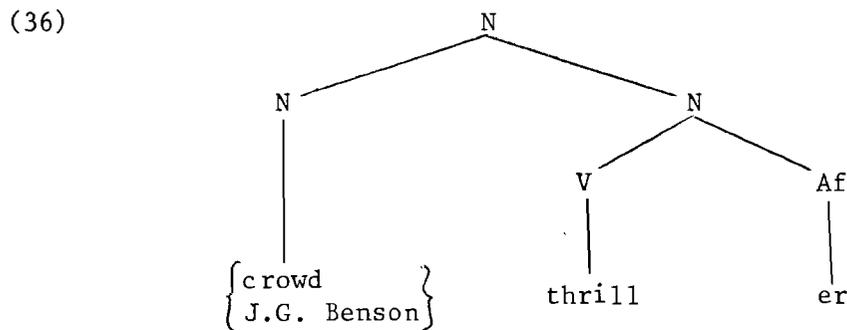
The semantic interpretation of the nonverbal compound <u>J.G. Benson thriller</u>, however, is composed in a different way. The interpretation (33)(d) is predicted by a configuration such as (35) in which <u>J.G. Benson</u> and <u>thriller</u> are the immediate constituents of X.[20]

(35)

```
                 X
                / \
               /   \
              /    /\
             /    /  \
        J.G. Benson thriller  er
```
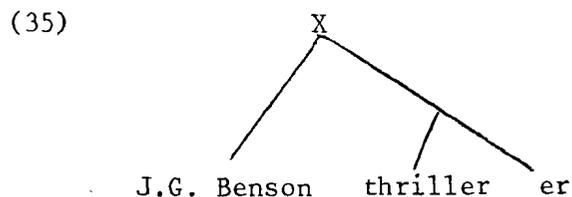
Given an analysis such as (35), the interpretation of <u>J.G. Benson thriller</u>

is composed as follows: the meaning of J.G. Benson is brought to bear on
that of thriller. Clearly, the meaning of J.G. Benson thriller cannot be
composed by bringing the meaning of the affix -er to bear on that of the
phrase (or combination realized in the surface phrase) J.G. Benson thrill(s).
By virtue of its lexicalized meaning, thriller has to figure as an imme-
diate constituent in the composition of the semantic interpretation of
J.G. Benson thriller.

In terms of Selkirk's hypothesis of formal nondistinctness, the verbal
compound crowd thriller and the nonverbal compound J.G. Benson thriller
must be assigned the same formal structure:

(36)

```
                              N
           N                          N
                               V           Af
         ⎧crowd    ⎫
         ⎨         ⎬        thrill        er
         ⎩J.G. Benson⎭
```

If the bracketing (branching) in the formal structure of compounds is to
serve as a basis for the composition of their meanings, the structure (36)
incorrectly predicts that the semantic interpretations of the verbal com-
pound crowd thriller and of the nonverbal compound J.G. Benson thriller
are formed in exactly the same way.[21]

There is a second kind of semantic difference between verbal and nonverbal
compounds which appears to be related to the first. It has been noted by
Allen (1978:147) for English and by Botha (1980:123) for Afrikaans that,
whereas nonverbal compounds, typically, are variable in meaning, verbal
compounds are not. Thus, whereas the verbal compound crowd thriller has
the fixed meaning of (37), the nonverbal compound J.G. Benson thriller
can have various meanings, including those of (38).

(37)   "someone/thing that thrills the crowds"

(38)   "a thriller about J.G. Benson"

"a thriller published by J.G. Benson"

"a thriller in the series edited by J.G. Benson"

"a thriller which is the property of J.G. Benson"

"a thriller of the genre created by J.G. Benson"

"a thriller in the style used/made popular by J.G. Benson"

There appears to be a correspondence, on the one hand, between invariabi-
lity in meaning and a semantic composition in which the meaning of an affix
is brought to bear on that of a phrase and, on the other hand, between
variability in meaning and a semantic composition in which the meaning of the
nonhead constituent is brought to bear on that of the deverbal head. As both
Allen (1978) and Botha (1980) have observed, this ties in with the variabi-
lity of the relation between the head and nonhead of primary/root compounds
vis-à-vis the invariability of the relation between an affix and the base to
which it is attached. Selkirk does not deal with the issue of the (in)varia-
bility of the meaning of compounds. Within her theory, (in)variability of
meaning does not appear to be related to other properties of morphologically
complex words.[22)]

4.6   Non-verbally based synthetic compounds

In Afrikaans, verbal compounds constitute but one of the subtypes of the
more general morphological category of synthetic compounds. The language has
various types of non-verbally based synthetic compounds which are systemati-
cally related --- in terms of semantic interpretation, co-occurrence restric-
tions, etc. --- to syntactic phrases of which the head is neither verbal nor
deverbal. The following illustrative examples are taken from (Botha 1980):

(39)   Compound   Corresponding Phrase

dik - lip - IG   (Hy het) dik   lippe.

thick lip   ed   he has   thick lips

"having thick lips"

vyf - week - LIKS   (Hy kom om)   die vyf weke.

five   week   -ly   he comes after the five weeks

"five-weekly"   "he comes every five weeks"

bo -   grond - S   (Die pyp loop) bo   die grond.

above ground affix   the pipe runs above the ground

"above the ground"

A - militêre - opleiding   (Hy ondergaan) militêre opleiding.

a   military   training   hy undergoes   military training

GE - rooi - das   (Hy dra) 'n rooi das.

-ed   red   tie   he wears a red   tie

"wearing a red tie"

vreeslik - krom - E   (Hy is) vreeslik krom.

terribly   bent   one   he is   terribly   bent

"someone/thing that is
terribly bent"

Forms such as those in (39) share a number of properties with Afrikaans verbal compounds. It is on the strength of these shared properties that the non-verbal compounds in (39) are considered to be synthetic compounds.[23)]

(40)   (a)   Both types of compounds are morphologically complex words
of which one (immediate) constituent is an affix.

       (b)   Corresponding to both types of compounds there are well-
formed simple derived words. If the simple derived word
is ill-formed, the corresponding synthetic compound is
ill-formed as well.

       (c)   Corresponding to the non-affixal part of both types of
compounds there are well-formed syntactic phrases. If
the syntactic phrase is ill-formed because of the viola-
tion of a subcategorization restriction, the correspond-
ing synthetic compound is ill-formed as well.

       (d)   The semantic interpretation of both types of compounds is
formed by bringing the meaning of the affixal constituent
to bear on that of the phrasal constituent.

       (e)   Both types of compounds have invariable meanings.

In Afrikaans, verbal compounds and nonverbally based synthetic compounds such as those in (39), thus, constitute a natural morphological class. This generalization --- which accounts for the various similarities

between the former and the latter forms --- should, of course, be ex-
pressed formally in the analyses assigned to these forms. An approach
in terms of which Afrikaans verbal compounds and nonverbally based syn-
thetic compounds such as those of (39) receive non-unified analyses will
fail to do so.

Suppose now that the basic assumptions of Selkirk's theory of verbal
compounding are adopted for Afrikaans. The question, then, would be
whether or not these assumptions allow for a unified analysis of verbally
and nonverbally based synthetic compounds. The answer to this question
has to be in the negative, it seems. A crucial notion in Selkirk's
account of verbal compounds is the notion "(the satisfaction of) argu-
ment structure". In terms of this notion she attempts to account for
the interpretation of verbal compounds, their well/ill-formedness, and
their relatedness to certain syntactic phrases. But, it is not at all
clear that this notion can be applied to an analysis of nominally and
adjectivally based synthetic compounds. Consequently, in terms of this
notion, verbal compounds --- i.e. verbally based synthetic compounds
--- and nominally and adjectivally based synthetic compounds do not con-
stitute a natural class and cannot receive a unitary analysis. As we
have seen, the similarities between verbally and nonverbally based com-
pounds stated in (40) point in the opposite direction. These similari-
ties can only be accounted for by a theory of which "synthetic compound"
is a fundamental notion and within the framework of which "verbally based",
"nominally based" and "adjectivally based compounds" constitute deriva-
tive notions.[24)]

5   Summary and conclusion

In the preceding section a number of questionable aspects of Selkirk's
theory of (verbal) compounding have been isolated:

1.   Selkirk's distinction between verbal and nonverbal compounds ---
      as well as the claims couched in terms of this distinction ---
      lacks the required empirical content because of the fact that both
      (i) her notion "argument (type)" (or "thematic relation") and
      (ii) her distinction between an "argument-like interpretation" and

an "argument interpretation" of a noun are unclear and are used in an arbitrary manner.

2.   Selkirk's hypothesis of formal nondistinctness is questionable owing to the fact (i) that English does not have verbal compounds of the type $_N[_V \quad N]_N$, and (ii) that, in formulating her rules of compounding, she ignores (at least) two categorial distinctions, viz. that between Adjective and Adverb, and that between Preposition and Particle.

3.   Selkirk's deverbal head hypothesis, when extended to Afrikaans, incorrectly predicts that the interpretation of all verbal compounds is determined by the deverbal head and not by the verb underlying this head.

4.   Selkirk's rule for assigning grammatical functions to the nonheads of compounds is problematic in that (i) 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, (ii) if the required similarity of functions does exist, the rule is conceptually redundant and there is a loss of generalization, (iii) 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.   Selkirk's proposals regarding the semantic interpretation of verbal compounds provides no account of (i) the differential way in which the interpretations of verbal and nonverbal compounds are formed on the basis of the meanings of their constituents, and (ii) the difference in regard to variability in meaning between verbal and nonverbal compounds.

6.   Selkirk's theory of verbal compounding appears not to allow for a natural way of analyzing nonverbally based synthetic compounds in Afrikaans because of the fact that "verbal compound" and not "synthetic compound" is the basic notion or explicandum of this theory.

NOTES

1.   For a similar appraisal of Roeper and Siegel's (1978) theory of
     verbal compounding and Allen's (1978) theory of synthetic com-
     pounding, as well as for an attempt to develop a theory of Afri-
     kaans synthetic compounding, cf. Botha 1980.

2.   For Selkirk's notion "argument" cf. §4.1 below.

3.   Selkirk's term "verbal compound", thus, apparently designates a
     much more restricted class of morphologically complex words than
     Roeper and Siegel's (1978) term "verbal compound". But see §4.1
     below.

4.   Williams (1981) has his own variant of this view but Selkirk (1981:
     255) argues that Bresnan's variant provides for a better analysis
     of verbal compounds.

5.   Jackendoff proceeds as follows: "It [i.e., the NP expressing Loca-
     tion --- R.P.B.] is often, but not always in a PP: (2.20)
     [= The rock stood in the corner --- R.P.B.] , (2.21) [= John clung
     to the window sill --- R.P.B.] , (2.22) [= Herman kept the book on
     the shelf --- R.P.B.] , and (2.24) [= The book belongs to Herman
     --- R.P.B.] have a preposition, and (2.23) [= Herman kept the book
     --- R.P.B.] (Herman), (2.25) [= Max owns the book --- R.P.B.] ,
     and (2.26) [= Max knows the answer --- R.P.B.] (Max) have none.
     Adjectives can function as abstract locations, as if they meant
     'in the abstract domain (of 'quality space') containing those things
     which are Adj.'. For example, stay can express either a physical or
     an abstract location.

     (2.29)   John stayed in the room.
     (2.30)   John stayed angry."

6.   Selkirk (1981:246), thus, concludes that party drinker, spring cleaning,
     etc. are not verbal compounds.

7.   Williams (1981:81) admits that for the purpose of characterizing
      the function that will relate the old argument structure of a lexical
      item to the new argument structure of an item derived by a morpho-
      logical rule from the former item, he "must have a theory of exactly
      how many argument types (thematic relations) there are". He (1981:
      83) proceeds, however, without presenting such a theory, merely
      stating "We will use the labels proposed by Gruber (1976), which are
      Actor, Theme, Goal, Source, *etc*.". (The italics are mine --- R.P.B.) .
      Notice, incidentally, that Gruber (1976) uses the label "Agent" in-
      stead of Williams's "Actor".

8.   Selkirk appears to provide a second reason for not accepting an argu-
      ment interpretation of the head noun of hover craft and scrub woman,
      a reason which is not easy to understand. She (1981:248) appears to
      deny the head of these compounds an argument interpretation because
      "there exists a fair number of cases where such an interpretation is
      not available, as with punch card, think tank, tow path, and so on ..."
      Why the interpretation of the former compounds should be (co-)deter-
      mined by that of the latter is not at all clear. Why the compounds
      under consideration cannot have different kinds of interpretation is
      particularly puzzling considering that Selkirk has no problem in
      allowing for two kinds of interpretation --- viz. an argument and
      a nonargument interpretation --- in the case of compounds consist-
      ing of a deverbal head and a nominal nonhead. In fact, she allows
      for two kinds of interpretation even in the case of compounds with
      the same morphemic make-up, e.g. tree eater.

9.   Roeper and Siegel (1978:209) state that "... verbs, which are single
      lexical items and not phrases, are also excluded from compounding"
      and "... we do not find verbal compounds of the form $[\,[V]\,+ verb
      + affix\,]$ ".

10.   Notice, incidentally, that she does this without attempting to re-
      fute Allen's (1978:98) view --- based on (Marchand 1969:63ff.) ---
      that English does not have a productive process for the formation of
      such compounds.

11.   Given the vagueness of her notion "argument type", it would be possible
      (but unfortunate) for Selkirk to claim that the nonhead of compounds
      such as <u>sharp shooter</u>, <u>well wisher</u>, <u>fast mover</u>, <u>slow worker</u>, <u>late</u>
      <u>bloomer</u> does not represent an argument type, say Manner, and that
      these compounds, consequently, are not verbal compounds.

12.   It would not be possible to merely claim that forms such as (21)
      cannot be considered verbal compounds because particles cannot bear
      thematic relations: on Gruber's (1976:89) analysis thematic rela-
      tions such as Goal and Source can be associated with particles.

13.   For this analysis cf. Botha 1980:60ff.

14.   Both of these points are illustrated by the following expressions:

                                              A   B
      (i)   Hy glo   dat Jan waarskynlik sal <u>uit</u> <u>sak</u>
             he believes that John possibly   will out drop

                 B   A
      (ii)   Jan <u>sak</u>   waarskynlik <u>uit</u>
             John drops possibly   out

15.   Reanalyzing the nonhead constituent as an adverb will not remove this
      threat. Afrikaans does not productively form nonverbal compound nouns
      of the type Adv N.

16.   Selkirk notes that in these assumptions her theory differs from
      Roeper and Siegel's theory.

17.   It is clear from the following expressions that other material can
      intervene between, for example, <u>fyn</u> and <u>maal</u>, and that the order of
      these two constituents can be reversed:

                                              A   B
      (i)   Hy vra of   die masjien die koffie <u>fyn</u> <u>maal</u>
             he asks whether the machine the coffee fine grinds

                        B   A
      (ii)   Die masjien <u>maal</u> die koffie <u>fyn</u>
             the machine grinds the coffee fine
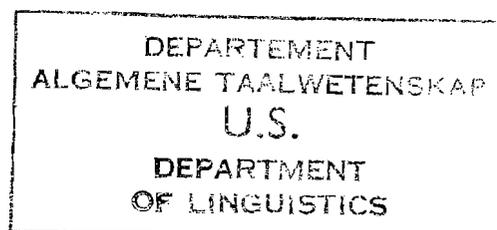
18.   These forms are verbal compounds in terms of the theories of Roeper
        and Siegel (1978), Allen (1978), and Botha (1980).

19.   For such a definition of OBJ cf., e.g., Jackendoff 1977:71-72.

20.   thriller, in turn, is analyzable as thrill and the affix -er.

21.   Botha 1980:124 argues that the difference in semantic composition
        under consideration represents a fundamental difference between Afri-
        kaans synthetic compounds --- verbally and non-verbally based ---
        and primary/root compounds. Notice, incidentally, that the expression
        J.G. Benson thriller can also be analyzed as a verbal compound with the
        meaning "someone/something who/which thrills J.G. Benson". The expression
        crowd thriller, in turn, can be analyzed as a nonverbal compound with
        the predicted meaning 'thriller written for/by(?)/about, etc. a
        crowd".

22.   For a discussion of the nature of the relation between the formal
        structure and the semantic representation of morphologically complex
        words cf. Botha to appear.

23.   Cf. Botha 1980:136.

24.   English may also have synthetic compounds which are not verbally
        based. Thus, Meys (1975:135) speculates about the possibility that
        forms such as short-circuiting, hot-gospelling, grand-touring, and
        perfect-fitting are derived by means of -ing suffixation from "adjec-
        tive-noun combinations" which also underlie (a) short-circuit,
        (a) hot-gospeller, (the) grand tour, and (a) perfect fit respectively.

BIBLIOGRAPHY

Allen, Margaret Reece
1978   Morphological investigations. Ph.D. Dissertation,
               University of Connecticut.

Botha, Rudolf P.
1980   Word-based morphology and synthetic compounding.
               (= Stellenbosch papers in linguistics, nr. 5).

to appear   Morphological representation and semantic interpretation.

Bresnan, J.W. (ed.)
1981   The mental representation of grammatical relations.
               Cambridge, Mass.: MIT Press.

Gruber, Jeffrey S.
1965   Studies in lexical relations. Ph.D. Dissertation,
               MIT.

1976   Lexical structures in syntax and semantics. Amsterdam,
               etc.: North-Holland Publishing Company.

Jackendoff, Ray
1972   Semantic interpretation in generative grammar.
               Cambridge, Mass.: MIT Press.

1977 $\overline{X}$ syntax: a study of phrase structure (= Linguistic
               Inquiry Monograph Two). Cambridge, Mass.: MIT Press.

Marchand, Hans
1969   The categories and types of present-day English word-
               formation. Second Edition. München: Beck.

Moortgat, M. et al. (eds.)
1981   The scope of lexical rules. Dordrecht: Foris Publica-
               tions.

Meys, J.

  1975   Compound adjectives in English and the ideal speaker.
                Amsterdam: North-Holland Publishing Company.

Roeper, Thomas, and Muffy Siegel

  1978   "A lexical transformation for verbal compounds", Linguistic
                Inquiry 9:199-260.

Selkirk, Elisabeth O.

  1981   "English compounding and the theory of word structure",
                in Moortgat et. al (eds.) 1981:229-277.

Williams, Edwin

  1981   "On the notions 'lexically related' and 'head of a word'",
                Linguistic Inquiry 12:245-274.